ICLEI Local Governments for Sustainability

Circulars

CIRCLE ECONOMY

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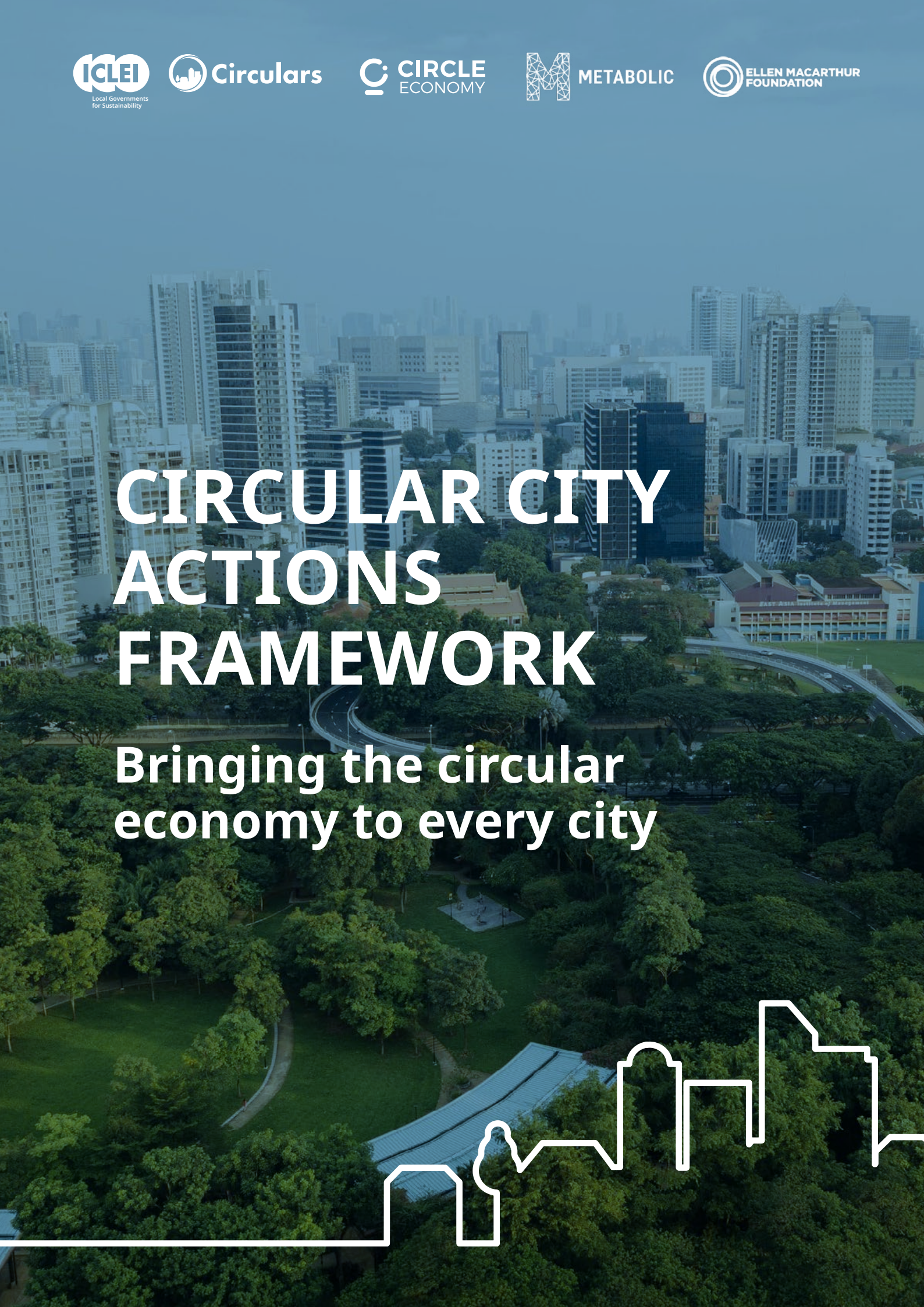

CIRCULAR CITY ACTIONS FRAMEWORK

Bringing the circular economy to every city

CIRCULAR CITY ACTIONS FRAMEWORK. BRINGING THE CIRCULAR ECONOMY TO EVERY CITY.

