ELLEN MACARTHUR FOUNDATION

CIRCULAR ECONOMY FOR FOOD: city government self-assessment

This document is intended to supplement our online city government self-assessment. Once you have gathered the information you require, please submit your answers online to score your cities progress towards a circular economy for food.

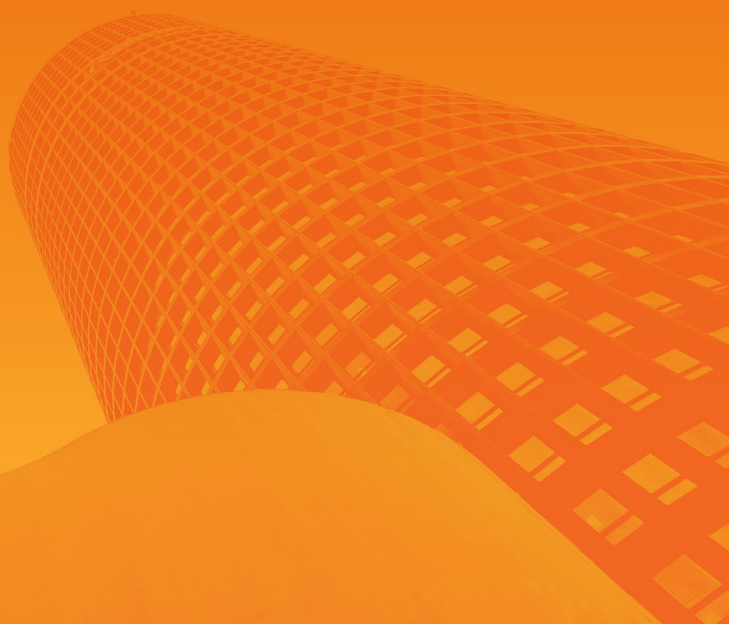
Moving to a circular economy for food can harness the full potential of food to allow people and nature to thrive.

Given that 80% of the world's food is expected to be consumed in cities by 2050, cities have a unique opportunity to spark a positive food system transformation.

Cities can help realise the vision by applying circular economy principles to ensure food actively supports natural systems, production is brought closer to where the food is eaten, and the concept of waste is eliminated.

Through these actions, cities can generate significant environmental, economic, and health benefits worth an estimated USD 2.7 trillion annually by 2050 (Cities and Circular Economy for Food, 2019) within and beyond their boundaries.

Completing this self-assessment can support your city in its journey towards a circular economy for food, helping to better understand where to focus action in transforming your urban food system.



Question 1: agreement and basic information

Please complete this question when you answer the digital self-assessment.

Section 1: Understanding food and by-product material streams

In this section we will explore where and how food is produced to feed your city, and what happens to organic waste streams.

Question 2: Do you actively support sourcing from peri-urban farms to feed your city?

Around 40% of the world's cropland exists in the peri-urban area surrounding cities.

Cities can bring production closer to consumption by sourcing food that is already being grown on peri-urban farms and by working with regional governing bodies who oversee agriculture outside of the city boundaries.

By forming strong relationships with farmers in the region, cities can also motivate a shift to regenerative practices to maximise potential benefits.

Do you actively support sourcing from peri-urban farms to feed your city?

- ☐ Yes, through public procurement
- ☐ Yes, through public messaging campaigns
- ☐ Yes, through business support programmes
- ☐ Yes, through public-private partnerships
- ☐ Yes, through policies that support an enabling environment
- ☐ Yes, partially - policies do exist, though more is required to make them more impactful
- ☐ Yes, through market places with local or peri-urban producers
- ☐ No
- ☐ I don't know

Do you have deadlines or time bound targets defined for these measures?

- ☐ Yes, for all
- ☐ Yes, for some
- ☐ No
- ☐ I don't know

Question 3: Are you actively supporting regenerative food production, in order to feed your city?

Each year, conventional agriculture practices contribute to the degradation of land the size of England to the point that it can no longer support harvests.

While some organic farms use practices that regenerate natural systems, the primary focus for many organic farming operations is the elimination of synthetic inputs: pesticides, fertilisers, and growth hormones; and the overall impact on the environment is not always positive.

Regenerative farming practices support healthy soils that can support harvests long term while sequestering carbon from the atmosphere and tackling climate change.

This, along with improved diversity of crops and the biodiversity of the local environment, help farmers to become more resilient to climate change shocks such as floods and droughts.

