CIRCULAR CITIES DECLARATION

Circular Cities Declaration Report 2022

www.circularcitiesdeclaration.eu

Foreword

Shifting from a linear to a circular economy is essential if we want to achieve decarbonization and stay within planetary boundaries. It represents nothing less than a paradigm shift, as closing and shortening material loops means adopting completely new ways of producing and consuming. As cities, we have a number of policy levers at our disposal which can have a strong influence on key sectors. We strongly believe that we can show the way forward, and lead and mobilise both people and organisations towards the circular transition.

This is precisely what the municipality of Porto has endeavoured to do since the adoption of the Circular Economy Roadmap in 2017. In Porto, we are actively promoting more sustainable resource use and the regeneration of our natural environment. To this end, the municipality engages with all citizens and organisations to raise awareness and prevent waste, and develop circular infrastructure and innovative waste management solutions to make the most of the waste into resources. The Porto Climate Pact, launched at the beginning of 2022, reinforces the commitment to decarbonize by inviting all to participate and act towards carbon neutrality and identifies circularity as one of the principles that contribute to the city's decarbonization process. This is why Porto has now become a reference not only at the national but also at the European level, being selected as one of the 100 cities by the EU Mission for Smart and Climate-neutral cities.

Porto is also proud to be part of the Circular Cities Declaration community and to engage with like-minded cities from all over Europe to make the circular transition a reality. This is the reason why the city now features in this CCD Report 2022. By providing unique insights on the circular transition at the local level, this report clearly demonstrates the important steps that local governments are taking and how crucial their role is. More than this, it highlights the key challenges that are being faced, while also providing some great examples from numerous Circular Cities Declaration signatories.

In conclusion, I would strongly recommend fellow politicians from other cities as well as national level policy-makers reading this report, to get some inspiration from signatories and hopefully to join our community and to get a closer understanding on what is happening at the local level and help leverage the action needed.

Filipe Araújo
Porto's Vice-Mayor and City Councillor for Environment and Climate Transition and for Innovation and Digital Transition

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Executive summary

From climate change to biodiversity loss, through growing economic instability and global chain disruptions, cities in Europe are facing unprecedented challenges. The circular economy is increasingly recognised as a great opportunity to tackle these challenges, unlocking wide-ranging benefits that help cities thrive and become more liveable and resilient places.

This is precisely why the Circular Cities Declaration (CCD) has been set up; to support cities in their transition from a linear to a circular economy and to emphasise the critical and effective role that they play in this transition, while also providing a shared vision of what a circular city is.

The CCD Report 2022 compiles and analyses the first submissions by CCD signatories on their circular activities (2021-2022), with the aim to celebrate and showcase the significant strides cities are making. In total, 40 cities submitted reports sharing their key activities and interventions as well as challenges experienced. To our knowledge, the report represents the most significant longitudinal sample collected to date on circular economy transitions at a local level in Europe.

The comprehensive analysis of submissions led by ICLEI Europe, and supported by the Ellen MacArthur Foundation, found eight prominent trends among the cities. Four key barriers facing signatories were also identified. A rich patchwork of activities exist across Europe with many frontrunning, pioneering activities being observed in cities both large and small.

From Maribor's circular economy strategy and Budapest's community composting initiative, to Ghent's repair cafés and Haarlem's world-leading target for 100% of local procurement to be circular by 2030, this report and the city profiles present many exemplary and replicable solutions. This report illustrates not only the rich diversity of how European cities are utilising circular economy thinking, but also how the circular economy is tackling common challenges.

8 trends on Circular Economy in European Cities

1. A growing number of circular initiatives are being set up at the European level to support cities.
2. Cities are adopting circular strategies and roadmaps to steer the circular transition.
3. Cities are investing in circular infrastructure to close material loops.
4. Cities are using public procurement to reduce their environmental footprint and enable the circular economy.
5. Cities are setting up their own innovation programmes and are carrying out innovation projects to unlock the circular transition.
6. Cities are raising awareness and empowering citizens to distil a shared sense of ownership.
7. Cities are pushing for more circularity in construction.
8. Cities are making local food systems more regenerative.

Tackling barriers to the circular economy

1. Overcoming capacity and resource limitations.
2. Securing political support and breaking down silos.
3. Measuring circularity: from data collection to monitoring frameworks.
4. Shifting the paradigm: Thinking circular in a linear system.

Circular Cities Declaration Signatories

Figure 1: Circular Cities Declaration Signatories

Introduction

The Circular Economy and Cities

The way we make, use and dispose of products and food accounts for almost half of global greenhouse gas (GHG) emissions and no less than 90% of both biodiversity loss and water stress[1]. With demand for strategic resources such as steel, cement, aluminium, plastics, and food projected to increase 42% by 2050[2], it is clear that the fight against climate change (and beyond the necessity to stay within planetary boundaries) cannot be won with the current "take-make-waste" approach. The transition to a circular economy - i.e. a model of production and consumption based on closed material loops and substantial decoupling between resource consumption and economic growth - would significantly reduce resource demand and its impacts, in line with the Sustainable Development Goals.

Cities, as centres of economic activity and innovation, are on the frontline of the transition. They are themselves responsible for up to 70% of GHG emissions, two-thirds of total energy demand and 50% of waste.[3] They must therefore play a central role in implementing the circular economy solutions to maximise impact. Local governments manage a number of key sectors in urban areas with the potential to become circular, such as transport and waste management, and are ultimately responsible for controlling land use and urban planning, key levers for enabling the circular economy. Public procurement and investment budgets of cities can also play a major role in driving demand for circular products and services and can impact decisions on energy, transport and water infrastructure. Cities are therefore ideally placed to pioneer new circular solutions and accelerate the circular transition.

The Circular Cities Declaration

The Circular City Declaration (CCD) is a commitment document which local and regional governments across Europe can sign to help accelerate the transition from a linear to a circular economy in Europe. It was launched in October 2020 by **ICLEI Europe**, support partners (see Figure 2), and a group of founding signatories. To date a total of 71 cities have signed the CCD, encompassing a total of almost 14 million people. Signatories come from 22 countries and include local governments of any size, from metropolises to small municipalities, such as Métropole du Grand Paris (FR) and Vistabella del Maestrat (ES).

The CCD aims to provide a shared, common vision of a circular city, enabling cities and towns to act as a joined force in harnessing their circular potential. CCD signatories recognise the wide-ranging benefits of accelerating the transition and are committed to act as ambassadors championing a circular economy which leads to a resource-efficient, resilient and inclusive society in which resource consumption is decoupled from economic growth.

A number of activities have been organised within the CCD to create a genuine community of Circular Cities. A good example of this is the **Webinar Series**, open for signatories and support partners to share knowledge, experiences and results on various circular topics. In addition, the CCD has also featured in other relevant events throughout Europe, some of them third-party events such as COP26, while others were organised by CCD signatories themselves, such as the **Circular Economy Day** in **Wiltz (LU)**. Furthermore, signatories and support partners have been sending relevant news, materials and resources which have been shared through the **CCD website**, the **Newsletter** and its social media channels.

1 Global Resources Outlook, 2019: Natural Resources for the Future We Want

2 Completing the picture: How the circular economy tackles climate change, 2021 Reprint

3 The Circular Economy in Cities and Regions; Synthesis Report, 2020

Figure 2: CCD Support Partners

The Circular Cities Declaration Report 2022

From November 2021 to January 2022, signatories were asked to provide information on their circular economy activities, especially on strategies and actions (e.g. projects, initiatives, events, processes developed). For each action, they additionally provided a brief description of the scope, objective and involved actors, and links to supporting documentation (web links, publications, documents, etc.). Furthermore, signatories indicated what their future actions will be, what challenges they are facing and which CCD commitments they are making progress on. A total of 40 signatories reported on their activities, providing a unique glimpse into how the circular economy is implemented at the local level in Europe.

Stephan Köhler / ICLEI

Progress towards the Circular Cities Declaration commitments

Signatories of the Circular Cities Declaration have signed up to deliver on 10 commitments, relating to the circular levers available at the disposal of local governments. For this report, signatories were asked to rate their progress against each commitment from one (just beginning) to five (systemic change achieved). The figure in the box shows the average assessment across all reports for each commitment.

Average scores on almost all commitments are below three, indicating a collective feeling of being far away from the overall goal - perhaps due to a lack of clarity on what that end point looks like or how to measure it. Ongoing initiatives aimed at developing a clear monitoring/ measurement framework for cities would likely be of great support to signatories.

The first four commitments on average scored higher, illustrating cities are now *establishing clear goals* (1), *convening local groups* (3) and *prioritising awareness raising* (2) and *urban management/ planning* (4), as key interventions. Lowest scoring indicators on average were *applying economic incentives* (6) and *enabling regulatory framework for circular markets* (7). This illustrates local governments' limited ability to influence both taxation or regulation, usually decided at the national level (or at EU level).

Figure 3: The average achievement of each CCD commitment by contributing signatory cities, rated from one (just beginning) to five (systemic change achieved).

Commitment	Rate
1 Establishing clear circular economy goals and strategies to provide a common direction for the local circular transition	3.1
2 Raising awareness of circular practices across our administration and amongst local citizens and businessess	3.1
3 Directly engaging local stakeholders from civil society, the private sector and the research community in the development of circular economy plans and initiatives, striving to make the transition inclusive and helping to nurture circular business models such as the sharing and the repairing economy	2.9
4 Embedding circularity principles in urban planning, infrastructure and asset management procedures	2.6
5 Leveraging public procurement to promote the market for circular products and services	2.3
6 Applying economic incentives and seeking opportunities to use fiscal measures designed to encourage circular economic and social behaviour	1.8
7 Fostering an enabling local regulatory framework which allows and encourages secondary raw material markets, repair, reuse and sharing schemes	2.2
8 Collaborating with national governments and European institutions to establish an appropriate policy and regulatory framework for the circular transition	2.4
9 Monitoring the progress made and impacts of our circular economy activities	2.4
10 Reporting to ICLEI on progress in achieving the above commitments	2.5

Over 2022, ICLEI Europe, supported by the Ellen MacArthur Foundation, analysed the reported data and developed this CCD Report 2022, firstly to celebrate and showcase the significant gains cities are making towards the circular transition, but also to highlight the most important trends and challenges related to this transition. To our knowledge, this represents to date the most significant longitudinal data collection of any study of circular cities in Europe. We hope that this report will not only encourage local governments across the continent to continue this growing momentum, but also that it will shed light on the crucial role local governments play in the transition to a circular economy, and how much they need to be supported in this process. As this is the first report carried out for the CCD, it will be interesting to see the progress made by cities over time. Moving forward, it will also be necessary to look at which additional data and indicators should be collected, in order to strengthen our understanding of how the circular economy is implemented at the local level.

The first part of this report analyses the eight main trends surrounding the circular economy in cities. Then, the second part reflects on the main challenges that signatories are facing and identifies opportunities for collective action to tackle them. In the last part, a one-page overview of each of the 40 reporting cities is provided, highlighting the circular strategies and actions across various sectors that cities are implementing.

Dreamstime / Scaliger

Eight main trends on Circular Economy in Cities

1 A growing number of circular initiatives are set up at the European level to support cities.

In recent years and especially in 2022, a growing number of initiatives have been set up at the European level to foster the circular transition, particularly in cities. This demonstrates the momentum that the circular economy is gaining and how it is now seen as a valid framework for tackling today's complex urban challenges. Direction at the European level comes from the European Commission's **Circular Economy Action Plan** - one of the main building blocks of the European Green Deal - which contains a series of measures aiming to close and shorten material loops along the entire life cycle of materials. The **European Circular Economy Stakeholder Platform**, managed by CCD Support Partner European Economic and Social Committee (EESC), further acts as a central resource hub and collaboration platform for stakeholders across Europe, organising a lively programme of EU Circular Talks, and providing a central resource and news hub.

Focusing more specifically on local and regional governments, the recently launched **Circular Cities and Regions Initiative (CCRI)**, is an innovative multi-stakeholder scheme, combining both technical and financial support. In this framework, the CCRI-Coordination and Support Office provides - among other support activities - direct technical support for the implementation of innovative circular systemic solutions in **12 pilot and 25 fellow cities and regions** across Europe, including CCD signatories Guimarães and Gothenburg (which joined after the reporting period), as well as the regions of Helsinki and Tampere, and CCD Support Partner, Circular Flanders. The CCD and several of the Support Partners are CCRI Associated Partners. In parallel, various EU-funded CCRI projects provide further support for the implementation of circular systemic solutions, as well as the development of new circular business and governance models. CDD signatories and Support Partners are for instance involved in **TREASouRcE**, **CircularInvest**, **DEFINITE-CCRI** etc. Similarly, the European Investment Bank's (EIB)'s **Circular City Centre (C3)**, is providing advisory support services to a number of European cities, including CCD signatories **Prague**, **Porto**, **Turku**, **Leuven** and **Murcia**.