This publication is a product of the Circle Lab for Cities program. The program supports cities worldwide as they take the next step in their circular journey through online and offline tools that support circular development planning and implementation at the local level. Circle Lab for Cities is funded by MAVA Foundation and implemented by Circle Economy, ICLEI – Local Governments for Sustainability, Metabolic, and the Ellen MacArthur Foundation.

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Introduction

In today's world, the vast majority of economies are linear. Linear economies follow a "take, make, waste" model: resources are extracted from the environment (take), used as inputs for infrastructure, buildings and production (make), then discarded after their use period (waste). Linear economies are linked to a range of negative impacts in cities, including rising carbon emissions, biodiversity loss and waste management challenges. In contrast, a more circular economy goes hand in hand with resilience, climate action and biodiversity conservation, while also offering cities the tools to support social equity, local job creation, public health and community wealth.

Transitioning from a linear to a circular economy requires creativity, flexibility and cross-sectoral collaboration on the part of governments, businesses and communities. Knowing where to start—and how to move forward—often poses challenges for cities embarking on their circular economy transitions. Circle Economy, ICLEI – Local Governments for Sustainability, the Ellen MacArthur Foundation and Metabolic leveraged their combined expertise to create the Circular City Actions Framework, a framework that unpacks what the circular economy concept means at the local level, to help cities on their circular journeys.

What is a circular city?

A circular city is one that promotes a just transition from a linear to a circular economy across the urban space, through multiple city functions and departments and in collaboration with residents, businesses and the research community.

In practice, this means shifting away from the linear economy's "take, make, waste" model and moving to an economic system where the value and utility of infrastructure, products, components, materials and nutrients is maintained for as long as possible. In a circular city, material loops are closed, meaning that existing materials are repeatedly cycled instead of becoming waste; resource extraction is also minimized.

Through this transition, cities seek to improve resource access, lower emissions, protect and enhance biodiversity, and reduce social inequities in line with the Sustainable Development Goals.

The Circular City Actions Framework

The Circular City Actions Framework (hereafter referred to as the Actions Framework) can be used by local governments and city-based circular economy practitioners at any stage of their city's circular economy transition to advance systemic approaches toward a more sustainable and circular economy. The framework is structured into five complementary R strategies:

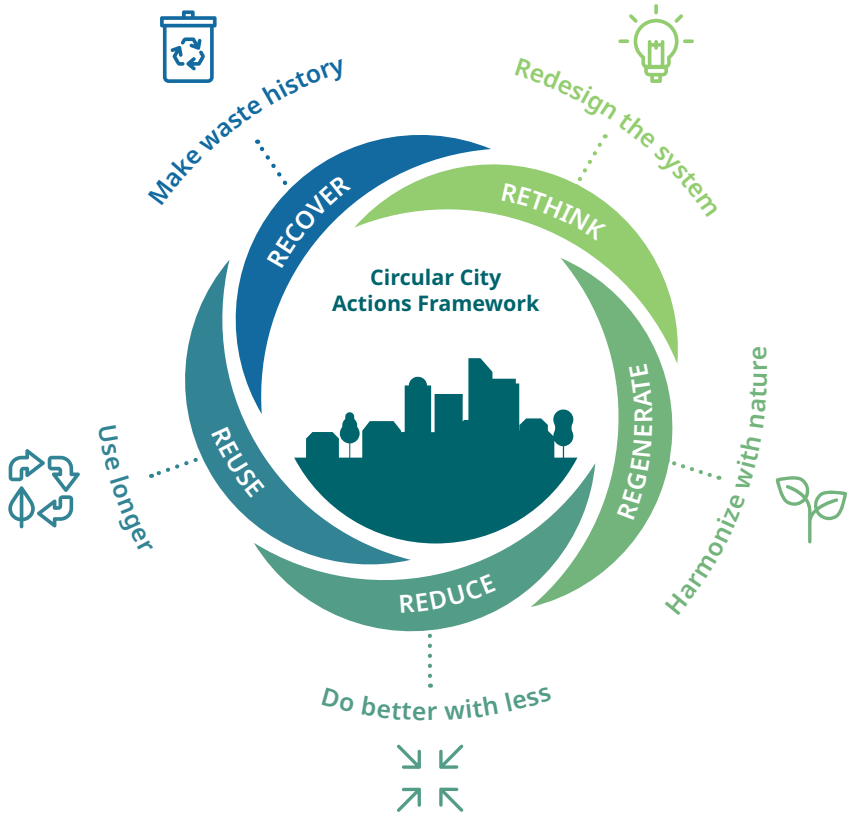
Rethink: Redesign systems to lay the foundation for circular activities and enable the transition to a circular economy

