

Community Paper
City Playbook Working Group

Consumers Beyond Waste

An initiative of the Future of Consumption Platform, World Economic
Forum



City Playbook

BUILDING A REUSE CITY

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Disclaimer

This working document serves as a contribution to a World Economic Forum project, insight area or interaction. The findings, interpretations and conclusions expressed herein are a result of a collaborative process facilitated and endorsed by the World Economic Forum, but whose results do not necessarily represent the views of the World Economic Forum, its Members, Partners or other stakeholders, or the individuals listed as contributors or their organizations.

Acknowledgments

Consumers Beyond Waste (formerly Consumers Beyond Disposability) is a multistakeholder initiative hosted by the World Economic Forum's Future of Consumption platform in collaboration with Kearney. The initiative engages an informal coalition of diverse stakeholders committed to empowering consumers to, by 2030, access innovative consumption models at scale that offer aspirational, affordable, and more sustainable alternatives to single-use. Consumers Beyond Waste works in close collaboration with related World Economic Forum efforts, such as the Global Plastics Action Partnership and the Platform for Accelerating the Circular Economy. The project's 2020/21 Steering Group comprised members from Algramo, Closed Loop Partners, the Ellen MacArthur Foundation, Greenpeace International, Paris City Hall, Nestle, the New York Mayor's Office of Sustainability, PepsiCo, P&G, TerraCycle/Loop, Unilever, WWF and the UN Environment Programme. Erin Simon from WWF and Tom Szaky from TerraCycle/Loop have served as 2020/21 project co-chairs.

The present guidance document is part of the Consumers Beyond Waste 2020/21 work program. The project's City Playbook Working Group laid the foundations for the document. In a series of virtual meetings between June and November 2020, members of this informal, ad hoc multi-stakeholder group exchanged best practices, insights and research, as well as advised on the purpose, scope and structure of the document. Kate Daly from Closed Loop Partners and Emily Yates from the City of Philadelphia served as co-chairs of the working group. During a dedicated webinar on 1 September 2020, the Consumers Beyond Waste City Peer Network, facilitated by the Ellen MacArthur Foundation and the World Economic Forum, provided valuable inputs from the city government perspective that were subsequently incorporated into the draft. The working group co-chairs played a leading role in synthesizing and structuring the working group findings. Following further editing by the World Economic Forum project team, the draft was shared back to the Working Group and other interested stakeholders for additional comments.

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I. Introduction

Cities occupy just 3% of the Earth's surface but house more than half of the world's population, consume over 75% of global resources, and emit 60-80% of greenhouse gas emissions. Urbanization is increasing, with 70% of the global population expected to live in cities by 2050. Since most of the goods manufactured worldwide end up in urban centres, this creates both an opportunity and responsibility for cities and regions to leverage this concentrated consumption pattern toward more sustainable outcomes. Shifting from single use, disposable products to reusable goods could dramatically reduce total virgin material consumption, emissions, and waste generation by keeping valuable resources circulating.

The global plastic pollution crisis requires fundamental systems change. Only 9% of all plastic waste ever produced has been recycled¹, exposing the limits of recycling efforts as a comprehensive solution. Packaging represents by far the dominant use of primary plastics, accounting for 42 percent of plastic use globally.² Compared to most other plastic uses that provide utility for years or decades – for example in cars or buildings – most packaging is used for only minutes, hours, maybe several weeks at the most.

Against this backdrop, reuse and other upstream innovation strategies are gaining more traction in environmental advocacy, consumer trends, business strategies and government policy frameworks. Municipal governments can support the structural transition to a reuse model, for example by creating enabling environments for reuse-focused businesses to thrive, driving policy change, leveraging public procurement, and building out the necessary physical infrastructure. The present Playbook aims to support city authorities and relevant stakeholders in this journey, advance their understanding of challenges and opportunities, and inspire collaborative action.

Responsibility lies not on city governments alone to find all the answers or take action. A diversity of civic groups, business owners, consumer-citizens, innovators, brands, retailers, investors, academics and other stakeholders are themselves contributing to advancing reuse systems. They all bring their own passions, interests, expertise and resources to the table in order to co-create the next generation of solutions. Besides taking the leadership themselves, city governments are therefore invited to engage in dialogue, mutual learning and experimentation with other relevant actors to advance this shared agenda. The city government perspective is an essential one, enabling other stakeholders, in particular private sector partners, to align their approach with the assets, interests and constraints of cities.

Reuse systems hold great opportunities for cities searching for new pathways to reduce the financial and societal burdens from record-level waste and its effects on the climate, air, waterways and the overall quality of life for their citizens. Cities have made ambitious environmental commitments and are seeking effective pathways to deliver on them. They are also looking for innovative approaches and models that offer employment and economic growth opportunities while advancing their sustainability agendas.

In light of the high societal and environmental costs of today's single-use consumption model, cities have an opportunity to take a step back, to examine their overall approach to resource

¹ [UNEP](#)

² Geyer, R., Jambeck, J. R., & Law, K. L. (2017). Production, use, and fate of all plastics ever made. *Science Advances*, 3(7), e1700782. <http://advances.sciencemag.org/content/3/7/e1700782>. Building and construction is the second largest sector utilizing 19 percent of the total. Packaging has a very short 'in-use' lifetime (typically around 6 months or less). This is in contrast to building and construction, where plastic use has a mean lifetime of 35 years.

management, and to consider alternative models. In addition to improving downstream interventions for better managing waste, cities are increasingly looking at waste prevention solutions upstream (reduction and reuse of packaging). In other words, what opportunities (and responsibility) do they see for enabling new systems that reduce the amount of waste entering the system in the first place?

Due to their population density and market scale, urban areas serve as natural enablers of reuse systems that seek to keep materials and packaging in the system by circulating them through multiple use cycles before reaching their end of life. As hubs for innovation and cultural transformation, cities are in a unique position to drive change and pave the way for a new generation of more circular consumption and production models.

II. About the playbook

Purpose and audience

The present City Playbook aims to serve as an action-oriented, one-stop framework that guides practitioners and stakeholders in their efforts to leverage city ecosystems for enabling and scaling reusable packaging systems. It is targeted at:

- **Municipal government leaders and officials** committed to exploring, enabling and/or implementing new consumption models within their jurisdictions that provide consumers with scalable alternatives to single use packaging
- **Other relevant reuse ecosystem stakeholders** (including consumer goods manufacturers, retailers, reuse solution providers, investors, infrastructure, logistics and sanitation companies, etc.) committed to collaborating with and leveraging urban ecosystems – including public sector instruments - for advancing systemic reuse solutions

The Playbook seeks to do this by pulling together, in one place, the key resources, examples and critical questions that practitioners should take into account across the following areas:

- Reuse strategy and program development
- Social, environmental and public health imperatives
- Stakeholder engagement
- Policy instruments
- Infrastructure
- Procurement

Recognising that not all cities are the same, and there are different dynamics between developing and developed markets, three city archetypes were prioritised to build the guidelines around:

- Developing Mega hubs - low income cities with a population greater than 5 million
- Stable Communities - high income cities with a population of less than 1 million
- Urban Powerhouses - high income cities with a population greater than 5 million

Format

The present document is a static snapshot of insights, recommendations and resources compiled by the Consumers Beyond Waste project community of the World Economic Forum. While it is the intent to generate updated issues of the document in the future, the project community is exploring the development of a dynamic digital version of the guidelines to allow for continuous updates, improvement and further additions to this body of collective knowledge over time. As such, the present document should be considered as a starting point, an initial foundation upon which the reuse community can build in the months and years ahead.

Scope considerations

The following scope considerations were made in developing these City Playbook:

- **City government vs. city ecosystem:** In line with the purpose outlined above, the Playbook looks to serve both the city government community and the broader city ecosystem. The latter also includes consumer-citizens, civil society, business, academia and other stakeholders. If not explicitly specified, the term “city” in this document refers to the broader city ecosystem.
- **FMCG packaging focus:** The Playbook focuses on supporting the development of reusable packaging systems for fast-moving consumer goods (FMCG), such as food and beverage, personal care and other common household products used in daily life.³ Reuse of other product categories (clothing, durable goods, cars, etc.) as well as B2B packaging are not considered, though in some cases the considerations outlined here may be relevant.
- **Material agnosticism:** The Playbook itself does not take a position in favour of or against broader material categories such as glass, metals or plastics; the impacts of materials depend on how they are sourced and managed.⁴ Rather, the Playbook supports efforts by cities to move from single-use to reuse models irrespective of the materials used. This does not preclude that some of the use cases referenced in the document have material-specific trade-offs.
- **Guidelines, not standards:** The Playbook does not propose specific standards or policy recommendations of any kind. This is the domain of governments, regulators and standard setting bodies. Instead, the document is an informal compilation of high-level guidance, considerations and recommendations shared by a diversity of stakeholders engaged in developing reuse solutions.
- **Reuse-specific considerations:** As much as possible, the Playbook focuses on municipal levers and issues that are unique to reuse. Many city-related considerations, while linked to reuse, focus on broader waste management, circularity, sustainability or innovation agendas. It would have been beyond the expertise (and bandwidth) of the stakeholder group behind this effort to include a comprehensive treatment of these broader areas. The Playbook therefore has to be used in conjunction with other tools and resources informing city-level approaches on these larger agendas.
- **Municipal vs. national-level considerations:** The City Playbook by design focuses primarily on municipal-level considerations. At the same time, it is recognized that national policies and other instruments play a major role in enabling reuse systems or informing incentives and boundaries for city governments. These dynamics also differ

³ Food and beverage packaging comprises 8 out of the top 10 most common beach litter items. <https://oceanconservancy.org/trash-free-seas/international-coastal-cleanup/annual-data-release/>

⁴ Materials used in reusable packaging systems should be carefully evaluated to determine environmental impact, see "Environmental Criteria in a Reuse System" for more information

greatly from one country to another depending on the distribution of responsibilities across different levels of government. A further treatment of the interdependence between and among national and local measures is a key area of further study and deliberation, in particular as national governments increasingly seek ways of integrating waste prevention and reuse targets into their national strategies.

III. Overview: Cities & reuse

Key motivators for cities

High population densities and growing urbanization rates put cities at the forefront of exacerbating, and suffering the effects of, the global ecological crisis. For developing-market mega-hubs, waste management systems often fail to meet the required needs and face significant challenges in effectively dealing with the waste produced by the urban population. Many municipalities in developed markets also struggle to provide adequate waste management services. COVID-19, which caused an unprecedented surge of packaging waste for home deliveries and takeout food orders, increased the challenges cities face in managing single-use waste.

Cities are searching for new pathways to reduce the financial and societal burdens from record-level waste and its effects on the climate, air, waterways and the overall quality of life for their citizens. Many have made ambitious environmental commitments and are looking for effective solutions to deliver on them. Visionary city leaders and stakeholders in the city ecosystem are keen on embracing innovative approaches and models that offer employment and economic growth opportunities while advancing local sustainability agendas.

Reuse systems present a significant, and often underexplored, opportunity for cities to address these challenges. Available studies show that generally a reusable packaging system has a lower environmental impact than single-use systems.⁵ Single-use systems, by definition, rely more heavily on effective recycling. In particular for plastic packaging, however, recycling systems are characterized by low recycling rates and lacking collection infrastructure in many parts of the world, their environmental impact is sometimes only marginally better than using virgin raw materials, and they often struggle to be economically viable.⁶ Such potential costs and benefits of reuse and recycling systems are usually not top-of-mind for city officials. However, it is important for cities to have access to such insights to ensure that they can make informed decisions about enabling reuse models alongside their recycling systems, and to prioritize investments that provide the greatest benefits.

