Circular economy in cities

Fifty-five per cent of the world's population today lives in urban areas, a figure that is expected to reach 68 per cent by 2050. Cities account for 75 per cent of the world's consumption of resources, up to 72 per cent of global greenhouse gas emissions and almost two-thirds of global energy demand. Cities produce 50 per cent of global waste and it is estimated that globally by 2050, the levels of municipal solid waste will double.

The circularity approach is an opportunity to rethink production and consumption models, services and infrastructure. A circular economy prioritizes reduction, reuse, refurbishment, and recycling of products and materials to reduce waste and pollution, keep products and materials in use, and regenerate natural systems. Cities and regions play a key role in making this happen: they are at the center of key decisions determining economic growth, social well-being and environmental benefits.

In cities, a circular economy model implies a systemic shift. Services, such as water, waste or energy, are provided making efficient use of natural resources as primary materials and optimizing their reuse. Economic activities are planned and carried out in a way to close, slow and narrow loops across value chains. Infrastructure is designed and built to avoid linear lock-in, for example by district heating and smart grid. Circularity in cities can be achieved by adopting policies in key sectors that advance solutions to climate change, such as food systems, buildings and cooling, and transport. For example, promoting urban agriculture and food waste management can reduce emissions associated with food production and disposal, and mitigate climate change. In the buildings sector, cities can implement circular design principles by encouraging the use of sustainable materials, retrofitting older buildings, and integrating energy-efficient cooling systems. For transport, policies that prioritize public transport, shared and active mobility, and electric vehicle infrastructure can lower emissions while supporting resource efficiency, all contributing to a more circular urban environment.

Cities can also embed circularity by incorporating sustainable practices into urban planning. By linking circular economy principles with integrated planning, cities can address the complexities of planning, developing, and governing infrastructures to sustainably accommodate their growing populations. Key strategies include using recycled materials in construction, promoting green mobility, turning waste into resources like bioenergy, and integrating green infrastructure.

Key messages

- Local and regional governments manage several key sectors in urban areas, such as mobility and waste, and are responsible for land use and urban planning. Their public procurement and investment budgets can play a key role in driving demand for circular products and services.
- Local government action is critical to creating circular neighbourhoods. Community activities are an effective starting point, but city level action is essential to accelerating the circular economy transition.
- Today, most cities we follow a linear system where the resources that enter the city leave it again as waste. Circularity remains low at 7.2 per cent globally.
- Circular economy in cities and regions is expected to reduce negative impacts on the environment through pollution decrease, increased share of renewable energy and reduction of raw materials, water, land and energy consumption.
- Shifting to a circular economy in cities could generate significant benefits. For example, it is estimated that cities adopting circular economy strategies could reduce their resource consumption by up to 50 per cent and decrease greenhouse gas emissions by up to 44 per cent globally.
- Circularity can have a positive effect on job creation if workers acquire the skills required by a green transition.
- Implementing circular practices in urban sectors like construction, mobility, and waste management could create more than three million new jobs in Europe alone, by 2030.

Key recommendations

- Circular public procurement: prioritize circular products in public procurement, using life-cycle assessments to select durable, repairable, and recyclable items. This shifts markets toward circularity in sectors like construction, energy, and transportation.

Further reading

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- Decentralized circular systems: promote local systems for managing waste, water, and energy use, such as urban farming, organic waste management and decentralized recycling.
- Innovation hubs and living labs: establish circular economy hubs that foster collaboration among researchers, businesses, and government. These hubs can pilot zero-waste models and the reuse of materials before scaling city-wide.
- Digitalization for circularity: use blockchain and big data to track material flows, improve resource sharing, and optimize waste management. Digital platforms also support transparency in supply chains, enhancing circular practices and resource efficiency.
- Legal and policy support: advocate for policies like extended producer responsibility, waste reduction targets, and tax incentives for circular businesses.
- Equity and inclusion: ensure everyone benefits from the circular transition by offering job retraining and education on circular practices. This supports economic inclusion and provides new employment opportunities.
- Collaborative consumption models: promote sharing and leasing platforms for products such as tools, cars or clothing. This reduces waste, extends product life cycles, and fosters community participation while creating new circular business models.

Key data

- Fifty-five per cent of the world's population lives in urban areas, a proportion expected to increase to 68 per cent by 2050. This will require an expansion of existing cities, as well as the construction of new cities.
- If we continue with business as usual, resource use will increase by 60 per cent from 2020 levels by 2060.
- Municipal solid waste is projected to rise from 2.1 billion tonnes in 2023 to 3.8 billion tonnes by 2050, costing the global economy up One-fifth of all food available to consumers, 1.05 billion tonnes of food, was wasted in 2022. Food loss and waste account for 8-10 per cent of global greenhouse gas emissions.
- The buildings and construction sector generates 40 per cent of global solid waste and 37 per cent of global CO_2 emissions.
- Shifting to renewable electricity offers the largest emissions reduction among circular solutions, cutting emissions by 77 per cent.
- Between 2012 and 2018, the number of circular economy jobs in the EU increased by 5 per cent to four million.