Regenerate: Harmonize with nature by promoting infrastructure, production systems and sourcing that allows natural ecosystems to thrive

Reduce: Do better with less by using and supporting infrastructure, processes and products that are designed to minimize material, water and energy use and waste generation from production to end of use

Reuse: Use longer and more often by extending and intensifying use of existing resources, products, spaces and infrastructure

Recover: Eliminate waste by maximizing the recovery of resources at the end of the use phase so that they can be reintroduced into production processes



The Actions Framework provides local governments with five R strategies and 15 linked actions they can use to:

Expand cities' horizons on local circular economy implementation beyond narrow or "end-of-pipe" solutions like recycling

Identify existing circular practices in their jurisdictions

Engage stakeholders in identifying circular economy interventions

Explore best practices from their peers

The Actions Framework covers actions that:

- Reflect the different roles that local and regional governments play, from public service delivery to cooperation with local stakeholders, asset management, urban planning and regulation
- Can be applied to all production, consumption and waste management processes influenced by the city, local businesses or residents

In this guide, each R strategy is illustrated "in action" by several case studies from cities around the world. These case studies are drawn from the Knowledge Hub Cities Collection, an open access library developed by Circle Economy and ICLEI which features 450+ examples of city-level circular economy interventions from a variety of sectors across the world. Find inspiration for your city's circular journey!

Visit the knowledge hub

RETHINK

Redesign the system

Objective: Lay the foundation for circular activities and enable the transition to a circular economy

Our current economic and governance structures are built on the assumption of unlimited resources. The circular transition will require substantial reworking of our systems of resource extraction and use, which is where **Rethink** comes in. **Rethink** is about designing systems that "close the loop" by creating the enabling conditions to allow circular practices to emerge and thrive. **Rethink** asks us to rework our governance systems to eliminate linear incentives while also putting enabling conditions in place for circularity. This can be done, for example, with circular roadmaps and action plans, or by including circularity criteria in municipal procurement guidelines to boost demand for circular products. It can also mean working beyond silos to build the kind of cross-sectoral collaboration among municipal actors, businesses and industries that will be needed to implement ambitious circular projects. **Rethink** has implications for individuals, too. Namely, it calls on cities to encourage businesses, residents and visitors to change their consumption habits and adopt sustainable, circular practices. Cities can do this by holding awareness campaigns and supporting capacity building programs or by taking stronger actions, such as banning single-use plastics or the advertising of certain types of products.

Local government actions

Eliminate linear incentives and set goals and incentives for circularity

High-level changes to policy and practice (such as taxation systems, investment and procurement guidelines and criteria) that disincentivize activities that perpetuate linear economic systems, as well as vision-setting (goals, roadmaps) to catalyze action on circularity across the city

Support closed-loop systems and cross-sectoral synergies

Facilitate collaboration by engaging city departments, industries and businesses on ambitious, closed-loop circular projects

Enable sustainable lifestyles

Includes a variety of actions (e.g. campaigns, information sharing, public events) that encourage city residents and visitors to build sustainable practices into their daily lives

Rethink in practice

Curitiba, Brazil, is a model of transit-oriented planning

The Brazilian city of Curitiba exemplifies transit-oriented planning. Curitiba's mobility plan helped build more sustainable communities by institutionalizing the principle of Transit-Oriented Development (TOD), which calls for urban development to be dense, mixed-use and highly accessible via public transit.

Read the case study

Hammarby, a demonstration of closed-loop metabolism concepts

The Hammarby Sjöstad district in Stockholm was designed around the closed-loop metabolism concept, which embraces synergies among water, energy, and transportation services. The district is heated by purified waste water, combustion of household waste and biofuel; once heat has been extracted from waste water, it is used for cooling. The biogas produced is used to run local transit.

Read the case study

Turku, Yokohama and Nagano launch the 1.5-Degree Life Campaign

The three cities of Yokohama and Nagano, Japan, and Turku, Finland, joined forces to launch the 1.5-Degree Life Campaign. The campaign engages with youth groups on efforts to reduce emissions stemming from consumption. Participants are invited to make creative materials on their "1.5-degree lifestyles" to encourage others to adopt similar practices.