More specifically, reuse systems can help cities by:

- **Cutting costs.** Cities are overwhelmed with the costs of managing waste and litter. Reuse offers the potential for systematically reducing budgetary impacts and aligning investments with true long-term costs and benefits. Designed to reduce *at the source* the amount of waste generated in a city, reuse systems can lower the need for classical waste management and disposal activities. Less waste in the system means that the financial burden of waste management drops, cutting cost for cities over time.
- **Creating jobs.** Zero waste models and reuse systems can generate new types of employment and business opportunities.⁷ Areas such as reverse logistics, sanitation or information technology can see new 'circular economy' jobs being created, countering

⁵ <https://www.sciencedirect.com/science/article/pii/S2590289X20300086>; See also <https://www.lifecycleinitiative.org/activities/key-programme-areas/technical-policy-advice/single-use-plastic-products-studies/>

⁶ [Metabolic, 2020. The study combines a life cycle impact assessment and a dynamic material flow model of how material recovery would change over time under different scenarios to evaluate the circularity of different material types including PET plastic.](#)

⁷ <https://zerowasteworld.org/wp-content/uploads/Jobs-Report-ENGLISH-2.pdf>

job losses in other sectors. Pioneering cities can attract dynamic innovation clusters required to develop, test and implement reuse systems.

- **Contributing to their sustainability goals.** Due to national targets and/or citizen demands, many municipal governments have made ambitious zero-waste, zero-emissions and related environmental commitments. Reuse systems provide a tangible opportunity for cities to rethink their sustainability strategies and investments. In particular, they invite cities to reprioritize approaches addressing the root causes of the current ecological crisis over those focusing on managing its worsening symptoms. Beyond the reduction of waste volumes, reuse can also reduce cities' carbon emissions.⁸
- **Building long-term solutions.** Related to the previous point, reuse systems can offer cities a powerful vehicle for realizing a more holistic, longer-term vision for advancing environmentally sustainable consumption and production, and for building healthy communities. As regards economic long-term viability, they also provide the possibility of (re)embedding packaging and materials as economic assets into core private sector business models, rather than overburdening recycling systems.

The unique role of cities

Due to their particular attributes, cities are uniquely qualified to serve as laboratories for testing and ultimately implementing reuse systems. A number of critical characteristics can be identified that underscore the special role cities can play:

- **Conducive market structure.** Urban areas provide large concentrated markets where novel production, distribution and consumption models can benefit from scale efficiencies much sooner than in dispersed or smaller markets. This market concentration also helps lower convenience-related barriers for consumers by providing a dense, integrated network of consumer touchpoints with the reuse system (e.g. reusables purchasing and collection points).⁹
- **Local infrastructure.** Reuse systems are local in nature, requiring short distances between operational steps in the reuse cycle (production/refilling, consumption, collection, cleaning and back to production/refilling). Urban agglomerations are in a position to offer the infrastructure and physical proximity of the required operations related to these steps.

⁸ According to a recent study, reusable glass packaging solutions can emit almost 85 per cent fewer greenhouse gases than single-use glass packaging solutions. With sufficient reuse cycles, they can also significantly outperform the emissions footprint of single-use PET bottle solutions. https://zerowasteurope.eu/wp-content/uploads/2020/12/zwe_reloop_report_reusable-vs-single-use-packaging-a-review-of-environmental-impact_en.pdf.pdf_v2.pdf

⁹ Market concentration is especially critical for on-the-go reuse solutions. Simple 'bring your own' solutions will also still be viable in more dispersed communities. (S. Miller, M. Bolger, L. Copello (2019) Reusable solutions: How governments can help stop single use plastic pollution. 3Keel, Oxford, United Kingdom. A study by the Rethink Plastic alliance and the Break Free From Plastic movement.)

- **Innovation and collaboration platform.** Cities can serve as innovation hubs for diverse, and at times competing, reuse solution providers. As neutral actors, they can unlock significant network effects by supporting the collective know-how, cross-learning and shared investments needed for enabling integrated reuse ecosystems. More broadly, cities can serve as powerful knowledge and collaboration platforms that bring together relevant experts and community stakeholders needed to successfully advance reuse systems.¹⁰ In some cases, cities are in a position to use their relationships with the private sector to provide education, outreach, technical assistance and grant funding (e.g. for helping businesses purchase reusable foodware).
- **Living laboratory.** Municipal authorities in many cases have the leeway, political will and citizen proximity to experiment with innovative models and provide pragmatic support to reuse stakeholders, for example in the form of policy innovation, infrastructure or awareness raising. This makes cities natural champions and partners for activating concrete reuse pilots on the ground and engaging in a learning-by-doing approach that is hard to realize at the national or global levels.
- **Cultural leadership.** Finally, cities are poised to serve as the breeding ground for new social and cultural norms and narratives about what citizens value and how they behave and consume. With more direct access to decision makers, new norms can also translate more easily into new business behaviours and policymaking. While maybe the least tangible of factors, this may ultimately be the most decisive role urban communities – cities, boroughs and neighbourhoods - will play to enable a next generation of more sustainable production and consumption models.

Challenges and opportunities

In light of the motivations and unique capabilities of cities, enabling reuse systems is no doubt within their reach. Such a shift requires initiating and seeing through important systemic change that presents cities with a number of opportunities and challenges. This section looks at some of the general headwinds and tailwinds that cities should be mindful of as they seek to innovate and go beyond current waste management approaches.

Challenges

- **Economic viability questions:** Reuse systems raise complex questions about viability, in particular from a business model perspective. A shift to reuse implies a shift in economic value from some sectors and activities to others – for example from materials producers and recycling operations to reuse solution providers, reverse logistics and sanitation activities. Such shifts have political economy implications. Some value chain actors may also respond with hesitation to additional regulatory or operational burdens, such as retailers having to manage return-related logistics. Moreover, at low levels of scale, some reuse operations are likely to entail inefficiencies, requiring discussions

¹⁰ REFLOW Report “The REFLOW Handbook”

about transitional measures, public-private collaboration and multistakeholder commitments to unlock the transition.

- **Environmental impact questions:** In general terms, reuse is a resource-optimizing behaviour and therefore environmentally superior to single use, if properly set up. The full environmental impacts of reuse systems are hard to predict upfront, however, especially in light of early-stage inefficiencies that also affect environmental performance. Standardized definitions and impact metrics for reuse, as well as further research and modelling will help close this uncertainty gap. However, prototyping and testing reuse systems in practice will ultimately allow cities and businesses to monitor, evaluate and learn, with a view to improving and optimizing environmental performance over time.
- **Consumer adoption questions:** The degree to which consumers will embrace new reuse models is a key factor. Here too, additional research and consumer testing can be instrumental; also, innovative, aspirational design and compelling marketing and advocacy can go a long way to promote reuse solutions. That said, many consumer convenience and affordability-related factors are scale-dependent: As the size and density of reuse systems grow, efficiencies of scale – supported by standardization through the value chain (e.g. shared infrastructure, standardized packaging design to a certain degree, etc.) will bring costs down and enable consumers to access reuse solutions in proximity and at high frequencies in their daily lives. In that sense, consumer adoption is inextricably linked to the economic (and environmental) viability questions mentioned above. Finally, COVID-19 has significantly heightened consumer sensitivity to hygiene and food safety, at least in some markets.¹¹ In general, safety and hygiene are critical for all packaging and are determined by how the packaging is managed and handled, not whether it is single-use or reusable. Most reuse systems, some active for decades, have withstood the pandemic without needing to make any changes. A scientific evidence-based approach, consumer education, and, where needed, regulatory updates accommodating new reuse and refill systems can play an important role in providing clarity to stakeholders.
- **Budgetary and capacity constraints:** While most cities traditionally operate with tight budgets, COVID-19 has led to many additional cost requirements by city governments, from paying out unemployment benefits to providing temporary financing to local businesses, contributing to ever tighter budgets on non-essential government spending. Although circular systems allow cities to realize significant cost savings in the long run, any required upfront investments can be challenging for cities amid the pandemic. Calculating cost benefits on a larger scale will therefore be essential for justifying circular practices and avoiding decision-making driven by short-term cost savings. On the other hand, the further decline in the economic viability of traditional recycling operations (due to packaging light-weighting, record low oil prices and other factors) may shift the underlying economic equation; the rising costs associated with traditional waste

¹¹ <https://www.mckinsey.com/industries/paper-forest-products-and-packaging/our-insights/sustainability-in-packaging-inside-the-minds-of-us-consumers?cid=other-eml-alt-mjp-mck&hdpid=cc5d3e5f-439e-48d7-b788-8d8d47387963&hctky=12078414&hlkid=91f6ad4ace7640e69789fb515deed904#>

management approaches may force many cities into reuse and other alternatives to find a way out of the waste crisis.

- **Institutional barriers:** In many cities, institutional processes, incentives and cultures are informed by linear economic and waste management models. Reshaping these structures is challenging, in particular when institutional capacity and awareness are limited, and inter-divisional collaboration is discouraged by engrained processes or inter-divisional competition. In some instances, policies and incentives may even hinder reuse models and instead contribute to an inherent support for waste generation and single-use products, for example where success is measured by volume of waste managed (recycled or disposed).

Opportunities

- **Consumer trends:** In recent years, the public has shown growing interest in various environmental issues.¹² This trend has further accelerated during the pandemic.¹³ People are also increasingly willing to take responsibility for their actions related to consumption, and increasingly see packaging and existing waste systems as a growing problem requiring solving.¹⁴ There is also growing consumer demand for packaging options with a better environmental performance.¹⁵ Reuse systems offer a powerful vehicle for engaging with consumers in addressing local and global ecological challenges: On the one hand, disposable packaging is a tangible and highly visible impact that all consumers can easily relate to on a daily basis. On the other hand, reuse (in its opposition to single-use) is an easy-to-grasp concept that establishes a clear link between consumer behaviour and the amount of materials/resources used to produce packaging.
- **Advances in technology for reuse systems:** Various technological advances make it easier for cities to introduce efficient systems for reusable packaging. For instance, reusable coffee cups can be embedded with QR/NFC/RFID tagging which enable smart return stations to recognize users when cups are returned,¹⁶ and software solutions can optimize the washing and transportation routes of reusable packaging containers. Broader structural changes in how goods are distributed, in particular the growth of e-commerce, with its dense and complex delivery and return logistics capabilities, offer unprecedented opportunities for closed-loop packaging models.
- **Limits of recycling and disposal:** Despite of technological progress and innovation, waste management solutions based on recycling and disposal are under significant stress. First, recycling of single use packaging is more challenging than ever due to low oil prices that incentivize the market to use more petroleum-based virgin plastic versus

¹² For instance, according to a recent survey, 26% of the U.S. adult population finds climate change and its consequences alarming, up from 11% in 2015. ([Leiserowitz et al., 2020](#)).

¹³ <https://kantar.turtl.co/story/whocares-who-does-2020-pro/page/6/1>

¹⁴ According to a European-wide survey by [EC](#) (2014), 87% of Europeans believe that their country generates too much waste, and 92% are committed to making efforts to reduce the amount of household waste that they generate.

¹⁵ In more than [90% of the CPG categories](#), sustainability-marketed products grew faster than their conventional counterparts

¹⁶ [EMF, 2019](#)

recycled material for manufacturing. Second, more packaging, in particular light-weight flexible film packaging, is becoming hard to recycle due to its extremely low material value (by design) and the use of multilayer materials. Third, many countries like China that once received low-value plastic waste from overseas to recycle or dispose of are no longer accepting such imports. Disposal, while often easier to realize, is a non-circular option exacerbating environmental burdens, emissions, and land scarcity, which is even more critical in cities. These trends open the door for upstream innovation which allows us to address the waste crisis at the root cause, by rethinking the packaging, product or business model.¹⁷

- **Mainstreaming of circular approaches:** An increasing number of national and local governments are defining and implementing circular economy strategies and action plans. Similarly, many private sector actors are investing in materials innovation, product redesign, new business models and partnerships to make their operations and products more sustainable. Globally, commitment frameworks such as the New Plastics Economy Global Commitment, led by EMF in collaboration with the United Nations Environment Programme, provide a powerful framework for stakeholders to set targets and work towards building a circular economy. Given the limitations of recycling and disposal solutions, reuse and other upstream innovation strategies are gaining more traction in environmental advocacy, consumer trends, business strategies and government policy frameworks.