Regenerative farming in areas surrounding cities can help combat heat island effects and provide cleaner air and drinking water for all citizens.

Are you actively supporting regenerative food production, in order to feed your city?

YES, FOR ORGANIC PRODUCTION

- ☐ Through public procurement
- ☐ Public messaging campaigns
- ☐ Business support programmes
- ☐ Public-private partnerships
- ☐ Policies that support an enabling environment
- ☐ Through support of community programmes

YES, FOR REGENERATIVE PRODUCTION

- ☐ Through public procurement
- ☐ Public messaging campaigns
- ☐ Business support programmes
- ☐ Public-private partnerships
- ☐ Policies that support an enabling environment
- ☐ Through support of community programmes

- ☐ No
- ☐ I don't know

Do you have deadlines or time bound targets defined for these measures?

- ☐ Yes, for all
- ☐ Yes, for some
- ☐ No
- ☐ I don't know

Examples of regenerative food production

São Paulo state has set a goal for all school feeding programmes to source at least 30% of ingredients from farmers using regenerative practices, providing healthy food to children while increasing demand for regenerative food production.

The Marin Carbon Project is a programme in California which assists farmers in their transition to regenerative through rotational cattle grazing and other regenerative practices. Through the project, the farmers can receive carbon credits, a market-based mechanism through which producers can receive payment for sequestering carbon.

Balbo Group have seen a 20% increase in their sugarcane yield since transitioning to regenerative organic practices that emulate natural processes. Closing nutrient cycles by returning organic matter to the biosphere enhances soil health and avoids the need for chemical inputs. They now produce 93,000 tonnes of organic sugar annually – amounting to 15.5% of the world market.

Question 4: Have you identified diverse food ingredients, and are you supporting local sourcing and consumption of them?

Just 12 plant and 5 animal species represent 75% of the total food eaten globally. By sourcing a greater diversity of food ingredients and eating food grown regionally, cities can support agrobiodiversity agrobiodiversity* while rediscovering greater flavour and nutrition. Reconnecting with underutilised native crop varieties is one way of achieving this.

Agrobiodiversity tends to be an outcome of regenerative farming practices that move from mono-cropping to multi-cropping, cover cropping, and crop rotation.

Have you identified diverse food ingredients, and are you supporting local sourcing and consumption of them?

- ☐ Yes, through public procurement
- ☐ Yes, through public messaging campaigns
- ☐ Yes, through business support programs
- ☐ Yes, through public-private partnerships
- ☐ Yes, by supporting and partnering with Indigenous communities
- ☐ No
- ☐ I don't know

Do you have deadlines or time bound targets defined for these measures?

- ☐ Yes, for all
- ☐ Yes, for some
- ☐ No
- ☐ I don't know

Examples of sourcing diverse food ingredients

North American Traditional Indigenous Food Systems (NaTIFS), founded by the Sioux Chef, works to address the socioeconomic inequalities affecting indigenous communities by re-establishing Native foodways. They are also working to establish the Indigenous Food Lab in Minneapolis.

The Slow Food Foundation for Biodiversity is working on a project to create 10,000 food gardens in African schools and communities to raise awareness among young generations about the importance of food biodiversity and increase access to healthy, fresh food.

WWF and Knorr collaborated to produce 50 Future Foods Cookbook, featuring a range of recipes from underutilised plant-based ingredients.

Question 5: Are you actively supporting the reduction of animal product consumption in your city?

Currently, the production of animal-based foods accounts for two-thirds of agricultural GHG emissions and more than 75% of agricultural land use. In a circular economy for food, animal-based foods come from animals that are raised in integrated regenerative systems (e.g. managed grazing, silvopasture practices). By sourcing fewer, but better animal based foods, cities can reduce the negative impacts of livestock production.

Diverse plant-based protein sources can meet the remaining demand, but regardless of the source, plant protein and all ingredients should be produced using regenerative methods.

Are you actively supporting the reduction of animal product consumption in your city?

- ☐ Yes, through public procurement
- ☐ Yes, through public messaging campaigns
- ☐ Yes, through business support programmes
- ☐ Yes, through public-private partnerships
- ☐ Yes, through policies that support an enabling environment
- ☐ No
- ☐ I don't know

Do you have deadlines or time bound targets defined for these measures?