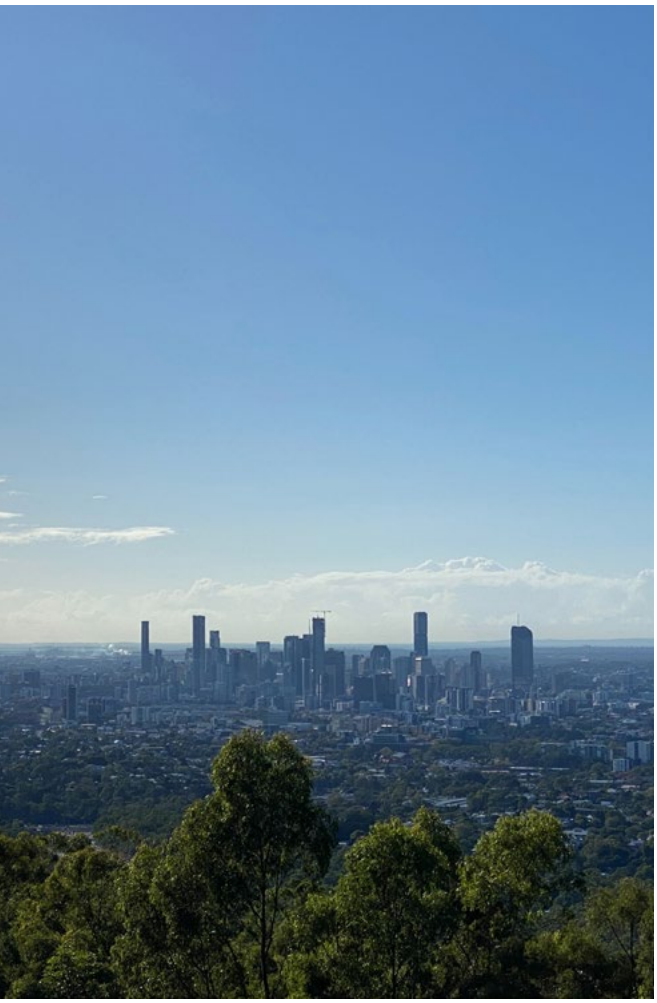
Read the case study

REGENERATE

Harmonize with nature

Objective: Embrace infrastructure, production systems and sourcing that allow natural ecosystems to thrive

Cities, businesses and their residents rely on natural ecosystems for a diversity of services, including crop pollination, urban cooling, water purification, and many others. Accordingly, **Regenerate** emphasizes that no city's circular transition would be complete without commitment to healthy ecosystems and biodiversity. First and foremost, that means protecting and enhancing local ecosystems within and beyond the city's boundaries. This could include, for example, regeneration of local water bodies and rewilding city-owned land. Secondly, infrastructure and the built environment should be designed to work in tandem with functioning natural systems. These interventions are referred to as nature-based solutions. Lastly, when extraction and use of natural resources cannot be avoided, cities have a responsibility to minimize the global environmental impacts of the resources they import. Therefore, **Regenerate** also calls on cities to source low-impact, renewable resources and decrease emissions and pollution whenever possible.



Local government actions

Protect and restore local ecosystems

Includes measures that protect and enhance ecosystems and biodiversity both within and beyond city boundaries, as well as actions to restore degraded ecosystems

Promote solutions inspired and supported by nature

Prioritize solutions that use the power of functioning ecosystems as infrastructure to provide natural services to benefit society and the environment; consider nature-based replacements for grey infrastructure

Prioritize renewable resources

Source and procure resources from low-impact, diverse, renewable sources

Regenerate in practice

Restoring Brasília's watershed

Drought in Brasília, Brazil's capital city, reached crisis levels in 2016. To ensure that local water bodies remained able to naturally recharge, a diverse group of stakeholders collaborated to reforest springs in the northern urban watershed. These springs flow into lake Paranoá, an important water source for the city.