Funding through programmes such as Horizon Europe, INTERREG and Life[4], also offer crucial financial and technical support for a large number of cities and regions to act and collaborate in the field of circular economy. The CCD and individual Support Partners will continue to facilitate access to these programmes and provide further support, as outlined in Table 1 below.

4 Funding opportunities can be found here: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home&sa=D&source=docs&ust=1673779317388792&usg=AOvVaw1mypnnfZUo3wTMJ1Xvj-zV

Table 1: Initiatives from Support Partners

Support partner	Initiatives
ReLondon	The **Circular Economy Training Academy** provides free and paid-for Continuing Professional Development (CPD) certified training modules, designed to empower local authorities to integrate the circular economy into all levels of all local authority departments. Provided modules include support to develop a cross-departmental circular economy action plan and training on how to embed circular economy principles in procurement.
Circular Flanders	1. The **Do-network Local Circular** establishes a structure and support hub for cities and municipalities (2022-2024). The aim is to foster widespread adoption of circular policies amongst local authorities. Tailor-made support has been produced for 10 local authorities regarding setting up strategies and circular pilot projects, communities of practices (on Circular Procurement, City Development and Monitoring) and the organisation of events, communication of best-practices and guidance documents. 2. As part of the EU Cmartlife project, two key initiatives in Flanders are the **Circular Ambassadors Program** which offers a unique 7-day interactive circular education course, open to anyone. Secondly, the **Learning Network Waste Management** brings together the latest insights and solutions for waste prevention and optimised waste management. 3. Circular Flanders initiated and supports **12 social-circular hubs**. They are local partnerships which boost new circular entrepreneurship with a social impact in their regions. The partnerships are deliberately diverse, with companies, city and municipal governments, knowledge institutions and social profit organisations on board. From Bruges to Genk, from Oudenaarde to Leuven, it is possible to visit the 12 regional social-circular hubs which offer inspiration, matchmaking and support.
Ellen MacArthur Foundation	**Ellen MacArthur Foundation Community Platform** comprises thousands of organisations who have embraced the circular economy and understand the need for collective action. Access to the community is free and any organisation can apply to gain access to facilities including the latest circular economy developments, network events, learning resources, collaboration opportunities and a dedicated space for cities and local governments.
ECERA-ENEA	1. The **ES-PA project** (energy and sustainability for public administration), part of the Italian Programma Operativo Nazionale (PON) Governance (2014-20), is a package of many activities to empower local authorities in energy and sustainability. The circular transition is the most important model to address the goals of the project, including the efficient use of both energy and material resources. Many circular activities have been carried out in two representative areas of different territorial typologies; the territorial area of the city of Matera and its province, in Southern Italy, and the island of Lampedusa. 2. **RECiProCo project** (implementation of circular economy tools and initiatives for consumers), financed by the ex Italian Ministry of Economic Development (2021-2022), includes initiatives aiming to activate participatory co-design processes of circular economy solutions. Through the Urban Living Lab methodology, ten circular project ideas have been co-designed to support circular economy transition in three pilot cities (Bologna, Anguillara Sabazia (metropolitan city of Rome), and Taranto). The project ideas were presented to the three pilot local authorities and are now at the stage of seeking funding. The aim is for the projects to be implemented in cooperation with citizens, local stakeholders and the local government. 3. **ICESP** is the Italian Circular Economy Stakeholder Platform similar to the **European Circular Economy Stakeholder platform** at the Italian level. Founded in 2018, it counts more than 800 participants, coming from public institutions, private sector, research and academic, NGO and civil society. There is a dedicated space for cities and local governments; the working group **Circular Cities and Territories**, the aims of which include suggesting practical actions that city leaders across Europe can adopt and promote, to accelerate the circular transition in their cities.
Circle Economy	The **Knowledge Hub** is an open-collaborative library of circular economy case studies from different actors, including local authorities. The library also contains frameworks of circular business strategies and policy instruments that can support the transition to the circular economy.

2 Cities are adopting circular strategies and roadmaps to steer the circular transition.

Amongst those reporting, 16 signatories have dedicated circular economy strategies or action plans in place, with at least two further under development currently (Grenoble, Torres Vedras). In many other cases, circularity principles are being embedded within other local strategies. This trend is also reflected in the work of the CCRI, which supports cities and regions with the development of their Circular Economy Action Plans and Circular Economy Investment Plans, and in the implementation of Circular Systemic Solutions.

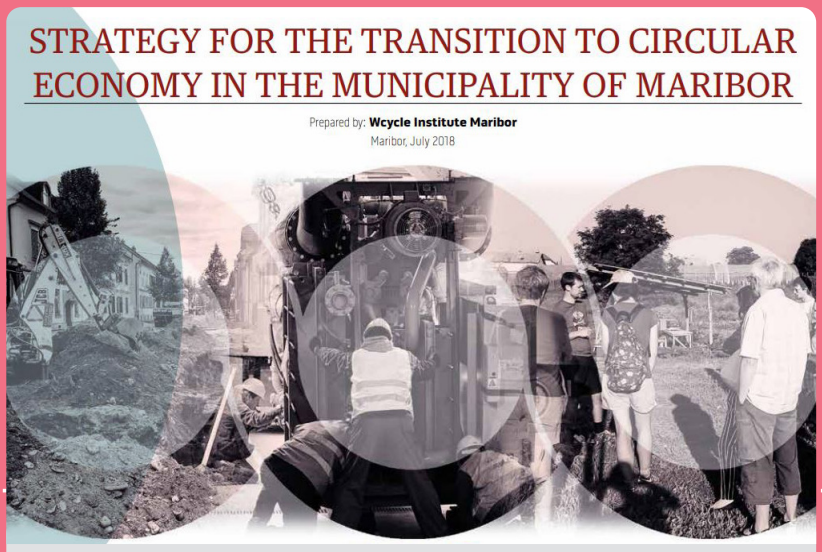
The increasing number of cities and regions with such strategies reflects the value attached to presenting a common vision and direction. A circular economy strategy can be crucial in ensuring cross-departmental collaboration across often large and complex public organisations. Associating vital stakeholders to its development can help set ambitions, identify opportunities and challenges, while also creating a sense of shared ownership.

In many cases specific quantified targets are established. Within those reported, the majority of these relate to waste, particularly recycling / recovery rates of municipal solid waste and bio-waste (for example, Évora targets an 80% recycling rate). This reflects not only the traditional focus and perception of circular economy, but also the challenge in identifying appropriate indicators and in collecting data for other aspects of circularity. Several signatories have also set targets and activities focused on procurement (Haarlem aims to achieve 50% circular procurement by 2025), and GHG emissions reduction (Copenhagen aims to become CO_2-neutral (scope 1-2) by 2025).

BEST PRACTICE - Maribor (SI)

Co-created with local stakeholders, **Maribor's Strategy for the Transition to Circular Economy** was approved in 2018. Its development was closely linked to the INTERREG Alpine Space program and the Greencycle project. The strategy brings together the municipality, publicly-owned companies as well as external stakeholders, and aims to foster cross-sectoral cooperation in the handling, processing, re-use and development of resources in seven key sectors. A truly innovative and systematic approach, it articulates all aspects of implementation - technological, organizational, social, cultural and behavioral innovation. **Support partner RRA Podravje** - Maribor was instrumental in the development of Maribor's Strategy for the Transition to Circular Economy.

*More on **Maribor on page 50**.*



Strategy for the Transition to Circular Economy in the Municipality of Maribor. Image: Wcycle Institute Maribor

3 Cities are investing in circular infrastructure to close material loops.

The development of circular infrastructure to close material loops is the most frequent type of intervention implemented by cities, with 37 actions across different sectors. It covers small-scale equipment as well as large-scale production and treatment facilities. This starts with the setup of collection points, to collect certain streams of waste separately - such as bio-waste, textiles or plastics - from residents and (small) businesses alike. Moreover, reporting signatories have invested in facilities aiming to valorise various types of waste, with for instance composting plants implemented by around a quarter of reporting signatories. Infrastructure aiming to foster tighter material loops is also a focus, such as the set-up of material depots aiming to store, process and re-market secondary materials between construction and demolition sites (**Est Ensemble Grand Paris**). Cities are also developing regenerative infrastructure such as urban gardens, intended to make local food systems more circular but also to bring nature back into urban ecosystems thus improving resilience and promoting more sustainable lifestyles. This also encompasses digital circular infrastructure, with the development of tools and apps for matching supply and demand in various sectors and digital platforms to support the public in accessing repair services (**Leuven**).

These examples demonstrate the crucial role that local governments play in developing the infrastructure that is necessary to support the circular transition. More funding streams are therefore needed to be made available to this role, given that investment in new infrastructure is rather capital-intensive. Additionally, missed opportunities to build circular infrastructure now will likely lock cities into non-sustainable material management pathways and deprive citizens of the future opportunities brought by the circular transition. It also underlines how necessary spatial and land-use planning are, as allocating space for such infrastructure in planning documents will be key to build multi-functional cities, and to some extent enable production back in town.

BEST PRACTICE - Budapest (HU)

In Autumn 2022, as part of the HungAIRy air quality project, a composting campaign has been launched in Budapest, with the aim of raising awareness among the wider population of the capital. As part of the campaign, community composting points were set up in 5 districts in Budapest. In addition to reducing our household organic and garden green waste, composting also addresses one of the major challenges of our time: air pollution. On-site composting provides an alternative to burning green waste, does not pollute the air with the emissions associated with transport, and can also provide nutrient replenishment for your garden using the end product, the finished compost. This follows previous efforts from the Urban Gardening Company of Budapest, which have been steadily installing new composting sites across the city.

*More on **Budapest on page 27**.*

Community composting sites from the HungAIRy project.
Image: BKM BUDAPESTI KÖZMŰVEK Nonprofit Zrt. / László Horváth

4 Cities are using public procurement to reduce their environmental footprint and enable the circular economy.

Cities are using public procurement, i.e. the purchase of works, goods and services, to reduce their environmental footprint and to enable the take-off of new circular solutions and services. With 18 actions, circular procurement[5] is the second most-used policy lever by responding signatories, again across many different sectors.

Signatories have been adopting - or adapting - circular procurement strategies and setting goals related to local purchasing, circularity and socially responsible procurement for tenders. These strategies are often aligned with international or national frameworks, like the UN's Sustainable Development Goals. A number of signatories also reported the inclusion of circular criteria in specific tenders, on topics as diverse as public works (Hämeentie Street, Helsinki) to school meals (Torres Vedras).

These interventions not only allow local governments to reduce the environmental and social impacts of their purchases, but further stimulate the design, provision and management of more circular goods and services. As public procurement plays such an essential role in the circular transition, it calls for the adoption of supporting regulation at national and European levels, along with the provision of guidance to local governments.

5 For a definition of circular procurement see Public Procurement for a Circular Economy; Good practice and guidance, 2017.

BEST PRACTICE - Haarlem (NL)

Haarlem has set ambitious targets of 50% of all procurement being circular by 2025 and 100% by 2030. These targets come from **Haarlem's procurement policy** which sets goals related to local purchasing, circularity and socially responsible procurement. The policy was derived partly from the Roadmap for Circular Procurement and Commissioning, acknowledging that commissioning plays a major role in achieving circular procurement goals.

*More on **Haarlem on page 39**.*

Boat charging stations procured through circular criteria.
Image: Gemeente Haarlem

5 Cities are setting up their own innovation programmes and are carrying out innovation projects to unlock the circular transition.

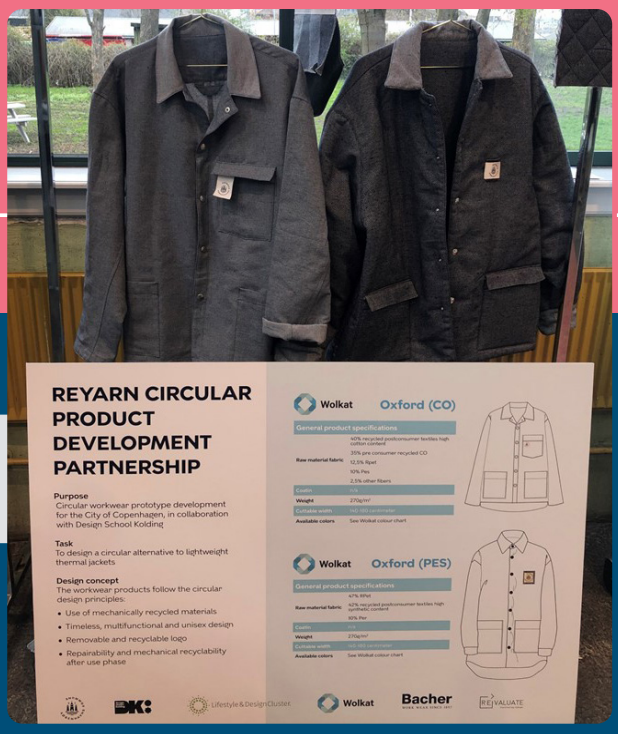
Innovation is at the centre of cities' interventions, with around a quarter of reporting signatories either engaging with their local innovation ecosystems, or being involved in innovation projects themselves. In this regard, a number of signatories have implemented innovation programmes and events (such as the Circular Economy Design event in Lappeenranta), which cover a variety of sectors and aim to develop new circular products, services and business models, often in close collaboration with innovative companies and knowledge institutions. This also includes the setup of collaboration spaces or incubators to foster connections among entrepreneurs and support them in early stages (Smart Chemistry Park in Turku).