- ☐ Yes, for all
- ☐ Yes, for some
- ☐ No
- ☐ I don't know

Examples of reducing animal product consumption

The C40 Good Food Cities Declaration was signed by 14 cities in 2019. Signatories cities will work with their citizens to "achieve a 'Planetary Health Diet' for all by 2030, with balanced and nutritious food, reflective of the culture, geography, and demography of their citizens." Moving to more plant-based diets is one key lever.

Menus of Change is an initiative run by The Culinary Institute of America with a focus on developing a 'plant-forward' US food service industry.

Question 6: Do you actively support edible food waste prevention and redistribution?

Edible food waste at the retail and consumption stages can represent up to 40% of all food waste and loss in some regions of the world. Solutions can be put in place to prevent surplus edible food from being generated in the first place, and then ensuring any surplus edible food is redistributed. Additionally, redistribution efforts can help address food security issues.

Do you actively support edible food waste prevention and redistribution?

- ☐ Yes, through publicly-led programmes
- ☐ Yes, through established public-private partnerships
- ☐ Yes, through public messaging campaigns
- ☐ Yes, through support of community-led initiatives
- ☐ No
- ☐ I don't know

Do you have deadlines or time bound targets defined for these measures?

- ☐ Yes, for all
- ☐ Yes, for some
- ☐ No
- ☐ I don't know

Example of reducing food waste

The DonateNYC Food Portal is a publicly available platform that helps organisations and businesses match surplus edible food generators with recipients based on a matching and geo-location algorithm.

For the Food Matters project, the NRDC has partnered with US cities including Baltimore, Denver, Nashville and New York City to drive food waste reduction through policies and programmes.

Question 7: Is household and commercial organic waste produced in your city collected separately, treated and valorised to generate valuable products?

Today, <2% of organic waste created in cities is being collected and valorised (with the remainder sent for incineration, to landfill, or left uncollected).

Cities can transform organic 'waste' into agricultural inputs such as compost, biofertiliser, or feed for livestock. Beyond agriculture, innovative technologies provide capabilities to turn food by-products into products such as biomaterials, food ingredients and nutraceuticals.

Is household and commercial organic waste produced in your city collected separately, treated and valorised to generate valuable products?

- ☐ Yes
- ☐ No
- ☐ I don't know

What proportion of the organic waste produced in your city is collected separately, treated and used to produce valuable products?

- ☐ 1-25%
- ☐ 26-50%
- ☐ 51-75%
- ☐ 76-100%

Do you have deadlines or time bound targets defined to increase the proportion of organic waste that is valorised in your city

- ☐ Yes
- ☐ No
- ☐ I don't know

Examples of valorising organic waste

Several Italian cities have implemented highly effective organic collection systems, such as Milan, which increased the collection of organics from 34% in 2011 to 54% in 2015.

Veolia and Yara launched the Nutrient Upcycling Alliance (NUA), an initiative that aims to capture the value of organic materials nutrients from inedible food by-products that are discarded by creating agricultural inputs from them, while also reducing reliance on agricultural inputs made from finite resources.

Question 8: Is human waste collected, treated and valorised to generate valuable products?

Human waste is an ultimate by-product of food that contains valuable nutrients (e.g. Nitrogen and Phosphorus) and organic material that can be captured and transformed into new products.

Approximately 80% of human waste goes untreated around the world, leading to negative health outcomes and environmental impacts, while letting valuable material and nutrients go to waste.

Existing technologies offer solutions to create safe agriculture inputs from human waste and make the most of the valuable nutrients it contains.

Is human waste collected, treated and valorised into valuable products?

Valuable products made from human waste include agricultural inputs such as biofertiliser.

Energy generation as a by-product of producing other valuable products, e.g. by producing biogas in addition to producing biofertiliser via anaerobic digestion, makes full use of valuable nutrients contained within human waste, and counts towards this total. However, energy generation solely through incineration of human waste, rather than generation of energy as a by-product, does not make full use of the valuable nutrients contained within human waste and does not count towards this total.

- ☐ Yes
- ☐ No
- ☐ I don't know

What proportion of human waste is collected, treated and valorised to generate valuable products?

Making agricultural inputs from human waste makes the most of valuable nutrients e.g. Nitrogen and Phosphorus.

- ☐ 1-25%
- ☐ 26-50%
- ☐ 51-75%
- ☐ 76-100%

Do you have deadlines or time bound targets defined to increase the proportion of human waste valorised in your city?