Read the case study

Sponge city Shenzhen

The Chinese city of Shenzhen turned a 105-acre abandoned agricultural experiment station into a park that incorporates sponge city principles. The sponge city concept uses nature-inspired water management solutions, including small swales to catch runoff, ponds with native rushes and permeable pavement, to capture, store and purify rainwater. Sponge city infrastructure functions to reduce the risk of flooding while also providing habitat for urban biodiversity.

Read the case study

Solar-powered water supply project in Makang'wa Village and Chamwino, Tanzania

The village of Makang'wa and neighboring villages in Chamwino, Tanzania, implemented a solar-powered drinking water supply project able to provide over 7,000 households with clean water. The project involved renovation of a water tank, construction of 13 water access points in the village and installation of solar panels and water pumps.

Read the case study

REDUCE

Do better with less

Objective: Design infrastructure, processes and products to minimize material, water and energy use and waste generation from production to end of use

Circular cities embrace the concept of doing better with less, both in terms of material and natural resource consumption as well as waste production. The **Reduce** strategy, which comes into play when new production cannot be avoided, is centered around increasing efficiency across various domains. Some of these domains fall under the influence of cities (e.g. efficiency in the built environment and infrastructure), while others (e.g. resource-efficient innovations, products and services) relate primarily to businesses and value chains. Though cities may have only limited influence on business activities, they can still create the enabling conditions that allow circular businesses to thrive. On a larger scale, **Reduce** also calls on cities to support low-impact, circular economies, such as by creating platforms to connect consumers to local producers. These initiatives reduce the environmental impacts linked to freight transport, including processing, kilometers traveled and packaging waste.

Local government actions

Design infrastructure and the built environment for resource efficiency

Ensure that infrastructure and built assets in the city are designed and upgraded to be as resource-efficient as possible

Support circular and resource-efficient business innovations

Put enablers in place that allow circular businesses to grow, thrive and innovate (e.g. incubators, start-up funding, partnerships, innovation deals, business capacity building and testing grounds for new business models)

Support local, low-impact circular economies

Increase efficiency and promote local economic growth by shortening supply chains and connecting local producers to consumers

Reduce in practice

Washing buses with rainwater in Guelph

Guelph, Canada, relies on a limited supply of groundwater for its drinking water supply. The city has introduced various water-saving infrastructure solutions to reduce water consumption and preserve potable water for drinking. One such solution is Guelph's rainwater bus washing system. The system works by capturing rainwater, which is used to wash the city's buses. The city has saved over 1 million liters of drinking-quality water since the system launched in 2012.

Read the case study

Jaipur supports textile sustainability

The Indian city of Jaipur supported construction of the Jaipur Integrated Texcraft Park Private Ltd., an eco-friendly textile production park with facilities for water recycling, rainwater harvesting, and energy conservation. The textile park has also taken significant steps to protect the safety and health of textile workers.

Read the case study

Urban agriculture in Rosario

The city of Rosario, Argentina, collaborated with NGOs to create its highly successful Urban Agriculture Program (UAP). Concerted efforts on the part of the municipality, including provision of funding, implementation of supportive policies, and forward-looking city planning, contributed to the program's success. One major outcome of the project was the development of a strong local food economy in the city, which offered residents income opportunities and reduced food insecurity. In addition, the project helped revitalize polluted urban areas via regenerative agriculture techniques.