Reporting signatories are also managing innovative projects, piloting or demonstrating new circular solutions or approaches, with for instance Eskilstuna working on recycling phosphorus and other nutrients from toilet wastewater from housing areas lacking connection to municipal sewer systems. This shows how local governments across Europe are pioneering new solutions and approaches and as such are shaping the future of the circular economy. It also raises the question of whether cities will have the resources to upscale those projects and ultimately finance operations with the current level of funding available.

BEST PRACTICE - Copenhagen (DK)

The **Circular Copenhagen innovation platform** enables radical innovation of new solutions for selected problems in the waste and resource field, working in close collaboration with innovative companies and knowledge institutions. Current examples include diaper recycling, a reuse system for packaging, reuse of paint, and digital watermarks on packaging. An established panel of external experts from around the world provide guidance on technological developments and innovative solutions. Collaborative projects aim to develop new, circular solutions for management of selected resource flows, in close collaboration with the most innovative parts of industry. Projects focus mainly on residual wastes for which there are currently no high-value recycling solutions.

*More on **Copenhagen on page 29**.*



Innovation promoted by Circular Copenhagen: recycled-textile workwear.
Image: Copenhagen Circular / Tina Winberg

6 Cities are raising awareness and empowering citizens to distil a shared sense of ownership.

Cities are dedicating significant efforts to not only raising awareness and educating the public, but also to effectively empowering citizens to take on an active role in the circular transition. Firstly, given the circular economy is still a relatively new topic, changing mindsets and encouraging citizen behavioural changes represents a significant challenge for cities. This is why signatories have been running awareness campaigns, for instance on new material collection schemes or on how to sort their waste for recycling. Moreover, to further foster change and introduce the concept of circular living to citizens from a young age, cities are carrying out actions towards children and students, with the use of guides, training and educational film screenings, as is the case in **Loures**.

Secondly, citizen engagement is becoming more sophisticated with a greater focus on empowerment. In this regard, many of the reporting signatories are integrating community services alongside circularity through the establishment of reuse and repair hubs (or cafés). Via demonstrations of how to repair their own belongings - from pieces of furniture to electric appliances - citizens are educated on how to repair by themselves, and simultaneously social links in the community are promoted. Some cities even encourage citizens to create circular solutions themselves, such as to harvest invasive alien plant species to produce new innovative bio-based materials (**Ljubljana**). These initiatives contribute to changing consumption patterns and to create a shared sense of ownership of the circular transition among the public.

BEST PRACTICE - GHENT (BE)

The City in partnership with the local waste company IVAGO and the Public Centre for Social Welfare OCMW, joined forces to spread awareness about **Repair Cafés** under the name of 'Gent Repareert' (Ghent Repairs). In these cafés volunteers help repair items such as electronics, furniture, bicycles and textiles. Following their success, further initiatives are being developed such as **Klusserette**. Various sharing initiatives have also emerged such as a children's bike-loan service (Op Wielekes) and several car sharing and cargo bike sharing initiatives.

*More on **Ghent on page 36**.*

Gent Repareert. Image: Stad Gent

7 Cities are pushing for more circularity in construction.

Construction - including demolition - is one of the sectors in which cities are the most active, firstly due to the high associated environmental costs, and secondly, due to the many levers and policy instruments local governments have at their disposal to influence this sector. As such, public procurement acts as the primary tool for commissioning circular construction projects, with local governments benefitting from having public buildings and significant works projects to use as test beds for more innovative solutions. Additionally, the amending of planning regulations enables circular standards to be set for new builds and renovation projects, for instance requiring brownfield developments or the reuse of existing structures, such as in La Spezia.

Engagement is used to encourage private construction companies, via funded hubs or circular charters (Est Ensemble), to explore new niche markets and develop circular products or practices. Circularity in the construction sector implies the adoption of novel techniques and methods - or sometimes bringing up to date vernacular architecture - which in turn asks for completely new sets of skills. That is why some cities, such as Helsinki, are starting to build capacity.

At different steps of the construction value chain, reporting signatories have been looking to enable the use of secondary materials in projects - thereby preventing the generation of vast amounts of waste, whether it is through setting up material exchange depots and marketplaces, developing digital platforms to track and identify exchange partners or developing guidance for pre-demolition audits and demolition instructions for source segregation of demolition waste. While considerable progress is still needed, this report shows that cities are taking steps to make the construction sector more circular.

BEST PRACTICE - Wiltz (LU)

The municipality has commissioned the construction of a **new school campus** (Géizt) with circularity at the centre of the project. The build includes a primary school, kitchen, day care centre, children's museum, music school and a sports hall. Circularity is notable regarding the choice of construction materials, the ability to change the use of the structures over time, reuse of rainwater, reduction of greenhouse gas emissions and use of renewable energy.

*More on **Wiltz on page 64**.*

Campus Géitzt. Image: Commune de Wiltz / Ben Majerus

8 Cities are making local food systems more regenerative.

The food value chain is another sector of focus for reporting signatories. As food system resilience[6] has become a largely shared preoccupation, cities are adopting strategies to create sustainable local food systems, prevent and reduce food waste and promote more sustainable diets, among others. In this regard, cities, for example, launched calls for ideas to engage citizens in further creating a sustainable local food sector and awareness raising campaigns aiming to impart the importance of sourcing locally grown food to the youth. Moreover, through direct support to farmers or public tenders, fresh and seasonal food as well as short supply chains are encouraged and supported via tenders, including for school meals. When it comes to addressing food waste, limiting and reducing food waste is encouraged through educational campaigns, while food redistribution is enabled through community-based collectives (Helsinki).

Anticipating regulatory requirements[7], cities are setting up separate collection schemes for bio-waste and are building up their valorisation capacities. Major focus has been placed by signatories on biological treatment (mainly composting), with the provision of community initiatives, training and high-cost investment in the relevant infrastructure to extend the organic loop recycling via cogeneration (energy and heat production) and biogas production. When it comes to ensuring sufficient quality and quantity of waste for valorisation, cities are running educational campaigns which target both households and businesses about how to effectively segregate their waste streams. Ultimately, cities are using biofertilisers and soil improvers on their own green spaces - an example being Maribor, which produces secondary soil for use in urban gardens, landscaping and construction and on occasion makes it available to citizens or farmers. Here again, many challenges subsist, but these examples show that local governments have a crucial role to play to relocalise food systems and make them more regenerative.

6 I.e. securing both food supply and resources that are necessary for food production, see https://circulars.iclei.org/wp-content/uploads/2021/03/ICLEI-Circulars-City-Practitioners-Handbook-Food.pdf

7 The revised Waste Framework Directive requires a separate bio-waste collection or recycling at the source by 31 December 2023 (Directive 2018/851/EU).

BEST PRACTICE - Évora (PT)

Projeto Ervilha aims to promote a short local production and consumption circuit for vegetables and fruit through awareness raising sessions within the education community, as well as tackling food waste by forwarding any surplus foodstuffs for distribution to needy families in the union of parishes of Malagueira and Horta das Figueiras. The Km0 Alentejo scheme certifies restaurants and food outlets, identifying food products which originate from within 50km.

*More on **Évora on page 33**.*

Locally produced vegetables. Image: Unsplash / Peter F

Tackling barriers to the circular economy

While cities continue to take significant steps to implement the circular economy, progress is admittedly varied between cities and limited overall, in comparison to the systemic change needed to fully transition away from the prevailing linear economy.

Reflecting on the challenges which inhibit cities from implementing effective circular solutions is essential to accelerating action on the European continent and beyond. Through the CCD reporting process, signatories were provided with the opportunity to share challenges which emerged when developing and implementing circular economy actions. Responses revealed four distinct yet interrelated challenges facing their cities: capacity and resource limitations, siloed-working and lack of political leadership, measuring circularity, and limitations that come from an economy that is still predominantly linear.

Collective action on all challenges is necessary to accelerate the circular economy transition. This following section aims to reflect on these challenges and subsequently identify priority actions and opportunity areas to direct the collective efforts of cities and wider system actors including policy institutions, philanthropy, academia and other interested organisations, in order to best mobilise their resources.

Unsplash / Daniel Funes Fuente

1 Overcoming capacity and resource limitations.

The first challenge identified across reports from cities are capacity and resource limitations. The need for additional resources regarding staff, skills and knowledge, as well as financing, land and infrastructure, are cited by reporting signatories as a major challenge when it comes to implementing the circular economy. The lack of capacity in these key areas undermines not only the day-to-day implementation of circular programmes and actions, but also impairs the prioritisation of more impactful and systemic solutions.

As cities begin to use circular economy principles as the framework for addressing challenges issues such as tackling waste and enabling the circulation of materials at their highest value, local governments require more dedicated staff, with a broader set of skills and greater knowledge regarding a multitude of material value chains including construction, food, water and plastics. Building institutional knowledge on key issues requires continued awareness raising and capacity building activities in city administrations. Additionally, since implementing circular solutions asks for greater collaboration between public and private stakeholders, critical skills such as facilitating, convening stakeholders, effective communication, and collaboration will increasingly be required by local governments.

For cities less hindered by staffing or skills barriers, the financing of interventions remains an obstacle. Budgetary pressures were cited repeatedly by reporting signatories as a key challenge for moving from strategy to implementation. Existing funding streams such as the EU's Horizon Europe are mostly project-based, supporting demonstrations or pilots but seldom their upscaling or operations. Moreover, the raising of revenue at the local level is to date difficult to implement among signatory cities ('applying economic incentives' was on average the lowest scored area of progress against the CCD commitments (Figure 3)), as in most of Europe it remains a national government's prerogative. Other stakeholders including EU institutions, national governments as well as to some extent the private sector and philanthropy, can therefore play an important role in creating other funding opportunities for ambitious city-level interventions.

Despite considerable investment, gaps in fundamental infrastructure essential to upscaling the circulation of materials was highlighted as another major issue faced by the reporting signatories. When it comes to the organic material loop, attaining adequate farm land to carry out regenerative food production[8] is a challenge. Biological treatment infrastructure for organic material treatment also requires available land and high initial investment costs not easily attained. Regarding the construction sector, digital and physical material banks for exchange of secondary building materials are not yet widely available. Access to affordable land and space, material collection services and treatment facility infrastructure, is essential to enabling the processes which can close resource loops.

Unsplash / Anne Nygard

8 For a definition of "Regenerative food production" see Regenerative food production, EMF.

2 Securing political support and breaking down silos.

Capacity and resource challenges can in part be overcome by fostering wider organisational and political support for the circular economy in cities. However, this in itself was a listed barrier which emerged from the signatory responses. Although the interconnected economic, social and environmental drivers of the circular economy for cities are increasingly being understood, a shift is still needed to ensure a more integrated governance approach. Signatories highlighted interventions that continue to be advanced in silos, where relevant city departments are not aligned, reducing the impact of actions carried out or missing opportunities. Worse, there were also cases of conflicting policies, such as business support programmes that do not promote circular business models. Whether it is a resistance to changing long standing ways of working, a poor understanding of circular economy fundamentals, or a lack of coordination, there is a need for better integration of circular economy thinking beyond the departments of environment, to areas including but not limited to housing and planning, business, procurement, food and transport.

The first step is to appoint a dedicated circular economy team within city administrations - or a dedicated officer in smaller towns - to coordinate and implement actions. Policy integration can then be improved through various coordinating and procedural activities such as establishing a cross-organisational working group of circular champions, developing a circular strategy or roadmap, and developing onboarding for new starters and providing ongoing learning and development opportunities to equip all local government staff with basic circular economy knowledge.

Improving cross-organisational collaboration also depends on strengthening top-level commitment in cities i.e. political support. However, signatories cited a limited interest or understanding of circular economy opportunities among elected officials as a key hurdle. While new holistic, upstream solutions and systems are needed to be tested and trialled, there may still be a political preference to favour more visible actions. Further nurturing of support across the political spectrum, including through celebrating pioneering interventions taken by city leaders and continuing to illustrate benefits, must remain a priority.

Ultimately, cities reported some difficulty in engaging with local stakeholders and with other levels of government. As circular economy extends beyond city boundaries and municipal competencies, multi-stakeholder engagement is a necessity that must be improved upon, in order to achieve greater scale of circularity, create a sense of shared ownership of developed cycles, and to take advantage of further opportunities[9]. Cities can move closer to achieving these goals by setting up a larger stakeholder group in close contact with their circular economy team, through which regular meetings and events are organised to encourage and maintain engagement.