¹⁷ See the Ellen MacArthur Foundation ‘Upstream Innovation: A Guide to Packaging Solutions’ (2020) <https://plastics.ellenmacarthurfoundation.org/upstream>

IV. Guidelines: Building a reuse city

Reuse strategy and program development

Set up overarching city-level goals

One of the most important steps that city governments can take in order to begin advancing reuse systems is to set up overarching, city-wide sustainability goals. These goals should ideally be quantitative, for instance, overarching goals around becoming zero waste, or goals related to sustainable/circular/green jobs or decarbonization. These city-wide goals can then be translated into policy, investment and procurement decisions at the department level. This can help justify and drive action around sustainability, making it an essential requirement in practical decision making. For instance, the procurement of solid waste management services could be linked to a city's overarching reuse objective. Instead of just evaluating contractors' bids on the price of their service, the contracts could also be evaluated on the overall reduction of products in the waste stream.

Develop a vision and roadmap for achieving reusability

In addition to setting up overarching sustainability goals, cities will benefit from developing a vision around becoming circular and zero waste, and a five- or ten-year roadmap/action plan for achieving it. The vision can then also include a description of how the city can enable reusable packaging systems, identifying necessary actions and laying out a concrete timeline for decision-making. Actions can include a range of interventions, such as putting in place tax or other financial incentives promoting reuse, setting up return stations throughout the city, establishing decentralized washing facilities, supporting the increase of products and delivery services based on reusable packaging; providing technical assistance to the business community to transition to reuse; implementing public communication campaigns. The subsequent sections on policy instruments, infrastructure, procurement, partnerships and communications look more closely at some of the key levers available to cities.

Align policies and internal incentives with the shift towards reuse models

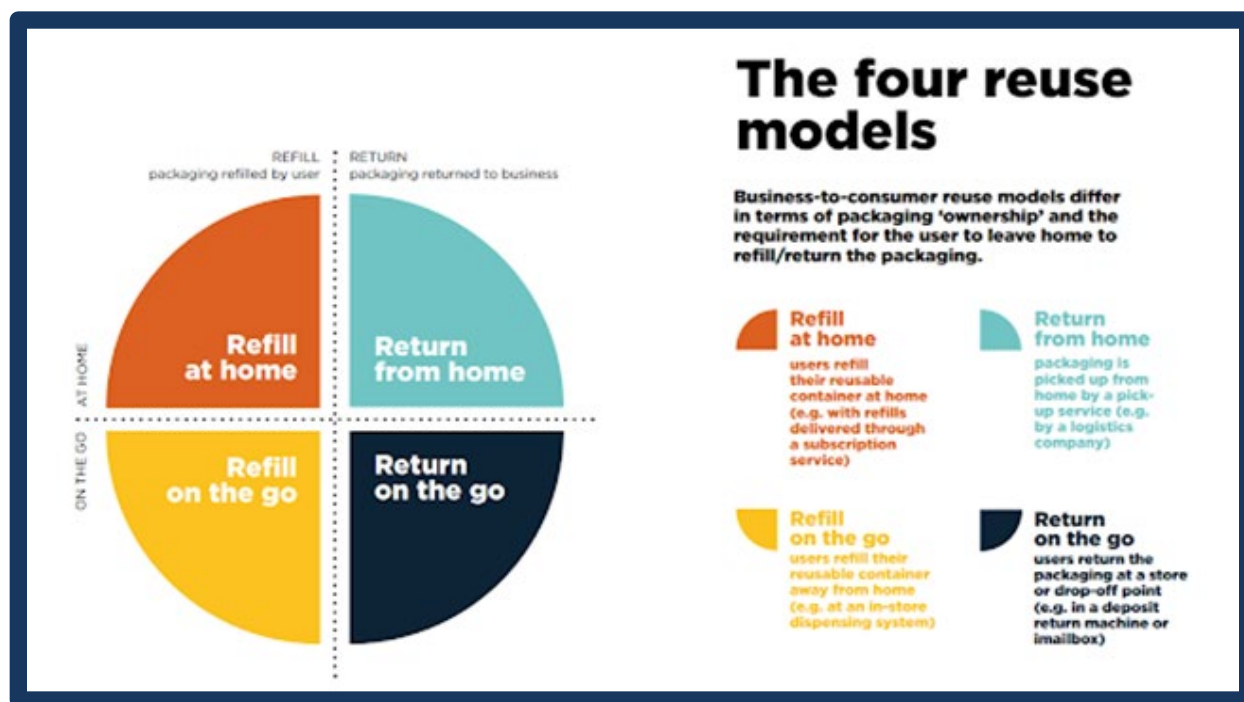
As part of their strategy development, cities should take a critical look at existing policies and incentive structures to ensure that they align with the shift towards reuse models, and to avoid situations in which cities structurally benefit from the generation of waste. For instance, the city of Amsterdam is a partial owner of the Amsterdam Energie Bedrijf (AEB), which has a large waste-to-energy facility. A shift towards reusable solutions would lead to lower volumes of materials flowing into the incinerator, subsequently leading to lower energy production levels, which would ultimately result in lower return on investment for the city of Amsterdam. Cities should carefully evaluate whether policies or investments are likely to lead to technological or financial lock-in and aim to avoid these kinds of constructions. Contract renewal windows offer an opportunity to re-evaluate the cost-benefit of continued investment in waste management vs. alternative investments in waste prevention.

Ensure that the reuse business model directly benefits the city

The revenues from the collection and sale of high-value materials in the waste stream (such as aluminium cans) can be an important source of financing for solid waste programs. When designing the shift toward a reusable material system, it is important to craft a business model that will bring net economic benefits to the city. This new system should take into account any lost revenue from recycling and waste disposal and generate wider economic gains such as job creation and private-sector investment.

Assess reuse-related needs and opportunities

As part of their reuse strategy development, municipal governments will benefit from better understanding the areas where public sector interventions may be needed or most effective in their city. Consumer-facing reusable packaging models can be classified into four broad categories: 'Refill on the go', 'refill at home', 'return on the go' and 'return from home'.¹⁸ The below figure describes the four models in greater detail. While some public sector interventions may promote all four reuse models – such as tax credits for reusable products, or single-use charges or bans – most interventions will be more specific to a given category. For instance, investments in setting up a collection infrastructure for reusables is particularly relevant for 'return on the go' models where consumers require drop-off points to return their empty packaging, such as used coffee cups or lunch containers.



Source: "Reuse: Rethinking Packaging". Ellen MacArthur Foundation, 2019.

¹⁸ EMF 2019.

Assess 'reuse maturity' to phase interventions

Cities will be at different levels of maturity with regard to adopting reusables. This should inform strategy and roadmap development; depending on its maturity level, a given city may opt for different intervention types to develop or strengthen its reuse systems. As reuse systems mature, the city can then phase and evolve its interventions accordingly.

Depending on a city's level of 'reuse maturity', a phased approach could look as follows:

- **PHASE 1 (there are no or very few companies providing reusable services):** Cities can start with procuring reusables for the administration and its functions (e.g. own food service and cafeteria operations for city government run & owned buildings), to become the first mover and an anchor client for new, local businesses in the reusables space.
- **PHASE 2 (there are some companies working to provide reusables, but they are small and poorly established):** Cities can leverage innovation funds – often established at the national level – and different types of assets to drive the development of innovator ecosystems around different parts of the reuse value chain. For instance, cities can set up a city-wide challenge with a monetary prize for companies committed to reuse models or make a plot of land or vacant building available to serve as a washing facility. By making different types of assets available for developing a reuse system infrastructure, and by opening tenders for reuse solution providers, cities can attract more new established parties into their city and stimulate the development of an innovation ecosystem for reuse. They can also play an important role in identifying and connecting smaller, otherwise disjointed reuse systems. For example, institutions such as universities, schools, hospitals, transportation hubs, event venues or prisons all serve as (potential) closed-loop reuse systems for food services and basic hygiene products. Given their proximity in a city or borough/neighbourhood context, these reuse systems can pool or cross-leverage collection, sanitation, and logistics infrastructure (as well as related data) to realize scale efficiencies. An integrated network of closed-loop reuse systems can then serve as a foundation for more complex open-loop reuse systems that require a broad and dense network of collection points and logistics and sanitation operations.
- **PHASE 3 (there are several established private sector parties providing reusables):** Cities can enable a more centralized/pooled infrastructure to manage the logistics around reusable packaging such as by supporting shared collection points, pick-up, cleaning and software tools/apps. Cities can also explore how existing infrastructure for curb-side waste collection or waste bins in the public space can be repurposed for reusable packaging.

The following subsections on policy, infrastructure and procurement go into greater detail on some of the potential levers available to cities. Finally, Section V (Summary and Recommendations) outlines some of the short, medium and long-term recommendations for how cities can think about advancing the development of reuse systems.

Social equity, environmental and public health & safety imperatives

Social, environmental and safety considerations are foundational for the success of any reuse system. They also represent non-negotiable public policy imperatives that need to be fully integrated into the design, implementation and impact assessment for reuse systems. Given the systemic complexity and nascent nature of many reuse models, measuring and optimizing social, environmental and safety impacts should be viewed as an ongoing, dynamic and reiterative process involving all relevant stakeholders. It will be impossible to predict all impacts upfront and design a perfect or static policy framework. Rather, policy innovation will have to go hand in hand with business models and broader cultural/behavioural innovation for reuse systems to succeed. For these reasons, having the right stakeholders engaged in key design, implementation, and evaluation processes will be critical (see below section on stakeholder engagement).

City governments have a unique leadership responsibility to keep these public good imperatives front and centre and to ensure that their own public-sector interventions (policy instruments, infrastructure investments, procurement decisions, public-private partnerships) aim to maximize positive impacts in these areas.

Social equity

- City officials and solution providers are advised to actively engage diverse communities and neighbourhoods in the design, implementation and iterative evaluation of reuse programs in order to enable inclusive and locally relevant choices.
- City interventions should consider promoting fair access to reusables programs, in particular for underserved communities. They can focus public interventions on:
 - Scaling reuse solutions defined by cost structures with low barriers to entry for lower-income households
 - Lowering barriers to entry for nascent reuse solutions that hold strong potential for scale efficiencies but, at their current level of scale, are difficult to access by lower-income households
 - Directly engaging underserved communities in reusable programs. This can for example be achieved by including public housing projects in reusable pilots or programs, or by embedding reuse solutions in government-backed food subsidy programs.
- With a view to creating new economic opportunities for low-income and highly impacted communities, cities have the option to prioritize funding, technical assistance or infrastructure support in such neighbourhoods or create incentives for the private sector stakeholders to invest in such areas.
- In developing markets in particular, cities should consider the potential impacts of reuse solutions on informal workers, such as waste pickers and aggregators, and ensure that their voices are included in the debate.