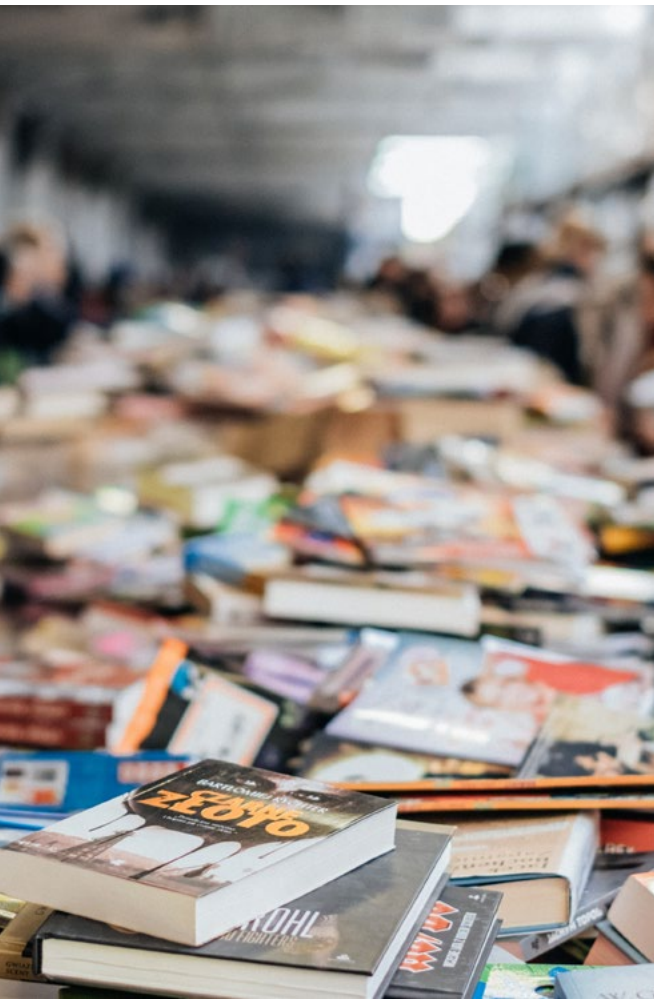
Read the case study

REUSE

Use longer and more often

Objective: Extend and intensify use of existing resources, products, spaces and infrastructure

Often, the most circular product or infrastructure is not a new one, but an adaptation of one that already exists. **Reuse** calls on cities to make the most of what they already have before considering replacements. Ideally, intensified and extended use should be planned for during product and infrastructure design phases, before roll-out even begins. This may include, for example, mandating that new city buildings be "designed for disassembly", or updating property regulations to allow for space sharing. Once assets have been built or produced, the city can further support reuse by creating or facilitating second-hand markets, sharing and exchange platforms for spaces, items and side streams. Maintenance and repair of existing assets is also critical; here, local governments have a role to play both in maintaining their own assets, as well as creating opportunities for residents to do the same for privately owned items and property.



Local government actions

Design and regulate for extended use

Incorporate extended use in project planning phases; create or update city policies to allow for extended use

Facilitate second-hand markets, sharing and exchange platforms

Create and support online platforms and physical spaces for sale, sharing and exchange of spaces, items and materials

Support reuse, repair, remanufacturing and maintenance of existing resources, products, spaces and infrastructure

Maintain and repair city-owned spaces and infrastructure to increase longevity, and support opportunities for residents to do the same for privately owned items and property

Reuse in practice

Making use of vacant city land with Pittsburgh's Adopt-A-Lot program

The US city of Pittsburgh, Pennsylvania, created a streamlined process that lets residents access vacant city land for gardening, growing food and creating rain gardens under the Adopt-A-Lot program.

Read the case study

Scaling up transit sharing in Seoul

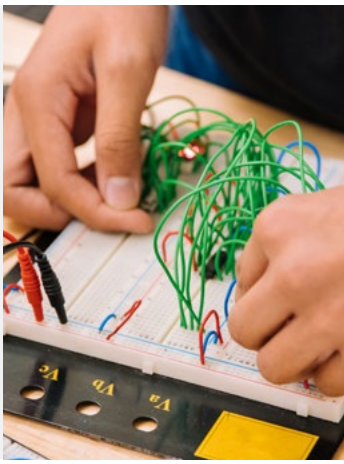
Seoul has made sharing services part of its transport demand management policy, which targets individuals without cars. The city's car sharing policy aims to have 2,000 stations across the city (5 stations per city district) by 2030. The city also provides bike and scooter sharing services. Public transportation and sharing cards can be used to access most services.

Read the case study

Brisbane supports community-level waste reduction

Brisbane, Australia, runs regular reuse and upcycle workshops to help citizens learn repair and remanufacturing skills.

Read the case study



RECOVER

Make waste history

Objective: Maximize the recovery of resources at the end of the use phase and reintroduce them into production processes

A key goal of the circular economy approach is to eliminate waste and pollution. Circular interventions should begin prior to resource extraction and continue during design, planning and use phases. **Recover**, which pertains to residual material streams, enters the picture once all other R strategies have been pursued to the fullest extent possible. Cities should consider how to recover resources from residual streams during infrastructure planning and design phases. Additionally, cities offering waste collection and sorting services should ensure that they facilitate maximum resource recovery (e.g. labeling, bins for separation at source, collection strategies). Cities should also support private sector efforts in this area (for example through training and partnerships with large employers). Once waste has been collected, it should be categorized, processed and fed back into production at its highest possible value. For example, sewage sludge can be converted into fertilizer inputs for agriculture.