9 EMF (2019), Circular Economy in Cities - Policy Levers.

Unsplash / Kaleidico

3 Measuring circularity: from data collection to monitoring frameworks.

A third challenge theme relates to monitoring and assessing circularity. This includes data collection, identification and access; developing suitable indicators and metrics both city-wide and for individual projects; as well as measuring and evaluating the co-benefits of action with other challenges (e.g., environmental and social indicators).

Data related to how products and materials are produced, consumed and managed at end-of-life, at city-level, enables better planning, decision making and drives more ambitious action in cities. Analysing and interpreting this data helps to identify where and how to intervene on which material value chains. Additionally, monitoring the actions and targets provides cities with insights into their economic activities and allows them to evaluate the impact of current initiatives and their potential to meet the targets and make the city more circular.

However, building a clear picture of these flows, as well as identifying the relevant infrastructures and stakeholders - both public and private - is a difficult task. Beyond measuring waste volumes, signatories report a lack of accessible upstream city-level data relying on downsizing national data and requesting private data. Efforts to improve the access of relevant city-level data are ongoing with the launch of tools like Ganbatte, while studies of 'urban metabolism' or material flow analyses are becoming increasingly more sophisticated.

To further implement the circular economy, cities also need data to measure the impact of their initiatives, and this cannot only be done at the material or nutrient level. Wider indicators are needed to monitor supporting factors such as policy levers, business model uptake, awareness, but as yet these are ill-defined or not widely adopted. At present, only a few reporting signatories shared circular economy roadmaps which include quantifiable city-wide targets, such as Copenhagen. Cities are therefore also unclear about defining what exactly to measure and how. Developing common and operable circular city indicators will improve our understanding of which parameters need to be measured and where citizens and cities can have the most impact.

A final element of the measurement challenge that cities are facing is the outstanding city-specific work to illustrate the co-benefits of the circular economy transition. Cities often lack the resources and capacity to build scenarios that can illustrate how circular interventions can connect to related, yet sometimes competing, initiatives around climate mitigation and adaptation, biodiversity, social inclusion, green jobs and skills. Frameworks, tools and indicators for cities to estimate how circular economy approaches create co-benefits in their city is a clear opportunity for researchers and funders.

Pexels / Lukas

4 Shifting the paradigm: Thinking circular in a linear system.

The fourth theme to emerge from signatory submissions relates to the structural barriers borne out of our existing linear, take–make-waste economic rationale which can only be resolved through a systemic transformation of how we produce, consume and regenerate. These barriers include regulations, certification for circular materials, "business as usual" thinking and limited awareness on the topic of circular economy - and beyond on sustainability.

In relation to the use of secondary materials, a number of cities highlighted that barriers such as a lack of common certification criteria for secondary materials, restrictive legislative definitions and timeframes on framework contracts (e.g. procurement), create additional hurdles and sometimes make secondary material use nearly impossible. As stated by one of the reporting signatories 'innovation often requires an evolution of the regulatory framework'. Legislative and regulatory changes at European or national level need to occur for the circular transition to happen. As such, the EU Circular Economy Action Plan is moving in the right direction with its sustainable product policy framework.

Additionally, regarding the extension of the lifespan of products, the high cost of repairing broken products compared to purchasing new ones, might prevent citizens from choosing to do the former. The reason for high repair costs being that taxes are focused on labour and capital, as opposed to environmentally harmful consumption and production. Signatories also mentioned that perceived cultural norms are to own and buy new, and therefore these norms need to be challenged to enact more circular behaviours.

For business, and in particular for SMEs, there is limited awareness about alternative, yet profitable, circular business models. Nevertheless, there is a lack of appropriate financial incentives and advisory support to support private investment in circular business models. In this regard, high costs and the economic feasibility of alternative business models remain the main barrier for consumers and business, in the transition to circularity.

Ultimately these barriers call for a paradigm shift towards a circular economy. Such a shift cannot not be achieved by individual actors only: national governments and EU institutions have an important role to play in setting up the pre-conditions and the direction of change.

Pexels / Jan van der Wolf

Reporting Cities

This section presents an overview of actions carried out by the 40 reporting signatories in the field of circular economy (see map on page 5). It also highlights any strategies or roadmaps in place, along with the associated governance structure. Key actions are briefly described and links are provided to external documents or web pages for more information. The following pages capture the diversity of circular actions carried out in cities across Europe. We hope that they will inspire other cities to both join the community and implement the circular economy at the local level.


Albergaria-a-Velha


Braga


Budapest


Capital Region of Denmark


Copenhagen


Eskilstuna


Espoo


Est Ensemble Grand Paris


Évora


Freiburg


Genoa


Ghent

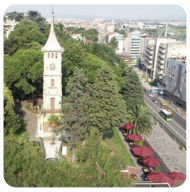

Grenoble


Guimarães


Haarlem


Helsinki


Høje-Taastrup


Izmit


Lappeenranta


La Spezia


Leuven


Lille Metropole


Ljubljana


Loures


Malmö


Maribor


Mikkeli


Murcia


Oslo


Oulu


Picanya


Porto


Prague


Roskilde


Tampere


Torres Vedras


Trikala


Turku

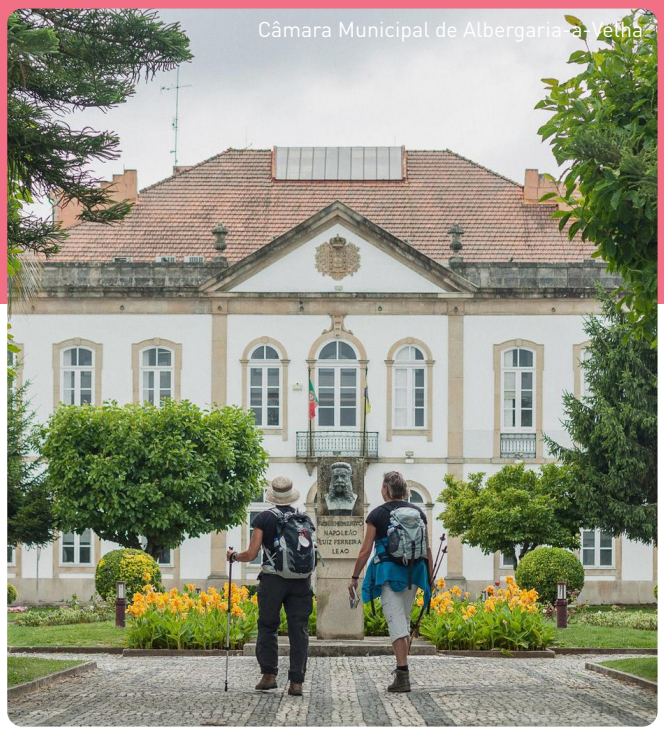

Umeå


Wiltz

Albergaria-a-Velha, Portugal

General information

Region population: **24,841**
Mayor: **António Loureiro**


Câmara Municipal de Albergaria-a-Velha

Strategy & governance

Circularity is incorporated into the Municipal Sustainability Strategy for the Municipality of Albergaria-a-Velha. The Strategy outlines six areas of action to be implemented by 2030, including commitments to recycling at least 20% of paper, glass, plastic and municipal solid waste (MSW) by 2027. The Strategy also commits to achieving 10% green public procurement (GPP) by 2027 and the introduction of segregated bio-waste collection and treatment by 2025. The municipality additionally subscribes to the Institutional Pact for the Valorization of the Circular Economy in the Centro Region, an initiative of the Commission Coordination and Regional Development Centre.

Key actions

- **Zero Waste Actions** – Zero waste market, A Praça, is a series of actions designed to reduce waste and promote circularity in the municipal market. Actions include installing 12 composters, giving out 5,000 reusable cloth bags and 200 baskets, organising information sessions and outreach materials and providing guidance to market traders.

- **Recycling of Masks and Textiles** – As part of the To Be Green project, project, masks were collected across 10 locations for separation, recovery and reuse of their parts (elastic and metal frames are removed, the non-woven material extracted). A facility has also been opened where the community can deliver clothes or home textiles for recycling and bring clothes in good condition for exchange.

- **Sustainable Entrepreneurship in Schools** – The School Entrepreneurship Project, active in the Municipality's schools since 2014, aims to encourage the spirit of initiative and innovation in young people, involving around 800 students each year. The 2020/2021 school year focused on the Sustainable Development Goals.

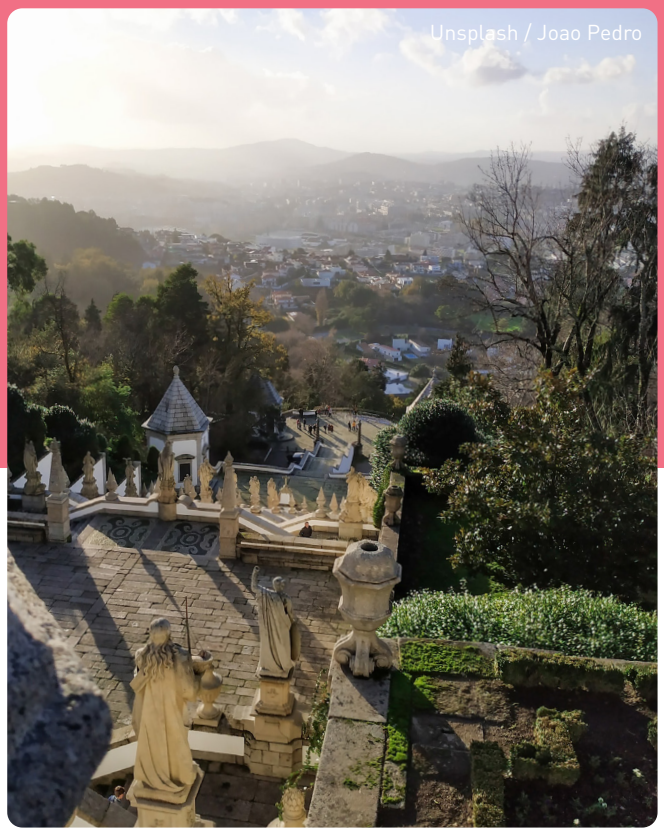
- **Organic gardens** – The first of a planned city network of organic gardens has been created in Lapa, designed to provide the local population with the knowledge and tools to carry out organic farming and composting. The garden has 28 plots for cultivation, four of which are designed to accommodate people with reduced mobility.

- **Certifying local circular companies** – The Certificate Recicla – Albergaria-a-Verde scheme, awards local companies (with either a silver or gold certification) which can demonstrate the implementation of measures to protect the environment. By the end of 2021, 150 companies were certified.

Braga, Portugal

General information

City population: **193,000**
Mayor: **Ricardo Rio**


Unsplash / Joao Pedro

Strategy & governance

In 2022, the municipality of Braga worked on a Diagnosis of the circular economy of the Region of Braga, a first step before developing a dedicated circular economy strategy. Additionally, existing planning documents, such as the Environmental Education Plan and the Municipal Strategy for Adaptation to Climate Change, already include circular actions that will be implemented in the coming years and will soon define a set of indicators and communication objectives in relation to these specific actions.

Key actions

- **Bio-waste valorisation** – Since 2021, bio-waste from large producers, starting with canteens, restaurants and hotels, is collected separately and valorised into Ferti +, an organic agricultural fertiliser used in tree and shrub crops. To citizens, schools and charities, Braga is additionally offering free composters and recycling bins, and also organising training sessions.

- Caring for Braga – In recent years, wildfires have become more frequent and extreme in central and northern Portugal. One of the causes is the burning of agricultural, gardening or forestry waste during the summer. To solve this issue, the municipality of Braga, alongside with the Parish Councils and local landowners, has set up a free bio-shredding service, providing biocrushers to shred waste into chips that are then used as soil improve by the municipality green spaces department or redistributed for free to citizens.

- **Community gardening** – The municipality is creating community gardens for private individuals and households (723 plots and 1434 users), for community groups (2426 m^2 and 154 users) or schools alike (7530 m^2 and 2576 users). Community gardening in Braga serves multiple purposes, as it provides a habitat for local biodiversity, improves access to nutritious food and contributes to recreating social links.

- **Education towards a circular economy** – In partnership with the association Bandeira Azul da Europa (ABAE), Braga has set up education programs on sustainability in 20 schools, labelled Eco-Escolas, in which circular economy is one of the key topics. To raise awareness among the public, the municipality also organises events during the European Week for Waste Reduction, every year since 2014.

Budapest, Hungary

General information

City population: **1.756 million**
Mayor: **Gergely Karácsony**

Unsplash / Tobias Reich

Strategy & governance

While Budapest does not have a specific circular economy strategy, measures related to circularity are embedded in both the city's Sustainable Energy and Climate Action Plan (SECAP) and the Mid-term Urban Development Strategy, ensuring an integrated approach to circular economy governance.