Environmental sustainability

The premise that reuse models are more environmentally beneficial than their single-use alternative serves as a primary motivator for stakeholders to advance reuse in the first place. In fact, studies confirm that, while not a silver bullet solution, waste preventative approaches – via packaging elimination, the expansion of consumer reuse options, or new delivery models – promise the biggest reduction in plastic pollution, often represent a net savings, and provide the highest mitigation opportunity in GHG emissions.^{19 20}

From a city perspective, an *at-source* reduction of waste volumes and overall lower carbon emissions over multiple reuse cycles promise significant environmental (and financial) gains from reuse systems. However, cities should consider the following in order to ensure that such benefits are realized in practice:

- The full environmental impacts of reuse systems are hard to predict upfront. Cities keen on enabling such systems should actively engage in a collaborative learning process – both with private sector stakeholders (reuse solution providers, logistics and sanitation companies, etc.) and among peers (other cities).
- Environmental impacts can also be expected to evolve in line with different levels of scale. At smaller scales – in particular for pilots – reuse systems may suffer from some operational inefficiencies that translate into additional environmental costs.²¹ While cities may have to accommodate such transitional impacts where warranted, it will be crucial that they incorporate a robust reporting, monitoring, evaluation and learning strategy into their overall reuse vision and roadmap from the outset. This will ensure that all relevant impacts are captured as reuse systems are tested and implemented.
- As mentioned previously, aligning their reuse program with their overall sustainability/environmental/circular economy strategy will allow cities to assess the contribution of reuse solutions to their overall waste and carbon reduction targets.
- Given the need to set new measurement and reporting standards for the environmental impacts of reuse systems, cities can serve as neutral data aggregators and collaborators in developing robust reuse metrics at the local and global level.

Public health and safety

The cleaning and refilling of reusable containers – above all for food and beverage applications – present unique challenges and solutions that merit particular attention. Health and safety questions around reusables were put into the spotlight by COVID-19, and in some cases, food retailers decided to temporarily suspend reuse/refill options for their customers. Reusables are of course not new in the wider hospitality and food services sector; and in light of the pandemic,

¹⁹ https://www.systemiq.earth/wp-content/uploads/2020/07/BreakingThePlasticWave_SummaryReport.pdf, p. 22

²⁰ See also https://zerowasteurope.eu/wp-content/uploads/2020/12/zwe_reloop_executive-summary_reusable-vs-single-use-packaging_-a-review-of-environmental-impact_en.pdf

²¹ From a materials perspective, a minimum number of reuse cycles may be required to ensure net benefits – especially where durable packaging design requires significantly higher material use.

health experts recently reconfirmed the safety of reusables when employing basic hygiene.²² The Ellen MacArthur Foundation has stated that “safety and hygiene are critical for all packaging and are determined by how the packaging is managed and handled, not whether it is single-use or reusable. There are many examples of how reusable packaging can be used safely and hygienically.”²³ In addition to safety and hygiene, the perception of quality by consumers is equally critical, in particular for product and retail brands.

Some reuse models – such as ‘refill-on-the-go’ solutions, where customers bring their own reusable containers for refill inside grocery stores or food service locations – raise more specific questions about where risks and responsibilities lie for the cleanliness and/or handling of the refill packaging.

Cities should therefore consider the following:

- City health officials need to work hand in hand with their sustainability colleagues and other stakeholders to ensure that health safety policies work to foster reusables while keeping consumers and employees safe
- In collaboration with other stakeholders (e.g. food retailers), city authorities should put in place robust reporting, monitoring, evaluation and learning frameworks to be able to continuously assess and respond to any risks
- Existing public health policies and regulations should be reviewed to remove any unnecessary or unintended obstacles to reuse. Where necessary, cities should consider establishing specific reusables food safety policies and regulations.²⁴
- In general, city officials will benefit from sharing insights and best practices with other stakeholders and their peers in other cities. This will allow for a coordinated and, where possible, a standardized approach to ensuring the safety of reuse systems.

²² https://www.greenpeace.org/static/planet4-international-stateless/2020/07/0c3a6a32-health-expert-statement_updated.pdf

²³ See “COVID-19 and reuse”. *Upstream Innovation: A Guide to Packaging Solutions*, Ellen MacArthur Foundation, 2020; p.77.

²⁴ For example, the California Food Safety Code was modified to develop specifics on how to safely fill a customer's personal food container:

https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB619#:~:text=AB%20619%2C%20Chi u.,%3A%20reusable%20containers%3A%20multiuse%20utensils.&text=Under%20existing%20law%2C%20local%20health,misdemeanor%2C%20except%20as%20otherwise%20provided

Stakeholder engagement

The transition to reuse systems requires significant changes in consumer behaviour, private sector practices, the existing city infrastructure, as well as city-wide incentive structures and policies. As such a multistakeholder and cross-disciplinary approach will be critical. From a city-government's perspective, this means collaborating internally across divisions and agencies, as well as externally with private sector, civil society, academia and other public sector actors.

Key internal stakeholders (city government functions)

- Sustainability / Environment
 - Recycling and Waste Management
 - Stormwater / water quality
 - Litter/ Public Works
- Economic Development / Innovation
- Procurement
- Infrastructure & Planning
- Public Health & Safety
- Disability, Equity and Inclusion
- Elected members
- Local mayor

Key external stakeholders

- Private sector (local and non-local businesses)
 - Reuse packaging and reuse system innovators / operators
 - Consumer goods producers and brands
 - Points of sale - incl. but not only retailers / operators of supermarkets of different sizes
 - Restaurant and hotel operators and associations
 - Events and facilities management companies
 - Logistics providers
 - Waste management companies already providing services for collection and recycling
 - Chambers of commerce
- Civil society, academia and media (local and non-local organizations)
 - End consumers / consumer advocate groups
 - Local business, community, and neighbourhood associations
 - Environmental groups active in the field of reusable packaging, waste reduction or the circular economy
 - Advocate organizations representing underserved communities
 - Universities, schools, research centres & reuse/circularity experts
 - Media, journalists and social media influencers
- Public sector
 - Peers in other cities
 - National and regional policymakers

Policy instruments

Cities can have at their disposal an array of policy tools to support the development of reuse systems. In some cases, cities are mandated to formulate and enact policies by national or subnational jurisdictions. However, in many parts of the world, cities act as laboratories of innovative policy approaches and local governments frequently copy one another, creating a patchwork of policies regulating the same business sector and eventually driving business to the table to seek uniform regulation at state or national levels. The ability of pioneering cities to over time drive and inform uniform national policies would be critical, allowing businesses operating nationally or internationally to support and benefit from coherent reuse systems and regulatory frameworks.

This section takes a general look at some of the potential policy levers cities can deploy to promote reuse. It considers two categories of policy measure and the city government's role in both:

1. Direct policy interventions that a city government could implement to promote waste prevention & reuse models
2. Policy interventions that are implemented at the national government level that can promote waste prevention & reuse models in cities

Before looking at these measures in detail, it is important to note that, historically, a range of waste management-based policies have been implemented with the aim of reducing waste. However, such measures - which include landfill bans, disposal-fees and taxes, or pay-as-you-throw schemes - have focused on how products are managed at the end of life. While they can indirectly enable waste prevention and reuse, there is little to no evidence that they have made an impact on consumer behaviour. Instead, they have tended to primarily support existing recycling or waste disposal efforts. See below box for more detail on waste management-focused interventions and their limited impact on reuse.

Box: Interventions focused on waste management

In most cases, recycling policies and extended producer responsibility (EPR) schemes do not specifically aim to minimize disposable products, and there is no clear evidence that they have had such an effect. Most often, such policies aim to increase waste collection and recycling. Historically, regulators and waste policy designers believed that increasing the cost of waste for businesses and consumers, such as landfill disposal fees, pay as you throw, and EPR, would incentivize the reduction of waste generated. Some of these policies have resulted in less trash going to landfill and in many cases more being recycled, even some waste reduction. Stakeholders should consider the lessons learned from decades of policies aimed at managing waste once it is created and how they can be redesigned to better incentivize reuse.

Landfill bans: A landfill ban can prevent certain types of waste streams from being treated by landfill disposal, but it doesn't necessarily mean more waste will be prevented. For

example, the European Union Landfill Directive²⁵ set the goal of reducing waste sent to landfill to 10% or less of the total amount of municipal waste generated by 2035. By 2017, the proportion of municipal waste entering landfill had been reduced to 21%. However, the data does not show a decrease in waste generated. Rather waste was instead treated by incineration, recycling, composting and digestion.²⁶ The effect of the Directive combined with the Waste Framework Directive was the development of new waste incinerators without any noticeable increase in prevention or recycling figures. From 2009 to 2013, only half of diverted waste went towards recycling, and composting. The other half went to incineration.²⁷

Landfill disposal fees and taxes: Research suggests that landfill taxes have a limited direct effect on household waste even at very high rates of tax.²⁸ Unless the landfill fees are directly paid by the household, this policy measure is unlikely to communicate increased cost in a direct enough manner to impact consumption behaviour.

Pay As You Throw: Households may be charged for the amount of waste by bin volume, number of waste bags or sacks, frequency of collection, weight, or a combination of these methods. Volume-only systems provide the least responsiveness amongst households. Sack and weight-based methods provide the strongest results. These systems work best where the cost of landfilling and incineration are high. Charges levied on all waste streams, including recycling, are the most likely to deliver waste prevention results.²⁹

1. Direct policy interventions that a city government could implement to promote waste prevention & reuse models

City governments can set regulations, standards, requirements and bans that can promote the reuse of packaging in their cities. This includes the development of waste prevention plans & strategies, financial incentives, leveraging public procurement for packaging reuse and supporting voluntary private sector schemes. The section below details some of these measures and provides examples of where they have been implemented by cities.

Waste prevention plans and strategies

²⁵ EU Council Directive 1999/31/EC of 26 April 1999

²⁶ <https://www.eea.europa.eu/data-and-maps/indicators/diversion-from-landfill/assessment>

²⁷ Zero Waste Europe (2015) Zero Waste to Landfill/ and or Landfill Bans: false paths to a circular economy. https://zerowasteurope.eu/wp-content/uploads/2015/12/zero_waste_europe_policy_paper_zero_waste_to_landfill_or_ban_en-3.pdf

²⁸ Institute for Environmental Studies (2005) Effectiveness of Landfill Taxation, Report for VROM, November 2005, http://www.ivm.vu.nl/en/Images/Effective%20landfill%20R05-05_tcm53-102678_tcm53-103947.pdf

²⁹ Eunomia Research and Consulting (2011) A Comparative Study on Economic Instruments Promoting Waste Prevention: Final Report to Bruxelles Environment, p. 72

Cities are best positioned to adopt source reduction, reuse and refill policies when they have prioritized these strategies in their zero waste, circular economy, and/or climate action plans. This is therefore an important step when considering a waste prevention approach.

Many cities are using their policy and strategy setting processes to set targets for waste reduction.³⁰ C40 Cities (97 cities world-wide) have adopted, as part of the Zero Waste Declaration, a target of reducing the municipal solid waste generation per capita by at least 15% by 2030 compared to 2015.³¹ Waste reduction targets help to set the stage for enacting more specific policies aimed at waste reduction and reuse. But plans that set targets for the transition to reusable and refillable delivery systems can demonstrate a clear vision for all city stakeholders, not just the city government, and a more direct path to achieving waste prevention.³²

In order to evaluate progress, prevention strategies require a baseline measurement of single-use products and packaging generation. A common method for assessing waste generation-adopted also by the European Environment Agency³³ - is to measure weight of waste generated per capita. However, a weight-based measure enables waste reduction via light-weighting of products and packaging, which does not necessarily translate into a shift from single-use to reuse models. Instead, this would require developing measurement and reporting approaches based on weight, packaging units, or other agreed upon generated per capita or per business sector.

Incentives to transition from single-use to reuse

After years of focusing on waste management programs, city governments are increasingly innovating with policies that disincentivize disposable formats or incentivize reusable/ refillable ones by targeting specific business sectors that are significant generators of packaging waste.³⁴ Cities have the opportunity to explore and test a range of enabling policies, which can include public funding for new reuse models, promotion of reuse through use of public buildings or infrastructure and/or tax credits if businesses use reusable packaging solutions and meet certain thresholds. To date, municipalities have mainly deployed the following types of policies related to reuse:

³⁰ For example, the London Environment Strategy has targets to reduce waste (<https://www.london.gov.uk/sites/default/files/waste.pdf>), consistent with the UK Government's 25 Year Environment Plan which aims at eliminating all avoidable waste by 2050 and all avoidable plastic waste by end of 2042 ([A Green Future: Our 25 Year Plan to Improve the Environment](#))

³¹ <https://www.c40.org/other/zero-waste-declaration>

³² The definition of targets will have to go hand in hand with multistakeholder efforts to determine measurement and reporting standards for reuse.