Local government actions

Design and regulate for separation and recovery

Incorporate extended use in project planning phases; create or update city policies to allow for extended use

Collect and sort waste to facilitate recovery

Ensure that household and business waste is collected and appropriately sorted (by type, label, etc.) to allow for maximum recovery of value

Process waste and ensure its re-entry into industry at its highest value

Process waste into valuable industrial inputs or consumer products; distribute processed waste to users

Recover in practice

Hebron links composting facility with food market

The city of Hebron created a market center directly linked to a composting facility, which facilitates valorization of the market's organic waste into fertilizer. Fertilizer produced at the center is redistributed to local food producers.

Read the case study

Washington's Photovoltaic (PV) Module Stewardship and Takeback Program

In 2017, the Washington state (US) legislature passed a bill that created the Washington Photovoltaic (PV) Module Stewardship and Takeback Program, which mandates that manufacturers of solar panels bought after July 2017 offer consumers an environmentally sound, convenient way to recycle panels.

Read the case study

E-waste recycling for increased value in Accra

Informal e-waste recycling practices at Agbogbloshie Market in Accra, Ghana, were widely recognized as unsafe and inefficient. In response, the city of Accra convened multiple national and international partners in an effort to improve recycling practices at the market. One outcome of these efforts is an e-waste recycling pilot facility set up by Blacksmith Institute and GreenAd Ghana. Workers learn how to disassemble items safely and cleanly so valuable parts can be sold at higher value.

Read the case study

Apply the Actions Framework in your city

The Circular City Actions Framework is a relevant tool for mapping existing circular practices in your jurisdiction. After choosing a sector relevant to your city, use the table below to list public, private and community initiatives that contribute to the different actions of the framework and identify gaps in collaboration with local stakeholders.

R	Actions	Public initiatives	Private initiatives	Community initiatives
RETHINK	Eliminate linear incentives and set goals and incentives for circularity			
	Support closed-loop systems and cross-sectoral synergies			
	Enable sustainable lifestyles			
REGENERATE	Protect and restore local ecosystems			
	Promote solutions inspired and supported by nature			
	Prioritize renewable resources			
REDUCE	Design infrastructure and the built environment for resource efficiency			
	Support circular and resource-efficient business innovations			
	Support local, low-impact circular economies			

R	Actions	Public initiatives	Private initiatives	Community initiatives
REUSE	Design and regulate for extended use			
	Facilitate second-hand markets, sharing and exchange platforms			
	Support reuse, repair, remanufacturing and maintenance of existing resources, products, spaces and infrastructure			
RECOVER	Design and regulate for separation and recovery			
	Collect and sort waste to facilitate recovery			
	Process waste and ensure its re-entry into industry at its highest value			

Next steps

The Circular City Actions Framework is just the beginning. Local governments that want to go a step further can turn to the tips and resources below.

Scan your City

The Circle Lab for Cities program is developing online tools that enable local governments to discover and prioritize circular opportunities for their city or region on the basis of socioeconomic and material data, relevant circular case studies and users' input. The Circular City Actions Framework will be housed on an online platform developed by Circle Economy which will be released at the ICLEI World Congress 2022.

Apply the Actions Framework to Specific Sectors

City Practitioners Handbook – Circular Food Systems: This handbook, developed by ICLEI, offers sector-specific guidance on circular food systems based on best practices from 50+ local governments along the Circular City Actions Framework. Additional handbooks for other sectors are planned for development in the coming months.

City Governments and Urban Policy Levers

Explore the wide range of policy levers that local governments can use to implement the Actions Framework in the City Governments and Their Role in Enabling a Circular Economy Transition report, developed by the Ellen MacArthur Foundation. The Circle Lab for Cities program is in the process of developing sector-specific policy trackers that align with both the EMF policy levers framework and the five R strategies.

In the future, the Actions Framework will serve as the basis for development of further circular economy tools and resources, such as circular city visions, implementation guides and monitoring frameworks.

Are you a city practitioner interested in testing tools to make your circular economy strategy more actionable? Register your interest and be the first one to test cutting-edge circular development tools: https://circulars.iclei.org/circle-lab-for-cities/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