Key actions

- **Recycling and reuse drop-off points** – The city has set up 17 waste collection courts where residents can deposit segregated collected waste. At two of these sites there are reuse centres where people can drop off unused household items still in working order. These items are then sold for a small fee to cover the cost of storage, enabling them to reenter the local economy.
- **Turning bio-waste into energy** – 90% of the electricity needed to run Dél-pest Wastewater Treatment Plant and 100% of its heat needs are generated in-house through the treatment of collected sewage sludge and food waste. The City is now also assessing the feasibility of treating collected green waste to expand energy production further for local usage.
- **Rainwater retention incentives** – The Municipality held its first citizens assembly (CA) in September 2020. One of the CA recommendations was the implementation of rainwater usage and runoff water retention incentives, supported by 85% of the CA. The recommendation is presented in the SECAP.
- **Community composting** – the Urban Gardening Company of Budapest has installed seven publicly available community composting sites in Budapest, with five further composting sites in development during 2022. The aim of the initiative is to educate and enable citizens to compost their organic waste and ultimately reduce the amount of organic waste going to landfill. (location of composting sites can be found here when searching for "komposzttároló").

Capital Region of Denmark

General information

Region population: **1.86 million**
Chairperson: **Lars Gaardhøj**

Strategy & governance

The circular transition is promoted through a number of key regional strategies and action plans, with a series of specific targets set. The Regional Development Strategy, and its accompanying Action Plan 2020-2021, include circularity as a key goal. It also forms a core part of the region's Agenda for Action for the UN Sustainable Development Goals, especially in relation to Goal 12 (Sustainable consumption and production). A series of circular roadmaps for key material flows in the region have been produced. Finally, the region's programme for green and responsible hospitals (Grøn2030), includes a series of circular activities, for example focused on waste reduction and sustainable procurement. An Advisory Board for Circular Municipalities and Regions has been established within the PARCK project. A sustainable construction strategy is currently under development.

Key actions

- **Circular economy roadmaps** – The Affald og Ressourcer på Tværs (ART) project has delivered five roadmaps for promoting circularity in electronics, construction, bulky waste, textiles, and data, based on initial material flow analysis of the regions waste streams, hotspot analysis and a stakeholder dialogue process. The roadmaps contain recommendations outlining actions to be implemented and who to involve.

- **Circular regional partnerships** – The Partnerskab for Cirkulære Kommuner (PARCK) project aimed to promote the circular transition in the region's municipalities. Measures implemented included developing guidance, establishing an Advisory Board for Circular Municipalities and Regions, running a series of demonstration projects on circular construction, procurement, textiles and industrial waste, and creating a strong collaboration network between municipalities, waste companies, the region and other value chain actors.

- **Circular construction and demolition** – Under the European CityLoops project, a series of demonstration projects on construction and demolition waste - including soil - are being implemented within the region, based on a series of innovative tools and procedures. The Capital Region of Denmark (CRD) is collaborating regionally with Høje-Taastrup and Roskilde, and at the European level with Apeldoorn, Bodø, Mikkeli, and Seville.

- **Green and responsible hospitals** – The Grøn2030 programme contains a series of actions focused on (1) moving towards waste-free hospitals, by considering aspects such as product life extension, reusability and minimising consumption, and (2) implementing sustainable procurement with an aim to promote circularity.

Copenhagen, Denmark

General information

City population: **602,481**
Lord Mayor: **Sophie Hæstorp Andersen**

Unsplash / Svend Nielsen

Strategy & governance

Copenhagen's circular transition is guided by the Circular Copenhagen Resource and Waste Management Plan 2018 - 2024, and includes circular objectives such as tripling reuse in the City's "sharing, swap and reuse" facilities from 2,000 tonnes per annum (2016) to 6,000 (by 2024), increasing biogas production from bio-waste, diverting more plastic from incineration, and improving the quality and quantity of waste collected for recycling to achieve 70% household waste and light industrial and commercial waste recycling. The circular actions align with the city's Climate Plan, which aims for the city to be climate neutral by 2025. The Waste Management Plan must be updated every six years to address the latest challenges.

Key actions

- **Citizen engagement** – Copenhagen launched a campaign aimed at raising citizen awareness regarding waste prevention, food waste reduction and swapping and repair of products. The multi-platform communications campaign enabled Copenhageners' own ideas on improving waste awareness to be collected and trialled via upscaled testing. The city also supports greater information provision about a given product's circularity (reparability, secondary material content, lifespan and end-of-life handling) so that citizens can choose to consume in a more circular manner.

- **Circular Innovation Platform** – The Circular Copenhagen innovation platform enables the innovation of new circular solutions for waste and resource problems in close collaboration with innovative companies and knowledge institutions. Projects are currently in progress to investigate and improve diaper recycling and the reuse of paint among other topics. The use of digital watermarks on packaging is also being investigated in collaboration with AIM and the Alliance to End Plastic Waste. The projects selected focus on residual wastes for which there are currently no high-value recycling solutions.

- **Circular construction** – In 2020, Copenhagen introduced requirements for material Life Cycle Assessments and incentives supporting design for disassembly, in the area of construction. Demolition projects are now required to include resource mapping and appropriate management of materials for reuse and recycling. Copenhagen also participates in the EU-project CIRCuIT, which showcases how circular construction approaches can be demonstrated, scaled and replicated across Europe to enable cities to transition to a circular construction and demolition sector.

- **Circular procurement** – The city uses its public procurement strategically to embed circular principles across many sectors and activities. To date, demands for recyclable packaging have been included in tender criteria for food items and work is being done in textile public procurement to stimulate demand for the output from the city's own textile recycling efforts.

Eskilstuna, Sweden

General information

City population: **67,359**
Mayor: **Jimmy Jansson**


Unsplash / Nazrin Babashova

Strategy & governance

While there is no specific circular economy action plan for Eskilstuna, relevant actions are embedded in the city's Waste Action Plan and Climate Plan. Targets for the City include reducing the amount of incinerated waste to 128 kg per capita by 2023. In terms of climate change, Eskilstuna plans to be climate positive by 2045 and to reduce CO_2e by 80% by 2030, compared to 2020.

Key actions

- **Soil recycling** – The city is enabling the recycling of excavated soils by investing in a soil sorting plant. A pilot project is also being undertaken to assess the efficiency of construction with secondary materials instead of using newly extracted resources.
- **Education initiatives** – Residents of all ages from primary school age to adults are receiving education and information on recycling, sorting for recycling, reuse and sustainability as a whole.
- **Textile collection** – Separate collection of textile waste was introduced in 2021 for all apartments and public spaces. Textile waste has been collected separately from houses since 2016.
- **Logistical efforts** – A pilot project has been launched which arranges shared home transportation of deliveries when shopping locally. The project aims to reduce CO_2 emissions, encourage social distancing during the COVID-19 pandemic, and support local business. The municipality has its own transhipment centre to reduce transportation by the co-delivery of goods to the municipal administrations. All vehicles are powered by renewable fuels. In addition, 100% of Eskilstuna's city buses are driven on biogas produced from the local wastewater treatment plant.
- **Plastic plate recycling** – The Green Loop System is now in place in some local schools. This rental model offers plates, trays and other kitchen utensils which after use are returned to the company either for reuse or recycling.
- **Repurposing furniture** – The municipality has promoted the internal reuse of furniture and furnishings in the new construction of schools and relocation of businesses. Refurbishment is done by citizens, redesign companies and resellers of recycled furniture.
- **Nutrients from wastewater** – The city is piloting an approach which aims to recycle phosphorus and other nutrients from wastewater collected in residential areas lacking connection to municipal sewer systems.
- **Circular electronics** – Eskilstuna has introduced a platform for the reuse of electronics and an internal scheme to promote the reuse and recycling of IT equipment.

Espoo, Finland

General information

City population: **292,796**
Mayor: **Jukka Mäkelä**

Unsplash / Alex Inkilainen

Strategy & governance

Circular economy is included in the city`s strategy; Espoo Story, which sets important circular objectives such as sustainable construction, addresses biodiversity issues in a context of growing urbanisation and provides sustainable consumption choices for citizens. A 4 year programme called Sustainable Espoo has been set up involving both internal and external stakeholders to coordinate the implementation of the sustainability objectives set in the city strategy. The city is also developing a proper Circular Economy Roadmap that will be closely connected to its carbon neutrality 2030 roadmap.

Key actions

- **Smart and Circular Districts** – Kera district is a former industrial area being redeveloped into a smart and circular district that will be home for 14,000 residents. Through the Smart and Clean Kera project, the new district is being co-created with different local stakeholder.In the process, Espoo and its partners are enhancing the temporary use of buildings, preparing collaborations for circular construction, and testing circular services for citizens. This ambitious redevelopment project also connects with the municipality's ambition to reach carbon neutrality in the construction sector.

- **Circularity of plastics** – Espoo has initiated several projects to make the plastic waste stream more circular. In the Closed Plastic project, the municipality engages with stakeholders all along the value chain to investigate how reuse and recycling rates can be improved. In Story of Plastic – From Waste to Product, plastic waste from schools is collected and turned into 3D printing material at the LAB University of Applied Sciences in order to explore new applications.

- **City-to-city cooperation towards the circular transition** – Alongside fellow cities of Tampere and Turku, Espoo is involved in the KIEPPI project, aiming to develop circular economy solutions that promote the transition to becoming sustainable neighbourhoods. It includes a number of experiments and pilots such as the testing of new business models for the sharing economy and the development of a collaboration model for circular partnerships. Successful pilots are then expected to be scaled up. Espoo is also involved in European projects and initiatives related to Circular Economy, including CityLoops and the circular economy working group of the Climate Leadership Coalition.

Est Ensemble Grand Paris, France

General information

Region population: **426,000**
President (Mayor of Montreuil): **Patrice Bessac**


Est Ensemble / Dcomdrone

Strategy & governance

Est Ensemble Grand Paris is an urban local authority gathering nine cities in the north-eastern suburbs of the Paris Metropole. Since its creation in 2016, Est Ensemble has affirmed environmental exemplarity and ecological transition as the pillars of its development. The first Circular Economy Plan was approved in 2019, and focuses on three strategic axes: mobilising local stakeholders to drive the transition to a circular economy, optimising resources by implementing local loops and making Est Ensemble Grand Paris an exemplary circular organisation. These strategic axes aim to optimise the circular management of resources in the territory by favouring local exchanges. Further benefits include the creation of local job opportunities and reduced dependency on external resources.

Key actions

- **Urban topsoil revitalisation** – Est Ensemble supports an applied research project called Technosoils. The project investigates the regeneration of excavated soil from construction with compost and earthworms to make it suitable for use in landscaping public spaces and urban gardens. This approach reduces dependency on imported soil while also reusing excavated soil produced from construction in Greater Paris.

- **Urban infrastructure for exchange of secondary construction materials** – The urban metabolism study focusing on building materials conducted in 2019 has highlighted the n to develop new urban platforms that will play an intermediary role between demolition and construction building sites, enabling the storage, management and exchange of secondary materials. Digital tools for matching supply and demand will also be developed alongside workshops and meetings to inform and engage stakeholders. Further similar projects are available here.

- **Signature of a circular planning charter** – In order to encourage circular practices in the construction and urban planning sector, Est Ensemble Grand Paris has created a charter for the development of the circular economy aimed at social housing companies, developers, promoters and real estate actors. The charter now brings together more than forty co-signatories, companies, developers, builders and social housing organisations. The text sets the objective of recovering 70% of building waste.

- **Financial and technical support for green innovation** – In order to mobilise economic players around issues including local employment, sustainable development and circular economy, the following initiatives have been launched to offer financial and technical support; (1) *annual call for Zero Waste projects* to raise awareness about waste generation and encourage a sustainable lifestyle among citizens, (2) Impact Funds for the support of social and solidarity economy entities whose jobs contribute to social and ecological development, and (3) the local *Green Economy Awards* to recognise and reward companies whose operations are sustainable.

Évora, Portugal

General information

City population: **54,000**
Mayor: **Carlos Pinto de Sá**

Dreamstime / Clement Mantion Pierre Olivier

Strategy & governance

Although Évora does not have a specific circular economy strategy, the topics of sustainability and circularity are central to the city's municipal policies. They are particularly visible in the work of the Operational Services and Economic Development departments as well as the Education and Social Intervention and Youth and Sports Divisions.Together with 11 other municipalities in the Alentejo Central region, Évora shares a series of waste and recycling targets including achieving a recycling rate of 80%, achieving recovery of over 48kg of urban solid waste per inhabitant per year, and implementing the separate collection and processing of bio-waste by the end of 2023.

Key actions

- **Separate bio-waste collection from large producers** – in 2021 a separate bio-waste collection service was initiated for school canteens, and other large producers such as hospitals, restaurants, hotels and the Portuguese army. The organic waste is used in the production of an organic agricultural corrective "Alentejo Fertil" used in tree and shrub crops.

- **Mediterranean Seasonal School Menu** – To stimulate the local agro-economy, school menus have been adapted in six school canteens (covering 12 schools) with respect to seasonality and the use of local products, including the creation of a vegetarian menu. The work included training for canteen staff, awareness raising in the community and monitoring the satisfaction of the school community.