³³ https://www.eea.europa.eu/themes/waste/indicators#c5=all&c13=20&c10=&c7=all&b_start=0

³⁴ For the subsequently mentioned policies, cities in some cases have focused these specifically on plastic packaging, rather than single-use packaging irrespective of materials. Under such a scenario, policies can lead to material substitution rather than incentivizing reuse over single-use.

- **Charges, taxes, or fees to incentivize reuse:** Many jurisdictions are turning to direct market-based incentives to encourage consumers to choose reusables. A key rationale for taxing or levying fees on disposables is to incorporate the environmental and societal costs into the cost of the product. From the consumer perspective, the extremely low cost of single-use formats has perpetuated their use. Consumers change their purchasing behaviour to avoid cost.
 - **Single-use bag charges:** More than two thirds of the world’s population live in a place where plastic grocery bags are banned or require a charge. In some cases, fees are also levied on alternative paper bags . These charges are designed to encourage consumers to Bring Your Own (BYO) reusable bags. Charges that are visible to the consumer are a very effective method for changing consumer behaviour.³⁵ Plastic bag and paper charges have been successful in reducing litter and single-use plastic bag usage.³⁶
 - **Single-use cup charges:** Disposable cup charges are based on the same framework as charging for single-use bags. For example, since the City of Berkeley, California enacted the first single-use cups charge in January 2019, similar measures were enacted in six other California cities and the City of Vancouver, B.C., with most cities adopting a 25-cent charge.³⁷
- **Policies that ban single-use packaging:** A number of policy measure directly target sectors and product categories associated with single-use packaging formats that are the hardest to recycle and contributed disproportionately to marine plastic pollution. These include primarily food and beverage packaging as well as single-serve personal care product packaging. For example, a number of cities in California banned the use of disposable foodware for onsite dining.³⁸ The Irish cities of Cork and Dublin have prohibited single-use cups at government facilities.
- **Policies mandating opt-in for single-use straws, utensils, and other accessories:** With the dramatic increase in take-out and delivery meals, many restaurants add

³⁵ T. A. Homonoff, *Can Small Incentives Have Large Effects? The Impact of Taxes versus Bonuses on Disposable Bag Use* National Tax Association Proceedings, Princeton University- <http://ntanet.org/wp-content/uploads/proceedings/2012/008-homonoff-can-small-incentives-2012-nta-proceedings.pdf>

³⁶ California’s plastic bag beach litter dropped by 72%in 2016 following adoption of a statewide plastic bag ban in 2014. See:<https://www.mercurynews.com/2017/11/13/editorial-success-californias-first-in-the-nation-plastic-bag-ban-works/> Los Angeles County’s plastic bag ban/ 10 cent paper bag charge reduced overall single-use bag usage at large retail stores by 90% in the first 6 months of its implementation- see: <https://dpw.lacounty.gov/epd/aboutthebag/Announcements.aspx>. In 2012, one year after the City of San Jose, CA adopted a plastic bag ban/ paper bag fee ordinance reduced plastic bag litter by 89% in the storm drain system, 60% in the creeks and rivers, and 59% in city streets and neighborhoods. The average number of single-use bags decreased from 3 bags to 0.3 bags per visit. See: http://www3.sanjoseca.gov/clerk/CommitteeAgenda/TE/20121203/TE20121203_d5.pdf

³⁷ <https://upstreamolutions.org/policytracker>

³⁸ Arcata, Berkeley, Fairfax, San Anselmo, CA. Links to specific policies provided at <https://upstreamolutions.org/policytracker>

condiment packets, straws, utensils, napkins, chopsticks, and other accessories regardless of whether the customer needs them. In the United States, more than thirty local laws have been enacted that require retailers and online ordering platforms to make these items available only on request.

Public procurement

Cities can leverage their significant purchasing power to create demand and market pull for new ways of providing goods and services. It therefore has the potential to be a powerful policy lever to contribute to the increased deployment of reuse models. This is explored in a dedicated Procurement chapter.

Supporting private sector schemes

A less tangible, but no less important policy lever, that cities can directly employ is to support private-sector packaging reuse schemes. City governments can do this by supporting awareness raising campaigns of these schemes, promoting them to their employees as well as city citizens.

In Berlin, the Senate Department for Environment, Transport and Climate Protection and Berlin City Cleaning, the public waste management company started an initiative called the Better World Cup campaign.³⁹ The campaign encourages citizens to use their own reusable coffee cup at local coffee shops and encourages all participating businesses who offer coffee to go to provide a discount for people bringing their reusable cup and for participating businesses to offer reusable mugs. The City provides the marketing and promotes awareness raising for the initiative, including providing an up-to-date online map that shows all participating the coffee-shops.

The Ministry of the Environment, Climate and Sustainable Development in Luxembourg established an initiative called Ecobox which is a deposit-return scheme for take-away meals. The Ministry created the Corporate Identity and the marketing campaign for the participating businesses who want to use the Ecobox as an alternative for single use 'doggy bags'.⁴⁰ Similar to the Berlin initiative, the Ministry also provides a map for consumers to find Ecobox providers.

2. Policy interventions that are implemented at the national⁴¹ government level that can promote waste prevention & reuse models

Not all policy interventions are competencies of city governments, some can only be implemented by national, provincial or state governments. This includes implementing deposit refund schemes and extended producer responsibility (EPR), providing funding for city-wide reuse schemes and national policies aimed at waste prevention and reuse. The section below

³⁹ <https://betterworldcup.de/berlin/>

⁴⁰ <https://ecobox.lu/en/about-us/>

⁴¹ In some instances, examples cited are associated with subnational jurisdictions, such as regions, states or provinces.

provides details on these measures, best practice examples of these measures in action as well as information on the role that city governments play in making these measures work.

Expanding Deposit Refund Systems (DRS) to incentivize reuse

Under DRS, known as “bottle bills” in North America, consumers pay a deposit on a container (usually a beverage container) at time of purchase set to cover recycling cost and costs of improper disposal. These systems also set up a dedicated collection/ take-back system for the containers. The share of beverages sold in refillable bottles has declined significantly around the world over the last few decades. In Western Europe alone, sales of beverages in refillables dropped from 63.2 billion units in 2000 to 40.2 billion units in 2015. Beverage companies reverted over time to single-use bottles because the costs of managing the bottles could be externalized. By packaging in single-use, beverage companies eliminated the costs of collection and refill.⁴² Markets that continue to have high levels of market share of refillable beverages have achieved that with specific policy instruments. First, refillable beverages are part of a DRS program which ensures high recovery rates. Second, governments set a deposit on both refillable and non-refillable containers in order to ensure that consumers are not discouraged from purchasing the refillable beverage by opting for a container which requires no deposit. Where the refillable deposit is lower than that for single-use bottles, the refill option is incentivized. In Germany, for example, the deposit on the non-refillable is 25 euro cents whereas the refillable carries an 8 euro-cent deposit.^{43 44 45}

City governments can play an active role in supporting DRS in their country by delivering awareness raising campaigns with citizens and where possible advocating for ambitious targets. In the case where no legislated DRS system is in place, city governments can support industry led voluntary DRS initiatives through awareness raising campaigns both for citizens as well as to advocate to businesses to join the voluntary DRS. City governments can also consider going a step further by setting up their own providing collection bins for the packaging type at the city government’s expense.

Extended Producer Responsibility (EPR)

First introduced in Germany in 1991, EPR for packaging was intended to result in the prevention of packaging waste. EPR architects reasoned that, by making producers responsible for the end of life management of the packaging they put into the marketplace, the scheme would create a

⁴² Reloop (2017), “Policy Instruments to Promote Refillable Beverage Containers” <https://www.reloopplatform.org/wp-content/uploads/2017/10/Refillables-policy-Final-Fact-sheet-June30.pdf>

⁴³ Id.

⁴⁴ Germany’s National DRS has been largely successful. 99% of reusable bottles, made of glass or PET, are returned by consumers, via machines or in stores, who are refunded their deposit. Most bottles are standardised in size, meaning they can be used and returned by multiple participants. Glass bottles are cleaned and refilled up to 50 times; PET bottles around 20 times on average (Break Free From Plastic (2019) Reusable Solutions)

⁴⁵ Sweden has DRSs in place for both one-way and refillable bottles. All the provinces of Canada have some DRS in place for drinks containers. A packaging tax for one-way containers combined with a refillable DRS might provide the greatest incentive for bringing back refillable bottles. Eonomia Research and Consulting (2011) A Comparative Study on Economic Instruments Promoting Waste Prevention: Final Report to Bruxelles Environment, p. 117.

financial incentive for producers to reduce the generation of waste in the first place. National EPR packaging laws have been spreading across the globe.⁴⁶ However, in the European Union, where EPR for waste and packaging has been in place the longest, the overall impact to date shows municipal waste generation held steady and packaging waste increased in the last 10 to 15 years.⁴⁷ While waste prevention was indeed a top priority, the EU only set performance measures related to recovery and recycling of waste in certain materials categories. Without specific targets for prevention, there is unlikely to be progress in that direction. In 2018, an amended EU policy directive made revisions that are more specific about the types of measures that must be implemented to prevent waste generation, including encouraging the reuse and repair of products.⁴⁸ The countries that are achieving the strongest prevention results, such as Belgium, Bulgaria, Italy, the Netherlands, Romania, and Spain, are setting prevention targets with clear deadlines.⁴⁹ For EPR packaging laws to result in a transition to reusable and refillable packaging formats, they may have to incorporate eco-modulation of fees to make reusables/refillables more cost-beneficial for producers than disposable products. The European Commission is currently preparing guidelines on the setting of eco-modulated fees which will provide additional insights and learnings on how to advance reusable packaging via EPR.⁵⁰

Cities can play an active role supporting EPR whether there is a national legislated EPR system in place or not.

When a national legislated EPR scheme is in place, city governments may or may not be responsible for collection and sorting. In the case that they are responsible, city governments can encourage the Product Responsibility Organisation(s) (PRO(s)) to set granular and ambitious quantitative targets for collections rates or to go beyond the EPR requirements using its own financial and operational resources to deliver higher targets than the EPR requires. In the case that collection and sorting is the responsibility of the private sector, city governments can still play a role. They can shape the minimum requirements of the EPR scheme or require the private companies that are contracted to deliver city services to go beyond the minimum requirements, delivering higher targets and/or broadening the scope of the packaging materials and types included. City governments can also deliver complementary services to go beyond the minimum requirements set by the EPR or to deliver EPR for additional packaging materials and packaging types.

When there are no national EPR in place, city governments could discuss with the national government the introduction of EPR or start their own voluntary local EPR that could serve as an evidence base for the national legislation. City governments can also support voluntary private sector EPR that are operating at a city or national government level through awareness raising campaigns, providing funding and/or collection and sorting infrastructure.