- ☐ Yes
- ☐ No
- ☐ I don't know

Example of human waste valorisation

At the end of 2018, the city of Guelph in Canada initiated a contract with Lystek, to help convert and manage the 4,500 tonnes of biosolids generated each year by the city's tertiary wastewater treatment facility and turn them into a commercially viable liquid organic fertiliser.

Lystek is contracted by the city to manage, sell, and safely apply the high-nutrient organic fertiliser on farms in the surrounding area of the wastewater treatment facility.

Sanergy build affordable sanitation for urban slums in Nairobi, Kenya. They collect human waste from the community using handcarts and trucks, and then convert the waste at a centralised facilities into valuable products such as organic fertiliser and insect-based animal feed.

Question 9: Do you have examples of food projects or activities that exemplify the principles of a circular economy?

Projects or activities that put circular economy principles in action can clearly demonstrate the benefits of realising a circular economy for food. These proof points can serve as guiding lights to stakeholders responsible for shaping urban food systems.

Do you have examples of food projects or activities that exemplify the principles of a circular economy?

- ☐ Yes, led by both public and private sector players
- ☐ Yes, led purely by public sector players
- ☐ Not on food, but on other aspects of circular economy
- ☐ No
- ☐ I'm not sure

Examples of food projects or activities that put circular economy principles in actioneconomy principles in action

ReLondon provide fully funded advisory support to small and medium businesses in London, to help businesses develop, pilot and launch well-designed and innovative circular initiatives.

Connect the Dots is a program run by the Municipality of São Paulo that connects a network of food system actors through policies and joint programmes. It supports farmers in the São Paulo peri-urban zone and surrounding region, provides access to nutrition for vulnerable people by purchasing produce from these farmers, and transforms urban organic waste streams into organic fertilisers.

Section 2: Governance and enabling conditions

In this section we will explore the systems and governance structures that are in place in your city to enable a circular economy for food.

Question 10: Do you, as the city government of your city, actively engage with networks and available resources to accelerate progress towards a circular economy for food?

Systemic solutions for developing thriving urban food systems demand an unprecedented level of collaboration.

By engaging with existing cities networks and available resources, and actively building supportive networks of food system actors, city governments can develop a robust understanding of food system solutions, exchange knowledge, and develop relationships needed for successful collaborative project implementation.

Do you, as the city government of your city, actively engage with networks and available resources to accelerate progress towards a circular economy for food?

- ☐ Yes, via events and online forums
- ☐ Yes, via learning materials (e.g. books, articles)
- ☐ Yes, with NGOs
- ☐ Yes, via collaboration with other divisions within the same municipality
- ☐ Yes, with other regional / national / international governmental and institutional bodies
- ☐ Yes, with other cities via cities networks
- ☐ Yes, with local private sector actors
- ☐ Yes, with international private sector actors
- ☐ Yes, with local farmers
- ☐ No
- ☐ I'm not sure

Example of network engagement

Since its launch in 2015, 209 cities around the world have signed onto the Milan Urban Food Policy Pact. The pact provides strategic options to those cities aiming to transform their food systems, with recommended actions on governance, food production and food waste amongst others.

The Food Initiative at the Ellen MacArthur Foundation partner with London, New York and Sao Pãulo to demonstrate how a vision for circular economy for food can be achieved at scale.

Question 11: Do you, as the city government, have a food strategy (either as a stand alone strategy or embedded in broader city strategy), and if so does it include circular economy?

Having a food strategy or policy helps establish food as a priority issue for the city and identifies the actions city government and other actors shaping urban food systems should take.

How cities execute food strategies varies due to different governance structures, but integration across departments and between municipal and regional government is essential for effective implementation.

Do you, as the city government, have a food strategy (either as a stand alone strategy or embedded in broader city strategy), and if so does it include circular economy?

- ☐ Food strategy, with explicit mention of circular economy
- ☐ Food strategy, but no mention of circular economy
- ☐ Circular economy strategy, but no mention of food
- ☐ No
- ☐ I don't know

Examples of cities implementing food strategies

The City of Toronto's Food Policy Council connects diverse food system actors to develop innovative policies and projects that support a healthy food system, and provides a forum for action across the food system.

In 2018, Charlotte, North Carolina was the first city in the United States to make a commitment to adopting the circular economy as a public sector strategy and developed a Circular Charlotte (2018) report with Metabolic.

Question 12: What staffing allocation does your city government have to cover the topic of circular economy overall?