- **Short food supply chain** – Projeto Ervilha aims to promote a short local production and consumption circuit for vegetables and fruit through awareness raising sessions within the education community, as well as tackling food waste by forwarding any surplus foodstuffs for distribution to needy families in the union of parishes of Malagueira and Horta das Figueiras (promoting entity).

- **Eco-Schools project** – In 2020/2021, 23 schools in Évora took part in the international Eco-Escolas (Eco-Schools) sustainability education programme run by ABAE which included the theme of circular economy. Several students won awards for circular economy projects.

- **Locally sourced certification** – The Km0 Alentejo initiative is a certification system which aims to boost the consumption, production and transformation of locally sourced food products. The scheme certifies restaurants and food outlets, identifying food products which originate from within 50 km.

Freiburg, Germany

General information

City population: **230, 241**
Lord Mayor: **Martin W. W. Horn**


Unsplash / Marco Pregnolato

Strategy & governance

Freiburg has been a leader in resource efficiency and waste management for decades. In recent years, the city has shifted focus to waste prevention, reuse and repair, and engaging businesses and citizens to do their part for a circular transition in the city. Freiburg adopted its own 59 sustainability goals in 2017. Many of the 2030 targets relate to circularity, in particular; sustainable and fair public procurement, halving food waste, regional food supply, raising awareness for conscious consumption and behaviour patterns, reduced waste generation and reduction of CO_2 emissions by 60%. A full list of Indicators on Sustainable Development in the city can be found in the biannual local sustainability reports and numerous SDG related measures are listed on the municipality's website.

Key actions

- **Valorising Green Waste** – Freiburg aims to recycle the 12,000 tonnes of green waste generated annually on public and private land in the region, ensuring material and nutrient recovery. Part of the green waste is processed into quality certified compost and the woody part is processed into vegetable charcoal in the carbonisation plant. The quality of the plant charcoal produced allows it to be used as a feed additive or to improve soil.

- **Emission-free street cleaning and waste collection** – Freiburg's waste management company ASF has set its own circularity targets for 2030. They include resource conservation through waste avoidance, reuse and recycling and reduction of emissions through transport optimisation and emission-free transport. ASF began the switch to emission-free vehicles using battery and fuel cell-based drive systems in 2012. In 2021, Freiburg's streets were being cleaned with 7 electric flatbed vehicles and sweepers. By 2023, 12 more fuel-cell vehicles will have joined the fleet.

- **Governance of circular initiatives** – Through the GreenCycle Interreg project, Freiburg developed its Circular Economy Strategy. Further, using a developed toolkit for circular solutions and multi-stakeholder groups, the city piloted innovations for circular management of excavated soils. Thanks to active planning and management, soil excavated from the city's construction sites is being used in the construction of the streets and public spaces of a new urban development area, Dietenbach.

- **Circular Economy as a special topic in the local sustainability council** – In 2022, the local sustainability council which is chaired by the mayor Martin W. W. Horn and consists of 40 local decision makers from the fields of politics, economy, science and civil society, chose circular economy as its focus topic. Sector specific events on the circular economy will follow.

Genoa, Italy

General information

City population: **583,601**
Mayor: **Marco Bucci**

Unsplash / Dario Bronnimann

Strategy & governance

Genoa's Lighthouse City vision and Genoa 2050 Action Plan (approved in 2021) covers economic and social development, with a focus on climate action. The Action Plan is built on the following pillars; (1) Innovative Development of Infrastructures, Networks and Communications ("GREY"), (2) Sustainable Urban Regeneration ("GREEN") and (3) Community Enterprises ("SOFT"). The plan includes thematic focuses such as innovative land use planning, optimising and renewing infrastructures, creating multifunctional connections, innovative training and improving the governance of the city system for the future generations. Genoa's waste management company has an Industrial Plan with the target to close all resource loops by 2025 and the city is planning the development of a dedicated Circular Economy Strategy.

Key actions

- **Physical hubs for reuse** – The city of Genoa benefits from several reuse or 'surplus' centres, which serve to allow for sharing and repair of goods and engagement and exchange between citizens about the circular economy. Surplus centres are managed actively by associations in their respective neighbourhoods. The branding and design of the diverse physical locations are developed in collaboration with the university's architecture faculty.

- **Mapping circular businesses** – In addition to the surplus centres, the Refresh app developed as part of the European FORCE Project, represents an important tool for the dissemination of the culture of reuse and the circular economy in Genoa. The platform has facilitated the establishment of a real network of the many commercial and non-commercial entities that have made upcycling/recycling and reuse their distinctive features.

- **Repair cafe** – In 2017, a Repair Café for repairing household goods such as electronics and appliances was set up by the city in the Don Bosco Institute. Repair demonstration events were held to teach citizens about common repairs such as replacing the screen of a mobile phone or changing an outlet. Repaired goods included hairdryers, table and floor lamps, fans, desk calculators, power supplies for drill batteries, computers and televisions. About 1,200 people visited the Repair Café during its operation. If financeable, the city would reopen the café.

- **Gamification of plastic packaging collection** – PlastiPremia works to collect plastic packaging and raise awareness of the existence of compactor machines in public spaces. In the first year of use in Genoa, the 12 compactors collected 19 tonnes of plastic,corresponding to about 3 million bottles. PlastiPremia awarded over 15000 prizes to users such as public transport tickets and discount coupons for local businesses. The project is a collaboration between the city and national packaging industry representatives.

Ghent, Belgium

General information

City population: **264, 666**
Lord Mayor: **Mathias De Clercq**

Strategy & governance

Ghent's ambitions for a circular transition are stipulated in the city's Climate Action Plan 2020-2025. Building on a tradition of participation, the city of Ghent is taking action in collaboration with the private sector, the port, the university and its citizens. The Climate Action Plan aims to speed up the transition to a circular economy through actions including reinforcing small-scale circular initiatives in the city, and scaling up the circular economy through the Ghent Cleantech Regional Cluster, a partnership with the port, the university, Cleantech Flanders and the provincial government.

Key actions

- **Supporting circular solutions and businesses** – Circular kickstart is a coaching trajectory directed at start-ups and existing businesses to help them develop a sustainable and circular business model. The ultimate goal is for entrepreneurs across all sectors to commit to a sustainable and circular business. With Circuit Circulair, Ghent supports projects focusing on reusing and upcycling. Selected projects are awarded with a coaching process to develop their business plan and are provided with a subsidy to kick-off.

- **Co-creation of new circular value chains** – Ghent is coordinating the European project PLASTICITY which looks for new solutions for collecting, sorting and processing plastic waste together with cities in the Netherlands, France and the UK. The city is also taking part in the European URBCON project which aims to help reduce CO_2 emissions and the consumption of raw materials in the construction sector. URBCON aims to produce concrete out of industrial by-products and has a carbon capture element.

- **Repair cafés and sharing platforms** – The City in partnership with the local waste company IVAGO and the Public Centre for Social Welfare OCMW, joined forces to spread awareness about Repair Cafés under the name of 'Gent Repareert' (Ghent Repairs). In these cafés volunteers help repair items such as electronics, furniture, bicycles and textiles. Following their success, further initiatives are being developed such as Klusserette. Various sharing initiatives have also emerged such as a children's bike-loan service (Op Wielekes), a circular sharing platform that enables neighbours to borrow and lend household items (Peerby) and several car sharing and cargo bike sharing initiatives.

- **Low waste events and reusable cups** – Since 2018, the use of reusable cups is mandatory at "The Ghent Festivities" and the city encourages organisers of other events to switch to sustainable alternatives. The local waste company IVAGO provides a cup rental scheme that can be availed of. The city recently carried out a study exploring the use of reusable cups in 'Overpoort', Ghent's main students' entertainment district.

- **Social economy** – the city of Ghent supports social economy companies to take up a role in the circular economy. It encourages companies to explore new niche markets (circular hub for construction materials) and develop circular products. In 2021, the ESF funded project "Ghent Social Circular Hub" was launched to stimulate cooperation between the social and the circular economy.

Grenoble, France

General information

City population: **158.198**
Mayor: **Éric Piolle**


Pexels / Mikhail Nilov

Strategy & governance

The Municipality of Grenoble has piloted circular economy actions across multiple departments within the City administration. This approach enables the city to target a wide range of stakeholders including citizens, local businesses and industries, and to reach the social economy as well as the building sector. The city currently has a Master Plan 2020-2030 for repair and reuse. An overarching circular economy action plan is currently in development by the Grenoble Metropole and is expected to be delivered by the end of 2022. At the same time a framework for how to integrate circularity into public procurement is being developed.

Key actions

- **A site and cooperative for circular businesses** – Grenoble Alpes Métropole is actively supporting a a cooperative called Fabricanova which facilitates businesses in upscaling and marketing their circular services and products. Another initiative supported by the city is Pôle R, an 8,000m² site of buildings proposed to house a range of facilities for reuse, repair and recovery of materials, along with an incubator for circular startups.

- **Stepping up circular procurement** – Grenoble has committed itself to SPASER, a French national scheme for the promotion of socially responsible public procurement. The city will finalise the implementation of the plan within its organisation in 2022, aiming among other things, to reduce the city's carbon footprint, decrease waste production, improve the quality of materials in construction and renovation, increase vegetarian meal options in the city and build resilience to climate change.

- **Sustainable consumption at la Machinerie** – La Machinerie is a concierge service offered to a working-class neighbourhood in Grenoble. It provides residents of the neighbourhood with a community cafe, a concierge service desk, a second hand shop, a DIY workplace, a digital corner (to fight the digital divide) and a community fridge (to limit food waste). La Machinerie aims to contribute to the development of a more sustainable way of life by giving citizens access to education, resources and alternative economic activities.

- **New waste disposal centres** – Four new waste disposal centres in the Grenoble Metropole enable residents to donate objects that are easily repairable, so they can be given a 'second life'. In the first month of implementation a total of 1,200 objects were collected, 82% of which were successfully repaired.

Guimarães, Portugal

General information

City population: **158,124**
Mayor: **Domingos Bragança**

Unsplash / Bruno Martins

Strategy & governance

The Strategy for Circular Economy in Guimarães called RRRCICLO is an ambitious, innovative, and integrated approach to circularity, with measurable objectives translated into targeted actions. It includes an action plan to improve circularity in key sectors, an action plan for municipal waste management (2016-2025) as well as a communication plan to promote awareness and education on the value of waste. It was done with the support of a task force engaging several partners from civil society, academia and local and national institutions. Strategy targets include the goal of 55% municipal waste prepared for reuse and recycling by 2025, with this increasing to a minimum of 60% by 2030. The city also coordinates a quintuple helix governance ecosystem entitled "Guimarães 2030" through which the public sector, businesses, civil society and academia are engaged for the mission of achieving climate neutrality by 2030.

Key actions

- **Bio-waste Strategy** – Guimarães is expanding implementation of door-to-door organic waste collection for households and businesses, including community composting initiatives. The municipal bio-waste action plan foresees continuous improvement in this field to reduce waste generation, better manage collected waste and revalorise it locally. The city was also the first in Portugal since 2016 to implement Pay-as-you-throw waste charges for a fairer distribution of the costs of waste management.

- **Plastic-free municipality ambition** – The city uses its own procurement to prevent plastic in many public spheres including local food markets where to avoid the use of single-use plastic bags, citizens receive free cloth bags and vendors receive compostable bags. Compostable bags are also used in public litter bins and street sweeping services. Glass bottles are used at City Hall meetings, reusable cups are provided at public events and reusable water bottles are distributed in schools. The Aqualastic initiative raises awareness on how to reduce and prevent plastic pollution in waterways using art and innovative methods.

- **Environmental education** – The Urgezes Parish of Guimarães set up a circular hub which brings together actions of environmental education and awareness, practical workshops on reusing and valuing products and a bank for the collection and repair of products. The municipality also organises and hosts a second-hand market for household goods twice per month.

Haarlem, The Netherlands

General information

City population: **161,265**
(Metro area: **420,447**)
Mayor: **Jos Wienen**

Unsplash / Mark de Jong

Strategy & governance

Haarlem has developed an action plan entitled Haarlem Circulair 2040 which places engagement of citizens, businesses and other key stakeholders as a central objective. As part of the action plan, Haarlem has identified public procurement as a tool to implement the circular economy and has therefore also made this a central feature of its strategic procurement policy. Given the overarching goal, all departments of the city are expected to work towards the goal of being a circular city by 2040 including in the areas of finance, spatial planning and civil works.

Key actions

- **Circular and socially responsible procurement** – Haarlem has developed a procurement policy which sets goals related to local purchasing, circularity and socially responsible procurement. This was derived partly from the Roadmap for Circular Procurement and Commissioning and acknowledges the role that commissioning plays in achieving circular procurement goals. Progress towards this is measured by the percentage of procurements which are determined to be circular. Haarlem has set ambitious targets of 50% of all procurement being circular by 2025 and 100% by 2030.