⁴⁶ <https://resource-recycling.com/recycling/2019/02/11/data-sort-worldwide-expansion-of-packaging-epr/>

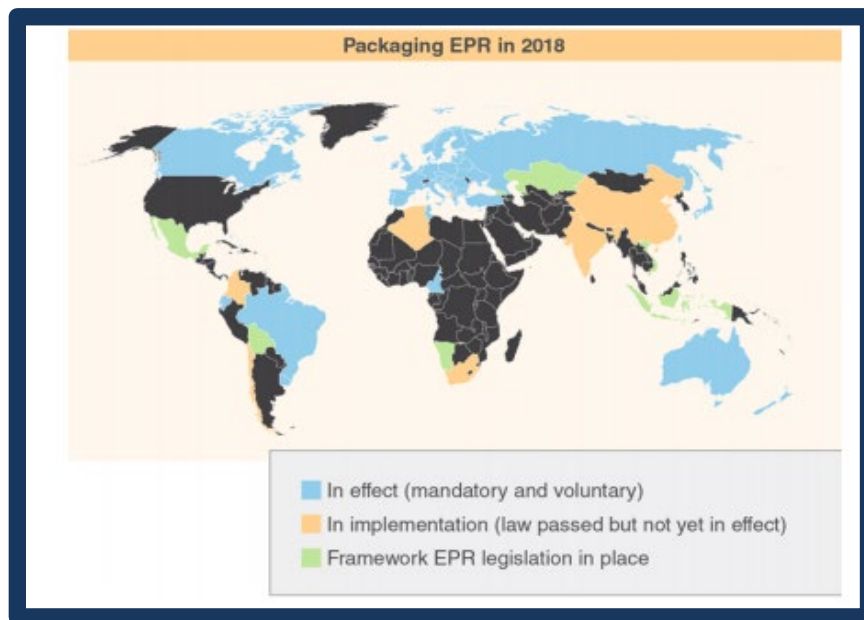
⁴⁷ Municipal waste generation in 2005 was 506 kg/capita and 502 kg/capita in 2019, while packaging waste generation per capita increased from 162 kg/capita in 2008 to 174 kg per capita in 2018. Statistics are available at https://ec.europa.eu/eurostat/statistics-explained/index.php/Main_Page

⁴⁸ Waste Framework Directive (WFD) 2018/851. See revised Article 9 on waste preventive measures to be taken by Member States. See also: [http://recircula.com/cms/wp-content/uploads/2019/10/190924 Reuse DG Environment Desgrees du Lou.pdf](http://recircula.com/cms/wp-content/uploads/2019/10/190924_Reuse_DG_Environment_Desgrees_du_Lou.pdf)

⁴⁹ Magrini, C., D'Addato, F., Bonoli, A. (2020) Municipal solid waste prevention: A review of market-based instruments in six European Union countries, Waste Management 38(1) Supplement 3-22.

⁵⁰ <https://www.ellenmacarthurfoundation.org/publications/the-new-plastics-economy-rethinking-the-future-of-plastics-catalysing-action>

Cities can also conduct baselining assessments to understand packaging flows within their municipality. These assessments can be used to support decision making. Helpful data to collect during these baselining assessments include packaging types, volumes, as well as reuse and recycling rates.



Source: <https://resource-recycling.com/recycling/2019/02/11/data-sort-worldwide-expansion-of-packaging-epr/>

The interactions between DRS and EPR systems

If well designed, DRS and EPR systems work in a complementary fashion. DRS can also directly be part of the broader EPR scheme addressing packaging to deliver on some of the targets set. In general, DRS is usually used for high value packaging materials and packaging types such as PET or HDPE bottles and aluminium cans, while EPR can be more effective for the remaining materials and packaging types such as flexibles, mixed paper, non-bottle polypropylene, etc. If both schemes co-exist, it is helpful when targets are separate (DRS vs EPR), granular, ambitious, time-bound, and defined across all the materials and packaging types included in the schemes.

National packaging taxes

Packaging taxes, such as a single-use plastic bag tax, have been implemented in multiple countries, for example to incentive consumers to use reusable bags for shopping. However,

when packaging taxes are legislated by national governments, city governments have a limited role in determining how they are designed and implemented. Although packaging taxes might complement EPR schemes, they cannot – unlike EPR - guarantee the net cost of collection, sorting, (possibly reuse) and recycling. This is because the taxes are most frequently collected by the Treasury and can be used for whatever priorities the Treasury chooses.

Government funding for reuse

Increasingly, government entities are playing a role in accelerating the transition to reusable by directly funding reuse programs and technical assistance to help businesses transition to reuse. Grants for reuse programs are for example available in California at the state and local level. The UK government provides funding via UK Research and Innovation (UKRI) for many projects linked to the circular economy. The latest one launched in partnership with WRAP, is for infrastructure for refills.⁵¹ UKRI is also managing grant funding for “smart sustainable packaging” research and demonstration projects.⁵² Such subsidies are offered to municipalities in the regions of Flanders and Matua (Italy) to promote waste prevention initiatives.

National policies aimed at waste prevention and reuse

Similar to city governments, national governments have also increasingly legislated bans on single-use plastics. 152 nations already have plastic bag laws or pledges.⁵³ France is requiring that hotels restaurants and cafes transition to only serving customers with reusable products by 2023 and that daily home meal deliveries must be in reusable formats by 2022. Navarre Spain has told hotel, retail, catering to serve 80% of beer, 70% of soft drinks, and 40% of water in reusable containers, while 15% of beverage containers in shops must be reusable by 2028. In Flanders, no single-use cups, cans, or PET bottles are allowed at government facilities, public events or non-governmental events that don't recycle 90%. Scotland has prohibited single-use cups at government facilities.

Only a small number of these interventions have incorporated direct measures to increase reuse. Policies aimed at reducing plastics, but not other single-use items, are likely to result in substitution with non-plastic disposable alternatives. In recognition of this, the European Commission adopted specific provisions in the EU Single-Use Plastics Directive 2019 that require Member States to adopt targets to reduce cups and containers by 2026. By 2022, the Member States must have completed baselines for consumption. In addition, the EU Single Use Plastic (SUP) ban, which bans 11 different types of single-use plastic products (mostly food and beverage packaging), adds a requirement that Member States adopt consumption reduction targets for all single-use products. Such approaches discourage replacing plastic with other single-use items. The EU also requires Member State's EPR laws to adopt eco-modulated fees for listed single-use products and requires that beverage bottles placed on the market must be

⁵¹ <https://wrap.org.uk/content/%C2%A3475k-refill-infrastructure-projects-announced-second-round-uk-circular-plastics-flagship>

⁵² <https://www.ukri.org/innovation/industrial-strategy-challenge-fund/smart-sustainable-plastic-packaging/>

⁵³ The last Beach Cleanup- <https://www.lastbeachcleanup.org/countrylaws>

separately recycled or reused, achieving a 77% rate by 2025 and 90% rate by 2029. While combining recycling and reuse into the same target is less effective than creating a specific target for reuse, such policies nevertheless open the door for lawmakers to think more proactively about achieving source reduction. Another example is the UK Plastics Packaging Tax that aims to increase the recyclability and reusability of plastic packaging.⁵⁴

⁵⁴ [Plastic packaging tax - GOV.UK](#)

Infrastructure

Infrastructure is critical for building and operating reuse systems that are both economically viable and environmentally superior compared to single use systems.⁵⁵ Transport distances and route optimization, proper cleaning, universal deposit systems, consumer access and convenience – all these important factors are related to the availability and performance of relevant infrastructure for handling reusable packaging. Infrastructure also has a major influence on whether the value of packaging, materials and other resources can be effectively preserved during the reuse cycle.⁵⁶

Cities can play a central role in enabling, building and/or managing infrastructure. This section looks at some general strategic considerations and then turns to different infrastructure elements unique to reuse systems, related to both physical and ‘soft’ infrastructure.

General considerations

- **Infrastructure needs:** Infrastructure requirements differ substantially from one reuse application to another. The table below highlights examples of key infrastructure needs per application. With regards to large-scale infrastructure, ‘on-the go’ models present the largest opportunities for cities to engage, given that these solutions require the collection, transportation and sanitation of large volumes of reusable containers. That said, many infrastructure assets can be leveraged across models, including sanitation and reverse logistics.

<p>Refill at home</p> <ul style="list-style-type: none"> ● Potentially sanitation of refill packaging ● Communications & education 	<p>Refill on the go</p> <ul style="list-style-type: none"> ● Sanitation <ul style="list-style-type: none"> ○ of B2B containers used in refill stations ○ of B2C containers ● Logistics <ul style="list-style-type: none"> ○ for B2B containers used in refill stations ○ For B2C containers ● Public dispensing points (e.g. water fountains) ● Data collection & analytics ● Communications & education
<p>Return from home</p> <ul style="list-style-type: none"> ● Sanitation of B2C containers ● Logistics of B2C containers ● Data collection & analytics ● Communications & education 	<p>Return on the go</p> <ul style="list-style-type: none"> ● Public collection points ● Sanitation of B2C containers ● Logistics of B2C containers ● Data collection & analytics ● Communications & education

⁵⁵ https://rethinkplasticalliance.eu/wp-content/uploads/2019/10/bffp_rpa_reusable_solutions_report.pdf

⁵⁶ <https://circulareconomy.europa.eu/platform/en/knowledge/building-circular-economy-how-new-approach-infrastructure-can-put-end-waste>

- **Investment approach** – Depending on the maturity of waste management systems and of reuse solution providers within its boundaries, a city may consider different approaches to infrastructure investments. Cities with underdeveloped waste management infrastructure may – in addition to improving such infrastructure – consider investing in reuse systems from the outset and supporting the development of required collection, logistics and sanitation assets. Cities with developed traditional waste management infrastructure can either provide incentives for private sector actors to develop reuse infrastructure (e.g. by facilitating affordable access to public land and buildings, providing tax incentives or other financial incentives) or enter into public-private partnerships to develop assets (or repurpose existing assets) for reuse-specific operations.
- **Network synergies:** To leverage existing assets and optimize infrastructure usage for building an integrated reuse system, cities can play an important role in identifying and connecting smaller, otherwise disjointed reuse systems. For example, institutions such as universities, schools, hospitals, transportation hubs, event venues or prisons all serve as (potential) closed-loop reuse systems for food services and basic hygiene products. Given their proximity in a city or borough/neighbourhood context, these reuse systems can pool or cross-leverage collection, sanitation, and logistics infrastructure (as well as related data) to realize scale efficiencies. An integrated network of closed-loop reuse systems can then serve as a foundation for more complex open-loop reuse systems that require a broad and dense network of collection points and logistics and sanitation operations.

Physical infrastructure

The main physical infrastructure elements that distinguish a reuse system from a single use system relate to back-end functions needed for re-capturing the value of packaging through its collection, cleaning, and re-distribution into the forward supply chain.

Of course, reuse systems also require recycling infrastructure, namely once the reusable packaging reaches its end of life. Here, cities are able to build on their existing recycling capabilities.⁵⁷ Recycling infrastructure is therefore not treated separately in the present document. It is worth noting, however, that reuse can play a potentially important role in strengthening the economic viability of a city's recycling system: Reusables lend themselves to higher-grade, mono-material design and, with known origin and usage, can offer recyclers high material value⁵⁸. Moreover, the recycled materials can directly be used again as inputs for the same packaging application in the next lifecycle.

⁵⁷ Materials used for reusables are usually of high value for recycling. Based on durable mono-material design, with known origin and usage, reusable containers can offer higher economic viability for recycling. In many cases, the materials can directly be used again for the same packaging application in the next lifecycle.

⁵⁸ How monetary value is captured will depend on the ownership structure underpinning a reuse system.