By allocating appropriate staff to focus on circular economy, a city government develops capacity to create strategy documents that embed circular economy principles in the city's strategy and activities.

What staffing allocation does your city government have to cover the topic of circular economy overall?

- ☐ >1 Full Time Employee (FTE)
- ☐ 1 Full Time Employee (FTE)
- ☐ <0.5 Full Time Employee (FTE)
- ☐ No staffing allocation
- ☐ I don't know
- ☐ Other

Examples of staff allocated to circular economy

Several cities around the world have allocated staff to focus on circular economy, including:

- Glasgow, UK - Circular Economy Program Manager
- Austin, USA - Circular Economy Lead
- Copenhagen, Denmark - Circular Copenhagen Project Manager
- Toronto, Canada - Manager of Circular Economy and Innovation

Furthermore, representatives from diverse government departments in the City of Toronto including City Planning; Economic Development and Culture; and Environment and Energy departments; convene as part of the City of Toronto's Cross Divisional Circular Economy Working Group to work together to co-create integrated policy solutions.

Question 13: What IT and digital systems and processes are you as the government of your city putting in place to collect the data needed to assess how circular your food system is?

IT and digital systems and processes are essential for proactively collecting and managing data needed to assess the city's food system on an ongoing basis.

Effective systems make it possible to measure the city's progress towards a circular economy for food through the provision of relevant data.

What IT and digital systems and processes are you as the government of your city putting in place to collect the data needed to assess how circular your food system is?

- ☐ Some systems and processes are in place, but major data gaps still remain
- ☐ Systems and processes are robust and comprehensive
- ☐ None currently, but systems and processes are planned and being put in place
- ☐ None
- ☐ I don't know

Examples of IT and digital systems and processes

The Waste Transport Control (CTR-E) is an inspection and traceability blockchain system created in collaboration with Plataforma Verde, to register all private entities (generators, transporters, cooperatives and final destinations), which are part of the urban cleaning system that generate more than 200L/day. The technology allows waste to be tracked to its final destination, providing management of legal documents, bills and invoices, and an on-time dashboard with reports, graphics and indexes. This allows the Municipality of São Paulo, through the Municipal Authority of Urban Cleaning (AMLURB), to know how the waste is collected, transported and finally, where it is destined.

When you have recorded all the information required to answer these questions, please submit your answers to the digital version of the survey. Submitting your answers digitally will allow you to calculate a score that will help you understand where your city is on it's journey to a circular economy for food and where to focus action in transforming your urban food system.

Glossary for city government self assessment

Agrobiodiversity

The variety and variability of animals, plants and microorganisms that are used directly or indirectly for food and agriculture, including crops, livestock, forestry and fisheries. It comprises the diversity of genetic resources (varieties, breeds) and species used for food, fodder, fibre, fuel and pharmaceuticals. It also includes the diversity of non-harvested species that support production (soil microorganisms, predators, pollinators), and those in the wider environment that support agro-ecosystems (agricultural, pastoral, forest and aquatic) as well as the diversity of the agro-ecosystems. Source: FAO 1999.

Anaerobic digestion

Microbial breakdown of organic matter in the absence of oxygen. In a circular economy, anaerobic digestion can be used to convert food by-products, sewage sludge, and other biodegradable materials into biogas and digestates (or 'biosolids') that can be used as soil enhancers.

Bioenergy

Energy generated as a co-product when organic material, such as food waste or human waste, is valorised into other valuable materials, creating a value cascade. Includes biogas from anaerobic digestion, which is generated alongside biosolids. Excludes energy from incineration, which does not make the most of the full value of organic materials.

Peri-urban

The area located within 20 km of a city boundary.

Public procurement

Public procurement is the purchase of goods and services, including food, by the public sector for public institutions such as schools and hospitals. Integrating circular economy criteria within public procurement policies and practices can stimulate the circular design, provision, management, and servicing of goods.

Regenerative food production

Food production via agricultural practices that increase biodiversity, improve the resilience of ecosystems, and build soil health. In agriculture, regenerative production practices include agroecology, agroforestry, and managed grazing.

Soil degradation

A reduction in soil quality resulting in a diminished capacity of the ecosystem to provide goods and services, including its potential to be used for agriculture. [Adapted from FAO]

Valorised

Inedible food waste and agricultural by-products being used to create new products, such as food ingredients, agricultural inputs, and biomaterials.