- **Sustainability Budgeting** – all budget holders across the city's departments are obliged to work with a sustainability budget which considers the sustainability impacts of any new projects or investments. There are ambitions within the city to develop this further to also consider circularity as well as climate change.

- **Circular Business District (C-district)** – Haarlem stimulates a business district in the city which has a focus on circular business models. One of the focuses is on 3D printing and the c-district enables knowledge sharing and networking between businesses working in this sector.

- **Sustainable Food Sector** – The city is working to develop a sustainable food system by facilitating food-focused living labs. Haarlem works with the Cities2030 programme entitled Food2030 as well as Haarlem Food Future to further this agenda.

- **Construction Projects** – Haarlem seeks to enable a circular economy for construction material by requiring material passports for every project. This will not only facilitate more circular construction but also help develop the Artificial Intelligence (AI) sector in the region.

Helsinki, Finland

General information

City population: **658,864**
Mayor: **Juhana Vartiainen**


Unsplash / Juha

Strategy & governance

The City of Helsinki has developed an action plan for circular economy implementation entitled the Roadmap for Circular and Sharing Economy. This document which concerns the activities of each of the city's organisations is coordinated by its environmental services department and sets out actions that the city will take in relation to construction, procurement, green waste and the Sharing Economy. Each focus area has a defined circular economy goal for the year 2035, and various interval goals between the writing of the report and the 2035 date.

Key actions

- **Circular Economy Training** – The city delivered training on the topic of the circular economy to various stakeholder groups including personnel working in construction, the city's eco-support staff, and students in the city's vocational college and adult institute.

- **Construction** – Helsinki has organised a circular economy cluster programme on the theme of construction, promoting circularity and developing novel approaches to reuse and recycling of building materials. It has also created demolition instructions that incorporate key elements of the circular economy, for example the source segregation of demolition wastes. This will be further developed to provide guidance on pre-demolition audits and reuse. The city is responsibile for the coordination of land mass management to reduce traffic, emissions and costs associated with transporting material to landfills. In a project called Towards Carbon Neutral Municipalities and Regions (CANEMURE), Helsinki is working on sustainable public procurement including in procuring the best possible technical solution for renovating Hämeentie Street. This is estimated to save 27% of total emissions compared to a standard construction site. Cobble stones are also reused across the city. Helsinki is additionally an active member of the UUMA forum, which promotes the use of recovered materials in construction.

- **Bio-Waste** – The city is working to tackle food waste by working on both prevention and redistribution activities. It partners with Stadin Safka and the Parish Union of Helsinki to collect surplus food from schools, daycare centres and hospitals and redistribute it to residents. Additionally through the collection of composted green waste and top soil from construction sites, Helsinki is producing its own substrate which can then be used in its construction activities.

- **Promotion Activities** – Helsinki has participated in the preparation of a national strategic programme to promote a circular economy. It has also established a cross-sectoral circular economy network which meets several times a year for knowledge sharing and networking.

Høje-Taastrup, Denmark

General information

City population: **50,676**
Mayor: **Michael Ziegler**


City Loops

Strategy & governance

Social, economic and environmental sustainability is central to Høje-Taastrup's development strategy. This long-term strategy and work plan touches upon all parts of the municipality's services, activities, education and job opportunities and is supplemented by a number of sectoral plans including the Climate Plan aimed at achieving climate neutrality by 2030. A dedicated Sustainability Strategy is also being developed by the Environment Department in close collaboration with all city departments, citizens and the business community. The procurement strategy of the city focuses on professionalising public procurement and making it more sustainable.

Key actions

- **Construction and demolition waste as a resource** – As part of its involvement with the CityLoops project, Høje-Taastrup is developing different solutions and tools aimed at valorising construction and demolition waste. As such, the municipality is using crushed concrete from Taastrupgaard, a social housing area that is being redeveloped; as recycled aggregates in new concrete for the foundation structure of its new city hall. Excess soil from this excavation is in turn used for landscaping in Taastrupgaard where a new school is being built. Høje-Taastrup has also taken advantage of this project to engage with all stakeholders in order to unlock existing barriers to the circular transition in the construction sector.

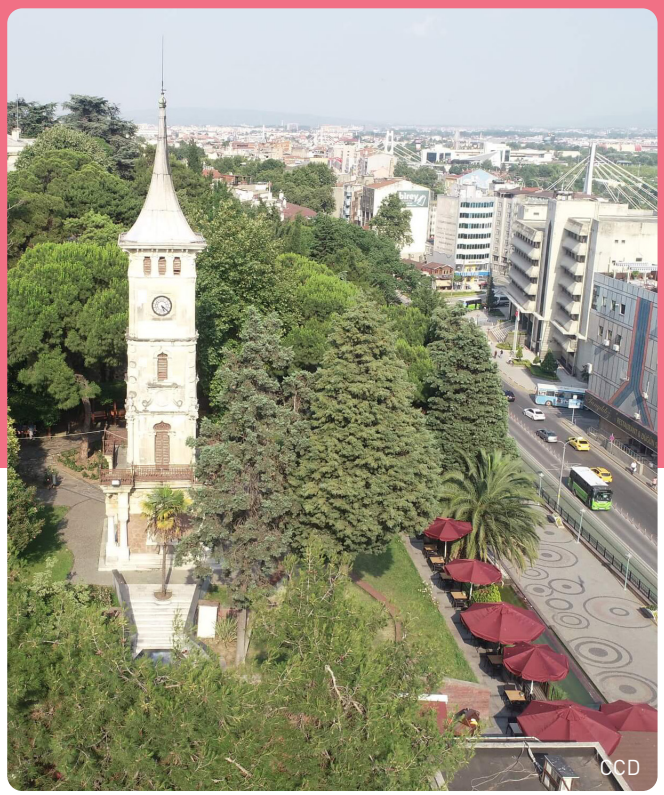
- **Circular public procurement** – The Sustainable Development Goals (SDGs) are strongly embedded in Høje-Taastrup's Procurement Strategy, particularly number 12 Responsible production and consumption. The use of procurement as a strategic lever to achieve more circularity can be observed in a number of public tenders including in the procurement of municipal employee uniforms where the reuse of existing uniforms is required.

- **Raising awareness within the city administration** – Høje-Taastrup is aware that awareness raising is a necessary step for the local transition to a circular economy. The municipality organised a virtual event attended by around 90 members of city administration staff on how the organisation can support a transition towards a circular economy.

Izmit, Turkey

General information

City population: **371,002**
Mayor: **Fatma Kaplan Hürriyet**



Strategy & governance

The city of Izmit has circular economy action goals including aiming to use different recycling methods to reduce the amount of waste going to landfill, raising awareness among citizens regarding recycling facilities available to them and encouraging local food production. In line with Izmit's Municipality Strategic Plan 2020 - 2024, the Municipality proposes to increase the total amount of waste recovered by at least 20% for five different waste types namely, packaging waste, textiles, electronics, batteries, and vegetable oil. Progress will be monitored by the Environment Protection and Control Directorate of the municipality.

Key actions

- **Improving separate waste collection** – Izmit Municipality and Izmit City Council have worked together to implement the "Children's Prize Market". It is a recycling and waste collection centre where residents can drop off their recyclable waste (for example batteries, electronics, glass) in exchange for toys and prizes for their children. Some items are brought to the centre by philanthropists. The aim of the project is to encourage the separate collection of waste from the source and promote and normalise recycling within the household.

- **An app for raising awareness** – The web-based and mobile application 'Izmit Çınar Atık' aims to raise awareness about the importance of recycling and to inform citizens about the projects which the municipality has already implemented. The application provides the locations of all the recycling points spread throughout the city. Citizens can see their closest recycling point, see the waste categories accepted, get directions and give feedback to the municipality.

- **Resilience in the local food system** – Wanting to increase local resilience and to support local farmers, Izmit aims to increase local agricultural production (e.g. + 30% for local wheat production) and in 2020, began to cultivate and produce a wide variety of summer and winter vegetables. The Çınar Public Market has also been integrated into this project in order to enable local producers to sell their products for real value and prevent price imbalances created by intermediaries.

- **Composting of green waste** – Green waste from the region is collected separately and used for compost production. In the Durhasan Neighbourhood, tree branches collected during the mowing of local parks and gardens are converted into compost fertiliser. The produced compost will be used as a soil improver for both parks and gardens of the Municipality.

Lappeenranta, Finland

General information

City population: **73,000**
Mayor: **Kimmo Jarva**


Dreamstime / Tatiana Savvateeva

Strategy & governance

The City of Lappeenranta approved its Circular Economy Road Map in 2021. The roadmap is expected to impact on all departments of the City's council and was produced by Greenreality Services and the regional Circwaste steering group. The stated aims of this road map focus on the sustainability aspect of wellbeing, the role that the environmental sector can play and the skills needed by businesses and civil society to ensure a successful transition towards circularity. The authors, Greenreality Services and Circwaste will be responsible for monitoring progress.

Key actions

- **Making urban infrastructure more sustainable** – As part of the Urban Infra Revolution project funded by the Urban Innovative Action initiative, Lappeenranta city along with local partners investigated and developed an innovative geopolymer composite material suitable for use in the Finish climate to replace virgin concrete in construction works. The project aims to reduce the carbon footprint of infrastructure by providing an alternative to virgin concrete. To enable the circular economy, new business models for construction based on local cooperation were developed. Many local stakeholders including Lappeenranta University of Technology, industry groups and city departments were involved. Development work for creation of industrial symbiosis and finding new uses for local waste streams is ongoing.

- **Circular Economy Design Event** – A knowledge sharing and capacity building event on the topic of design and marketing of circular products called UpCycle was organised by the city. The event also provides a platform to share ideas and examples of the circular economy, aiming to encourage further innovation within this sector.

- **Sustainability Watch** – As a demonstration of transparency regarding its climate and circular economy targets, Lappeenranta launched an online Sustainability watch website to show progress and activities contributing to seven key thematic circular economy topics including public procurement, land use planning, construction, recycling and waste management, nutrient recycling, and sharing economy and smart services. The website includes 27 circular economy (CE) actions based on the city's CE road map and 99 climate actions based on the city's climate programme.

- **Valorising wastewater sludge into biogas** – The biogas plant in Kukkuroinmäki uses municipal bio-wastes and wastewater sludges to produce zero-emission fuel which is used for public transportation. There are 5 delivery stations in the region of South Karelia and all of the waste trucks as well as some of the local buses and private cars run on the biogas.

La Spezia, Italy

General information

City population: **93,678**
Mayor: **Pierluigi Peracchini**

Unsplash / Alex Ghizila

Strategy & governance

La Spezia does not yet have a dedicated circular economy action plan. The city development strategy includes dedicated actions regarding waste, water, mobility, energy, construction and demolition. Two municipal departments, Mobility & Energy and Environment and Spatial Planning & Construction, collaborate for the development of circular initiatives in the territory under strategic coordination to align with both local economic development and EU policies. Initiatives are monitored using indicators under both strategic and management control systems on a biannual basis.

Key actions

- **Awareness raising about waste management** – The city carried out communication campaigns targeted at trade citizens in areas with door-to-door collection to ensure proper separation of 5 waste fractions. Meetings were also held to engage local trade associations on the waste separation. Information campaigns have also been set up to encourage home composting, including a digital training course for beginner composters and a digital educational kit for primary and middle schools.

- **Shared mobility** – The city is undertaking multiple projects for lower-emission shared mobility options including the expansion and electrification of public transport, specifically trains and buses. The 'Speziainbici' shared bike service is being strengthened by the introduction of more stations, electric bike charging and repair tools and the expansion of the network of cycle paths and bike racks.

- **Energy and Water efficiency** – The municipality joined framework agreements for the supply of gas and electricity by introducing Capacity Allocation Mechanisms (CAM). The agreements provide for defined energy savings, energy diagnosis and energy requalification. Energy saving actions include the replacement of public lighting and traffic lights with LED lights and the replacement of thermal systems in public buildings with high-performance systems. Water saving measures have been integrated into the municipal building regulations which require new construction and renovation projects to install equipment to regulate the flow of water and in the case of projects with green areas over 100 m^2, the use of rainwater collected from roofs for the irrigation of greenery and the cleaning of paved areas.

Leuven, Belgium

General information

City population: **101,396**
Mayor: **Mohamed Ridouani**


Unsplash / Kevin Liebens

Strategy & governance

Leuven has a circular economy strategy which has been developed within the framework of its urban circular strategy platform "Platform Leuven Circular". Leuven Circular is the steering group of the platform and comprises representatives from across the city's main stakeholder groups. The circular economy strategy is built around 5 strategic objectives including circular entrepreneurship, sustainable and circular consumption and policy work. For each objective, targets and actions are set out, defined in close collaboration with key stakeholders within the Platform Leuven Circular. As a city, Leuven attributes much of its success to the power of collaboration, acknowledging that government, academia, industry and civil society cannot be separated. Leuven 2030, is a city-wide network working towards climate-neutrality through projects such as its Roadmap to achieve carbon neutrality.