(1) Collection infrastructure

'Return-on-the-go' reuse systems require collection or return points (also known as drop-off networks) for reusable packaging, including associated signage. The following are important considerations related to collection:

- Synergies with general collection networks: While reusables may require the creation of new and separate collection points (e.g. to address potential cross-contamination risks), there is an opportunity to share and combine collection locations with general waste and recycling bins. This can generate strong synergies, both from a consumer convenience perspective and for efficiently servicing the combined infrastructure.
- Separate reusables stream: Unless technological solutions can ensure that proper separation can occur post-collection, it may be necessary for reusables collection bins to be separate from general waste or recycling collection bins.
- Loss minimization: Damage, breakage and even additional contamination of the packaging should be minimized at the point of collection.
- Public-private collaboration: Cities should explore public-private collaboration models to share or combine the hosting and/or servicing of collection points. This can for example be done by providing commercial operators with access to public land for installing collection points (e.g. sidewalks in front of retail outlets); or by combining and cross-servicing collection points in both public locations (e.g. parks or metro stations) and commercial spaces (e.g. event venues, convenience stores or food retail locations)

(2) Cleaning infrastructure

All reuse systems, irrespective of the category in question, require infrastructure that enables the proper cleaning and sanitation of reusables. For many refill models (refill-at-home and refill-on-the-go), cleaning of the consumers' containers (e.g. cups) likely occurs in a highly distributed fashion, either in the consumer's home or at a retail point where his/her container is being refilled. In many instances, infrastructure here means sinks and dishwashers.⁵⁹

Larger-scale infrastructure that can support centralized, 'industrial-type' cleaning operations are more relevant for larger refill systems using B2B containers, as well as refill or return solutions with B2C containers. In all these cases, large volumes of reusables are being re-looped into the system by retailers or manufacturers. Here, cities may have a role to play and should consider the following:

- Whether cities have a role to play in enabling, building or managing larger-scale cleaning infrastructure depends on the business model in question. In some cases, reuse solution providers, retailers or manufacturers can internalize cleaning

⁵⁹ For refill-at-home applications in particular, cleaning the packaging may not even be necessary between every use cycle, depending on the product's properties (e.g. detergent or other cleaning products)

operations into their business model. In other cases – in particular in the context of a nascent and fragmented solution space – internalizing cleaning operations may not be viable and city interventions can help fill the gap.

- Cities are often owners of significant plots, public spaces and other premises within the city that can be offered under affordable conditions for reuse project piloting and operations, including for cleaning.
- In some cases, cities can benefit from synergies with existing waste management infrastructure. For example, by developing cleaning facilities next to existing sorting or recycling infrastructure, cities can tap into existing waste transport routes and services, such as those linking collection points to waste management facilities.⁶⁰
- As with collection infrastructure, cities should consider opportunities to partner with the private sector (e.g. sanitation providers; institutional facility/event management companies with existing cleaning infrastructure) to promote innovative public-private solutions.

(3) Reverse logistics

Reuse models based on circulating large volumes of containers also require reverse logistics involving transport, such as between collection points and cleaning centres, or between the cleaning centre and the point of reuse/refill. In addition, storage and redistribution infrastructure may be needed at one or multiple points in the reverse logistics chain in order to optimize flow.

Here, cities may have a role to play and should consider the following:

- Whether cities have a role to play in facilitating access to transport and storage infrastructure depends on the business model in question. In some cases, reuse solution providers, retailers or manufacturers can internalize these operations into their business model. In other cases – in particular in the context of a nascent and fragmented solution space – internalizing such operations may not be viable and city interventions can help fill the gap
- Cities are often owners of significant plots, public spaces and other premises within the city that can be offered under affordable conditions for reuse project piloting and operations, including for storage or redistribution activities.
- In some cases, cities can benefit from synergies with existing logistics routes and operators related to waste management.
- Cities should consider opportunities to partner with the private sector (e.g. waste management companies, logistics solution providers) to promote innovative public-private solutions.

⁶⁰ When sharing transport assets, maintaining reusable containers separate from other waste may still be necessary due to hygiene requirements.

Soft infrastructure

Apart from physical infrastructure, cities can also play a leading role in providing a neutral platform in areas such as data pooling, deposit scheme management, or communications and education. This often opens potential public-private partnership opportunities between cities, technology providers, educational institutions, and other relevant stakeholders.

Below are a few examples of such 'soft infrastructure' opportunities cities can enable and implement:

- **Pre-competitive data for optimizing physical infrastructure:** Smart packaging can gather intelligence at various stages in the value chain to optimize the development, location and utilization of collection, logistic or sanitation assets. This can enable not only efficiency gains at the operational level but also contribute to developing better consumer behavioural insights. For example, the distribution of drop-off points can be optimized to maximize consumer convenience. As such, smart cities can adopt digital platforms for data collection from different reuse innovators or can provide incentives for technological innovation in reuse infrastructure.
- **Reuse maps:** Similar to helping citizens navigate a city's transport network, software applications interfacing with interactive maps can assist consumers in navigating purchase and collection points for reusable packaging.
- **Customer refund infrastructure:** While deposit schemes are nothing new and can take different forms depending on the business model in question, cities have the opportunity to set general requirements and parameters to promote a unified meta-infrastructure for managing deposits and refunds for reusables. This can promote interoperability and, in turn, consumer convenience and trust.
- **Public campaigns:** Consumer and public engagement is key for reuse solutions to thrive in cities. For this, communication platforms such as social media, campaigns and events can be valuable tools to increase knowledge and awareness across different stakeholders. By creating a broad social or 'open movement' approach, cities can incentivize experimentation and learning-by-doing dynamics through broad participation.

Many leading cities have found a great opportunity in using major events such as festivals or sports events to introduce reuse practices to large proportions of the population that are not necessarily part of a smaller community of environmentally conscious consumers.⁶¹ Other examples include city partnerships that provide reusable water bottles to students in the public school system⁶² or city-wide campaign platforms

⁶¹ REFLOW Report "The REFLOW Handbook"

⁶² New York City example: <https://www.nytimes.com/2018/09/23/nyregion/swell-water-bottles-nyc-high-schools.html>

for NGOs, businesses and other stakeholders to amplify zero waste and reuse efforts across sectors and solutions.⁶³

Cities can play an important role in initiating or amplifying citizen-facing campaigns supporting reuse, such as the ‘BringIt’ in New York City or “Bring Your Own” in Singapore. A diverse range of examples show how public or semi-public campaigns have been effectively leveraged to promote behaviour change and raise public awareness on key environmental and social issues, such as *Don’t Mess with Texas* (Texas Department of Transportation), *Click It Or Ticket* (National Highway Traffic Safety Administration), *Just Say No* (First Lady Nancy Reagan), or *You See Something, Say Something* (Department of Homeland Security).

⁶³ Singapore example: <https://www.nea.gov.sg/media/news/news/index/more-than-1-600-premises-team-up-with-nea-to-say-yes-to-waste-less>. See also New York: <http://www.nyc.gov/html/greenyc/html/byo/byo.shtml>

Procurement

Public procurement is the purchase of goods and services by the public sector, ranging from the purchase of office supplies and furniture to large-scale urban infrastructure projects.

Traditionally, procurement has been mainly focused on maximizing value for money. However, procurement can also be used as a force for positive impact. By integrating circular economy criteria in public procurement policies and practices as well as in tenders for goods and services, cities can stimulate circular entrepreneurship and market innovation; incentivize circular design, provision, management, and servicing of goods; and ultimately contribute to the increased deployment of reuse models.

Within the context of urban economies, the city government is an important player in terms of its own spending. Public procurement makes up approximately 14% of the EU's GDP, amounting to about €2 trillion annually, while in developing countries, it accounts for around 30% of GDP (EC, 2016). McKinsey (2011) indicates that by 2025, just six hundred cities across the globe are projected to generate more than 60% of global GDP. Cities can take advantage of this significant purchasing power to create demand and market pull for new ways of providing goods and services. This can be a starting point for an ecosystem of reuse within urban contexts.

In recent years, there has been a trend across cities towards green public procurement in the pursuit of broader sustainability objectives, such as moving towards decarbonization through procuring circular, low carbon products. Therefore, there are numerous existing mechanisms and tools that are at the disposal of cities to facilitate implementation of circular procurement practices. This chapter's main objective is to look at the different tools and mechanisms related to circular procurement that cities have at their disposal in order to stimulate reuse of fast moving consumer goods (FMCGs) and their packaging.

Build out circular procurement capacity at the municipal level

To efficiently integrate circular economy criteria into public procurement policies and tenders, city governments can proactively build out internal capabilities and skills in procurement departments and teams. Capacity building focused on the following topics would be beneficial:

- The circular economy in major sectors including food, consumer products, packaging, mobility and building;
- Measuring material circularity;
- Calculating total cost of ownership
- Circular business models (EMF, 2019).

Lead a market dialogue to facilitate cross-sectoral collaboration

To jumpstart the transition towards circular procurement, cities can proactively engage in a market dialogue and collaborate with different entities (Jones et al., 2017). Circular procurement requires new types of terms and contractual agreements and demands greater transparency between parties to facilitate effective learning. By leading a dialogue with different stakeholders, such as suppliers, recycling operators, and producers, cities can share their vision and goals,

discuss and define respective responsibilities between the private and the public sector, and facilitate the development of new innovative reuse solutions.

Adhere to principles of performance-based procurement in the public procurement of products

Many cities around the globe have already committed to sustainable development and have set up overarching sustainability objectives. However, such goals are often treated as aspirational and therefore do not always translate as hard requirements in procurement processes. Many governments have a policy of selecting the “Lowest Responsive and Responsible Bidder,” which places short-term financial performance as the most central decision-making criterion. Instead, cities should introduce hard performance or outcome-based criteria for public procurement of products, challenging the market to develop innovative product solutions suitable for reuse. For instance, under criteria based on waste prevention outcomes, a reuse solution provider offering infrastructure for the collection and cleaning of packaging would be a relevant candidate; this would not be the case where procurement efforts are scoped around waste management outcomes measured by collected, recycled or incinerated packaging waste. In another example, haulers or solid waste service providers could be evaluated as potential logistics providers for transporting reusables. If evaluations of this sort were built into their contract, they would be incentivized to engage in the reuse logistics business.

Use public procurement to encourage circular business models

To further stimulate product reuse by public procurement, city governments can choose to procure the ‘use’ of a product, rather than procuring the product itself, taking advantage of pay-per-use, take-back, and leasing models. This provides incentives for solution providers to lengthen the lifespan of products and drives the development of a market for products designed for reuse. In addition, city governments can also realize operational cost savings, and significant reduction in waste generation.

Align procurement efforts and reuse programs with broader city objectives, such as job creation

Cities should ensure that the structure of its procurement efforts and the design of its reusability programs is aligned with different deeper city-level objectives, such as job creation, economic development, or carbon impact reduction, to increase chances of success in accessing funds and winning bids. By making concrete links between reuse programs and other city objectives, such as linking the development of reverse logistics and job creation, cities can also justify the increased cost of moving towards a reuse system, as compared to staying within the old paradigm of waste being landfilled or incinerated.

Cost savings realized by reusing products and materials.

By implementing circular procurement practices, both public and private entities can realize significant cost savings in the long-term. For instance, public entities can benefit from lower

waste management fees and from extending the functional lifecycle of existing products and thus minimizing the procurement of new products, while private entities can reduce their production costs through reducing the demand for virgin materials, by maximizing material and product reuse.

Scale circular procurement through cooperative, joint procurement across a region

Cities can rapidly scale their circular procurement transition through cooperative procurement, also known as “piggyback procurement” across a region. This can be realized by multiple cities signing to the same procurement guidelines to facilitate circular contracting, building out a joint reuse infrastructure, and setting up a pool of shared resources to support the reuse system within a network of cities or regions. Ultimately, by procuring similar solutions, cities can reach out critical economies of scale to justify the investment in necessary infrastructure and create a wider catchment net for products and materials that will be crossing municipal boundaries.

Case studies

Copenhagen has demanded that big events taking place in the public space of the city, e.g. parades, carnivals, food festivals, are required to use reusable packaging, e.g. cups. This mandatory requirement is part of the demands for obtaining permissions for organizing big events in public spaces.

City wide initiatives for reusable to-go cups

FreiburgCup - Freiburg, Germany

In 2016, the mayor of the city of Freiburg launched the [FreiburgCup](#) scheme, a volunteering scheme of reusable cups under a deposit, with three main objectives in mind: to promote the use of reusable cups, to reduce litter and to drive more sustainable consumer behaviour. The logistics of the scheme, including collection and cleaning services, are enabled by ASF, a public waste management company. The project was launched with 15 participating cafes, which rose to 45 within a month. Currently, it is estimated that around 60-70 % of all local coffee shops participate in the FreiburgCup project, which makes it easier for customers to redeem their deposit, as most cafes take part in the system ([ZeroWasteEurope, 2018](#)).

Muuse - SE Asia, San Francisco

[Muuse](#) is a platform for smart-enabled reusable cup and food container solutions, enabling the development of city-wide reuse systems for the to-go economy in Singapore, Jakarta, Hong Kong, Toronto and San Francisco. Durable and digitally traceable packaging circulates city-wide and is recovered for cleaning and subsequent use cycles. Each container is tagged with a unique QR code, which ensures accountability and traceability of each item. Muuse offers several modes of operation, utilising city-wide reusable systems set up with cafes and larger chains, as well as closed-loop systems in corporate office buildings and campuses, with dedicated cleaning and logistics operations.

Public procurement of products***Venlo, Netherlands***

Between 2009 and 2016, the city government of the city of **Venlo** ran a procurement process for new furniture for its city hall. The criteria included the requirements that the furniture be high-quality as well as easy to disassemble, repair, refurbish, and reuse. The tender also required all products to be part of a take-back system to ensure their recovery after a ten-year period ([EC, 2016](#), [Janssen, 2017](#)).

Subsidized community centre for reuse to contribute to broader city-level sustainability targets***Gothenburg, Sweden***

As part of its journey towards the circular economy, the City of Gothenburg set a circularity vision and a goal aimed at reducing household waste by 30% between 2010 and 2030, namely by preventing waste and encouraging reuse. One of the many initiatives that the city government launched, in collaboration with local businesses, other municipalities, civil society, and local colleges, was the Fixotek project, which financed and established physical spaces in the city for four repair and reuse centres. The centres employ a total of 23 individuals, and provide local infrastructure to engage with local businesses and civil society, facilitating broader transition towards reuse models ([C40, 2018](#)).

Renovation and maintenance of city-owned buildings and infrastructure***Brummen, Netherlands***

The Dutch city of Brummen was in need of an extension of its city hall, with a guaranteed 20-year lifespan, while preserving the original historic building intact and ensuring flexibility of the site to adapt to future requirements. To fulfill all of these requirements, the city selected a 20-year service contract for a modular city hall extension, utilising 'building as material banks' practices. The winning solution made use of high-quality, renewable, and prefabricated materials, and the extension was designed for disassembly and reuse. At the end of the contract, all of the building components will be returned to their suppliers, who will ensure their continuous reuse ([Haagen, 2018](#); [Klaer, 2016](#)).

Circular tendering 'roadmap'***Amsterdam, Netherlands***

Amsterdam owns approximately 80% of the land in the city, and can therefore determine prerequisites for when and how they issue development rights. The city maintains ownership of the land, but provides long-term leases to the owners of buildings on that land. In order to advance the city's circular economy ambitions, Amsterdam contracted the development of a [roadmap for circular tendering](#), and now makes use of these rigorous guidelines around the circular design of buildings as a prerequisite for granting the rights to develop a plot of land.

City-level circular procurement strategy***Berlin, Germany***

Berlin's Waste Management Strategy includes ambitious climate protection targets, and due to Germany's status as the third largest producer of municipal waste in the EU, circular procurement is a vital part of the strategy. In 2010 the Berlin House of Representatives passed the Berlin Public Procurement Act (BerlAVG), which requires all

public purchasing offices to apply sustainability procurement criteria to procuring a diverse range of products, worth around €4-5 billion each year, such as office materials and equipment, cleaning agents and cleaning services, and products associated with large-scale events ([C40, 2018](#)).

Multi-stakeholder agreements and partnerships

Green Deal for Circular Procurement, Netherlands

In 2013, The Dutch Government launched the Green Deal programme, to support private and public actors in their sustainability transition. Green Deals are mutual agreements between a coalition of public, private, and civil society organizations, which act as a public-private learning network ([Defranceschi and Grana, 2018](#)). The aim of the Green Deal for Circular Procurement was to encourage circular purchases of goods and services, with each participants committed to participating in at least two circular procurement projects, exchanging knowledge and sharing the lessons learned in the projects, and demonstrating that circular procurement had been integrated in their organization's strategy, policy or procurement processes by 2016. In 3 years, 45 participants delivered 80 circular procurement pilots ([Defranceschi and Grana, 2018](#)). Following the success of this initiative, in 2017, the region of Flanders in Belgium has launched its own Green Deal on Circular Procurement. Over 80 companies and organizations were engaged, and committed to jointly delivering over 150 circular procurement projects by 2019 ([EC, 2020](#)).

Transnational responsible procurement working group

Paris, France

In 2015, the Paris city government initiated a transnational procurement group with several other European cities, to facilitate C40 zero waste commitments, including a 50% reduction of municipal waste by 2030. The responsible public procurement scheme initiated the application of environmental footprint indicators for municipal purchases, and future procurement contracts. By 2017, 39% of all contracts awarded included a circular economy dimension, and 61% of contracts were awarded based on environmental criteria. ([C40, 2018](#)).

V. Summary & recommendations

The global plastic pollution crisis has reached a point where fundamental systems change is urgently needed. The emergence of reuse systems present cities with significant opportunity – as well as a responsibility – to be at the forefront of enabling new models of consumption and production that are more local, circular, inclusive and sustainable. A proactive approach to nurturing such novel approaches allows cities to attract vibrant innovation ecosystems and the investment and employment opportunities these can provide. At the same time, cities have the chance to create a robust long-term perspective for managing materials and resources, reducing waste management costs and building healthier and more sustainable communities. By setting a bold vision for the city of the future, municipalities and neighbourhoods can play a central role in making reuse a viable alternative alongside single-use solutions that currently dominate the consumption and production landscape.

In their capacity as large markets and centres of innovation and social transformation, cities are a critical actor in enabling broader systems change towards truly circular models. Municipal governments have a particularly important role to play by using their policy, infrastructure and procurement levers to enable and direct such change in the public interest. That said, the responsibility lies not on city governments alone to find all the answers or take action. A diversity of civic groups, business owners, consumer-citizens, innovators, brands, retailers, investors, academics and other stakeholders are themselves contributing to advancing reuse systems. They all bring their own passions, interests, expertise and resources to the table in order to co-create the next generation of solutions. Besides taking the leadership themselves, city governments are therefore invited to engage in dialogue, mutual learning and experimentation with other relevant actors to advance this shared agenda. The city government perspective is an essential one, enabling other stakeholders, in particular private sector partners, to align their approach with the assets, interests and constraints of cities.

Looking ahead, cities have the opportunity to take a number of specific actions in this regard. The below suggestions are divided into short-term, medium-term and longer-term recommendations that allow cities to advance reuse systems within and beyond their borders. Whether an action falls into the short, medium or longer-term category will depend on a city's readiness, level of ambition or access to resources.

Short-term recommendations: What can be done now, with little investment required?

1. **Secure senior city government leadership commitment** to developing a reuse strategy
2. **Convene a cross-departmental task force** to develop a holistic approach to advancing reuse, including functions such as economic development, sustainability, education, waste management, public health, procurement and communications.
3. **Appoint a city lead to engage with peer-to-peer and multistakeholder communities** focused on enabling reuse systems, including the private sector. This will create network effects and accelerate learning, thereby lowering upfront time and resource investments.
4. **Map and assess a city's existing and missing capabilities** related to reuse. This can include a wide range of elements, such as: existing reuse systems, solution provider networks, public-private or academic partnerships, infrastructure assets, reuse-relevant city-level venues/events, community-led campaigns and initiatives, education/innovation

programs, funding opportunities/needs, in-house expertise, data (e.g. on existing material streams), knowledge gaps, as well as existing regulation, sustainability strategies or policy reform windows.

5. **Explicitly embed reuse and waste prevention approaches into the city's strategic frameworks, narratives and external/internal communications** related to circular economy, sustainability, innovation, economic development and other relevant domains
6. In light of the local nature of reuse systems, **empower sub-municipal reuse initiatives** by raising their profile and serving as a cross-community platform for exchange, learning and amplification at the city level
7. **Start with procuring reusables within the city government's administration** (own food service and cafeteria operations). The city can thereby become an anchor client for new, local businesses in the reusables space.

Medium-term recommendations: What can be done within 1 to 2 years, with moderate investments required?

8. **Develop a vision and a 5 to 10-year roadmap** to facilitate the achievement of the end vision on reusables. Hopefully the guidance contained in the present document – and in future iterations – serves as a useful starting point. Ensure this roadmap reinforces overarching city-level sustainability goals and objectives.
9. As part of this exercise, **undergo a detailed review of existing policies, incentive structures, and financing mechanisms** to ensure compatibility with reuse models. At a minimum, work to remove unintended barriers or disincentives hampering the development of reuse alternatives
10. **Align the design of a reusability program with other city-level objectives** like job creation, economic development, or climate impact reduction in order to increase the chances of success in accessing funds or winning bids.
11. Based on the roadmap, **communicate a public high-level commitment to advance reuse efforts** at the city level, as well as via engagement in external fora. Consider launching a city-level campaign or supporting existing civil society campaigns promoting reuse solutions and practices.
12. **Develop more specific reuse commitments and criteria.** For example, develop circular economy criteria in the public procurement process to stimulate market demand and shift towards reusable products and circular business models. Where possible, quantify targets and expected benefits (e.g. reduction in waste management costs or jobs created) as a basis for designing a monitoring and reporting framework.
13. **Lead a market dialogue** to define respective responsibilities between the private and public sector, considering respective capabilities, and readiness levels. Identify and activate possible pilot opportunities between the city and reusable packaging innovators.

14. At regular intervals, **share initial learnings or needs** with peer networks (cross-city) or multistakeholder communities to accelerate progress

Longer-term recommendations: What can be done within 2 to 5 years, with more substantial investments required?

15. **Facilitate, host or otherwise support city-level pilots** to prototype reusable packaging systems with solution providers and other stakeholders. Such pilots would allow actors in the reuse ecosystem to work through interdependencies with related systems, such as the regulatory environment, city infrastructure, existing waste management and logistics processes, public and private data platforms or public campaigns.
16. **Develop a holistic monitoring, evaluation framework** to ensure that the performance indicators of prototype reuse systems serve as input variables for iterative improvement, both in terms of the systems' operational efficiency and in terms of their social, environmental and economic impacts
17. Where appropriate, **consider strategic investments in or procurement of centralized infrastructure** (e.g. shared waste collection, cleaning, software tools/apps for facilitating collection) to consolidate and scale reuse models
18. **Develop circular economy funds and impact bonds** to support innovation ecosystems around different parts of the reusability chain and drive economic development and job creation
19. **Support collaboration and joint procurement across multiple cities or a region** to enable the expansion of reuse ecosystems and scale circular procurement. This is essential for reaching critical economies of scale to justify the investment in necessary infrastructure. It also addresses the fact that many reusable products will be crossing municipal boundaries by creating a wider catchment net.
20. **Engage with national and international efforts to determine metrics approaches, targets and commitments for reuse**, thereby evolving reuse systems into a measurable and scalable solution track for delivering on key national and global sustainability goals (such as zero-waste and zero-emissions targets). Connecting reuse to established metrics, target and commitment frameworks also serves to channel existing commitments and resources towards advancing reuse solutions. This holds true for political commitments made and available government funding allocated at national and multilateral levels, as well as for private sector and philanthropic commitments and resources.
21. **Deeply link the city's reuse program into an iterative, multistakeholder learning platform** that allows a critical mass of peer cities and diverse ecosystem stakeholders to co-create and continually evolve reuse systems over time, with particular attention paid to measuring their performance and maximizing their desired social, environmental and economic impacts.