Key actions

- **Repair Hubs** – The city and Maakbaar Leuven are involved in running a digital platform called LeuvenFixt to support residents in accessing repair services. Another related initiative is Repair Connects where citizens can register broken devices and receive repair advice. There is a physical space where repairers can experiment with spare parts and citizens can come to fix a broken device together with a voluntary repairer or use the provided tools and repair the device themselves. These projects have been amplified by the INTERREG ShareRepair project.

- **Circular Hubs for entrepreneurs** – C3000 was set up as a circular hub for circular and social entrepreneurship (including training modules and a desk counter to support companies, start-ups and organisations on circularity). It focuses on valorisation of waste streams such as plastic & textile). The aim is to connect sustainability ambitions to the strategic policy choices of the City of Leuven.

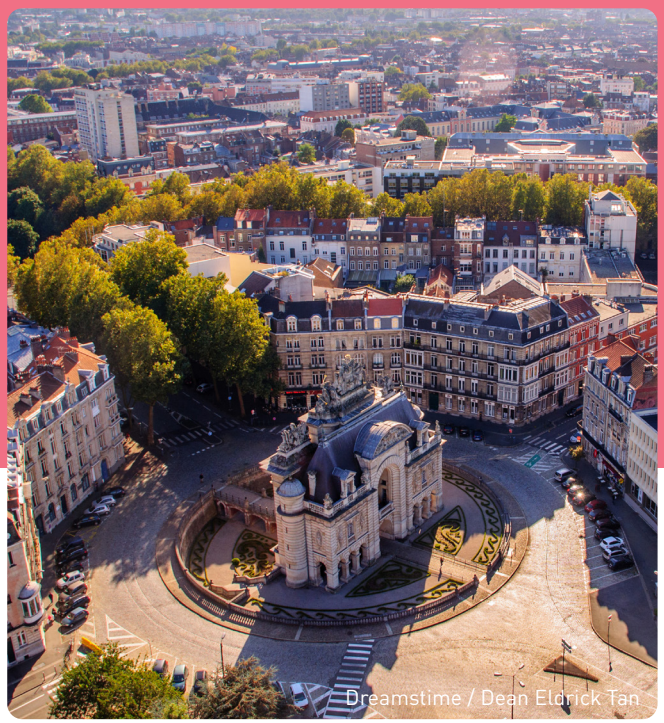
- **Building materials bank** – Leuven is mapping the material and waste streams used and generated in the city, with an eye on economic valorization and closing loops. The objective is to reduce the use of primary raw materials and contribute to the city's climate ambitions. The city also established the Building Material Platform, operated by local NGO Atelier Circuler, where individuals and companies can purchase or return recycled or reclaimed building materials. The materials bank has been used as a case study in a paper from KU Leuven researchers on bottom-up monitoring approaches.

- **A Circular Makerspace** – Maakleerplek is a circular makerspace in Leuven which connects educational, business and creative actors in an open space. Maakleerplek comprises a Low Tech Lab, an open studio and wood workshop connected to the materials bank, as well as a High Tech Lab, focusing on the plastic waste stream and following the Precious Plastic approach. No waste will be a basic housekeeping rule of the makerspace.

Lille Metropole, France

General information

City population: **1,179,050**
Mayor: **Damien Castelain**


Dreamstime / Dean Elrick Tan

Strategy & governance

The Métropole Européenne de Lille (MEL) has developed a number of action plans and policies to support its transition towards a circular economy. These include a Circular Economy Strategy, a Blueprint on Household Waste, a Local Household Waste Prevention Programme, and a Climate and Energy Action Plan. Many departments of the council contribute to these, in particular the Economic Development Department and the Department for the SECAP. Within the Circular Economy Strategy, targets are broken down by waste stream and includes a 15% reduction of household waste and 50% reduction of bio-waste by 2050.

Key actions

- **Circular Construction** – The metropole has committed to using dredged sediments from local canals for construction projects. Initiated by the Hauts-de-France region, this initiative saw 500 tonnes of sediment used to backfill a sewage trench, create a parking lot and convert public spaces into a town centre. The metropole has also set up META,a materials bank to store, process and commercialise secondary raw materials at metropolitan level.

- **Crowdfunding for entrepreneurs** – MEL Makers is a crowdfunding campaign to finance local start-ups which focussed its 3rd edition on projects participating in the circular economy. The campaign, which collected € 60,000 from 932 contributors, is supporting 10 entrepreneurs adopting “upcycling” methods.

- **Local food focus** – The metropole adopted a Local Food Strategy in 2020 aimed at making the local food system more circular and resilient. More recently, it launched a call for expressions of interest to further the sustainable food sector in the region, encouraging local production and consumption. Different strands of this call related to nutrition, packaging, logistics and reducing food waste.

- **Circular fashion** – The metropole is supporting research and innovation on topics such as traceability and recyclability in the textile stream with the CETI innovation hub and cluster. It is now preparing the launch of the European circular fashion trophies (France-Belgium-The Netherlands), aimed at giving visibility and rewarding organisations who act to limit the impacts of the textile industry.

- **Heat recovery for district heating** – As part of the “Heat Highway” project, the metropole is setting up a 20 km-long pipe network to connect the existing district heating system to its local waste incinerator (which until now has only been generating power), in order to phase out a coal-fired power station, thus improving air quality and reducing greenhouse gas (GHG) emissions.

Ljubljana, Slovenia

General information

City population: **295,000**
Mayor: **Zoran Janković**

Pexels / Blaž Gostinčar

Strategy & governance

The municipality of Ljubljana has prepared its Circular Economy Strategy in co-creation with over 80 different stakeholders including all city-departments, public institutions and public companies. The process was led by a circular economy manager, who is also responsible for the strategy implementation. It includes the following four priority areas; single use plastics, food loss and waste, textiles and waste electrical and electronic equipment (WEEE). Ambitious targets are set for the year 2027.

Key actions

- **Circular administration** – Considered as one of the pioneer cities in the field of circular economy, Ljubljana wants its administration employees to be a role model for citizens. As such, the municipality has been organising internal Circular Challenges, encouraging employees to commute by bike, reuse or upcycle old pieces of furniture and reduce the amount of food waste generated in public canteens. These challenges aim to strengthen "circular thinking" and decision-making within the administration in a simple and socially responsible way.

- **Involving citizens in the circular transition** – Public participation is a key enabler to the long-term success of Ljubljana's circular transition and as such it forms a core part of several projects. In APPLAUSE (supported by the Urban Innovative Actions programme), the municipality encourages citizens, through large-scale educational and awareness raising campaigns, to harvest invasive alien plant species for production of various innovative bio-based materials. Likewise when the city hosted the UEFA European Under-21 Championship in 2021, citizens, schools and sport clubs were asked to donate worn out footballs for use as urban decorations and flower pots to decorate the streets. After the championships they were donated finally as toys to animal shelters and zoos. Additional Library of THINGS were established in two Youth Centres, thus supporting citizens on their circular transformation.

- **Industrial symbiosis** – Public company Energetika Ljubljana is using the excess heat from the company Lek for district heating. By using less fuel both partners facilitated a reduction of annual CO_2 emissions by 1000 tonnes. The amount of heat generated provides heating or domestic hot-water for around 300 apartments, and is equivalent to saving over 20 Olympic swimming pools-worth of water. The project represents a new good practice of circularity in Ljubljana, connecting two different industries – pharmacy and energy.

- **Digitalisation and open data** – Ljubljana is participating in several European projects in this area such as CIRCULAR4.0 and DEAS, aiming to strengthen digitalisation processes by SMEs to foster innovation processes and to improve the value of using open data for public service and business, in order to accelerate the transition to the circular economy in Alpine Space.

- **International collaboration** – Ljubljana was chosen as one of the 100 Climate-Neutral and Smart Cities within the mission call of the European Commission in the framework of the Climate-Neutral and Smart Cities Mission. Ljubljana is also co-chairing the Eurocities' working group on waste.

Loures, Portugal

General information

City population: **201,646**
Mayor: **Ricardo Leão**

Strategy & governance

While Loures does not have a strategy dedicated to the circular economy, the topic is addressed throughout city strategies relating to environmental and sustainable policies. The Environmental Education Plan and the Climate Change Adaptation Plan have set circular actions for the next 5 years, and have identified indicators and communication objectives related to these actions. In 2023, the city will start monitoring its Climate Change Adaptation Plan, launch a Water Sustainability Plan and create a workforce that will develop a sustainability framework. This framework will also include circular economy topics.

Key actions

- **Mobile environmental education** – With the LRS 360° project, Loures wants to educate and raise awareness among school children about the circular economy and the environment. The project carries out actions at schools in the Municipality, with the aim to build sustainable consumption habits and increase the recycling and reuse of materials. Activities include viewing a short 3D film about the life cycle of packaging and visiting a waste packaging deposit.

- **Home composting in suburban and rural areas** – The "Compostar outra forma de Reciclar" initiative focuses on the recovery of organic waste, as well as the reduction of organic waste sent to landfills or incinerators.Targeting houses with gardens in the suburban and rural areas of the Municipality, the project provided interested participants with a composter, a shovel, a set of ecopoints, 20 seedlings for planting and a training session on domestic composting. To date, 871 people have received training and the Municipality estimates that this has led to a 40% reduction of bio-waste present in mixed municipal solid waste.

- **Collecting and recycling cooking oil** – The Municipality has equipped cooking oil collectors, installed in the various city parishes, with a sensor system. This system allows remote monitoring of the filling level of containers, contributing to an optimization of the collection process and avoiding more than one ton of CO_2 emissions per year. Each oil collector has a QR Code which informs citizens of the filling level. Loures has an environmental education program associated with this network, called "Vamos dar o litro" (let's give the litre), with a contest and a prize for the school that collects the most oil.

- **Recycling cigarette butts** – On average 7,000 cigarette butts per minute are thrown to the ground, a total of approximately 10 million per day in Portugal alone. Due to their lightweight, the butts are transported by rainwater, following the watercourse into waterways and ending up in the ocean. With Eco.beatas, Loures collects cigarette butts and aims to explore whether this waste can be transformed into raw material for product production.

Malmö, Sweden

General information

City population: **344,166**
Mayor: **Katrin Stjernfeldt Jammeh**

Dreamstime / Markovskiy

Strategy & governance

The circular transition forms an integral part of the city of Malmö's Environmental Programme, a strategic set of documents which lays out the direction of the city's long-term work regarding environmental issues. This Environmental Programme sets out a number of overarching goals such as achieving net zero emissions, increasing biodiversity and increasing resources efficiency. The programme is complemented by sectoral plans such as the Waste and eco-cycle plan 2021 - 2030 for waste management. All departments and municipally-controlled entities are responsible for fulfilling the goals and regularly report on progress made.

Key actions

- **Procurement of circular signs** – A long-time member of the Procura + network, Malmö takes into consideration the whole life-cycle of goods and services in its procurement policy. Within the INTERREG ProCirc project, the municipality is piloting a new procurement process for signs and navigation (e.g. signs for buildings) that takes their end-of-life into account, promoting reuse first,either by the city or the supplier, and if not possible recycling.

- **Circular construction** – Committed to a more sustainable construction sector, Malmö looking to drive the development of a local market for recycled building materials by implementing a number of pilot projects locally. The city is also involved in a number of national initiatives, such as Centrum för cirkulärt byggande - CCBuild, which brings different stakeholders together to foster circularity and push the sector to become carbon-neutral by 2030. The city engages with local businesses through LMF30, another initiative that aims to create a shared vision at the local level aligned with the Sustainable Development Goals (SDGs) and build discussion on circular topics including construction materials, business models, building design and carbon-neutral maintenance.

- **Sharing economy** – Malmö considers developing the sharing economy as a way to improve resource efficiency and close the loop on a number of strategic waste streams. The sharing economy is at the core of an open-source platform the city has developed, where citizens can find a wide range of sharing solutions, items, and services at a low cost. The concept is also central to the Sege Park redevelopment project, through which a number of initiatives have been set up to promote the sharing economy to residents and further engage them in participatory planning, events and public discussion.

- **Recycling textiles** – To improve circularity in a sector that for now remains mostly linear, Sysav, a South Scania waste company, has set-up the world's first large-scale facility for treating textile waste; Siptex. At the facility, textiles are sorted by colour and fibre composition using near-infrared light. This makes it possible to handle large flows and produce textile fractions that are adapted to different recycling processes.

Maribor, Slovenia

General information

City population: **113,778**
Mayor: **Aleksander Saša Arsenovič**

Unsplash / Leonhard Niederwimmer

Strategy & governance

The city of Maribor approved a Circular Economy Strategy in 2018. Maribor's unique governance model for the local circular transition brings together public companies for waste, utilities and public services, the municipality and the circular innovation agency W-Cycle as steering entities. Circularity is seen as an economic model for the efficient management of resources in Maribor and the city actively engages in international and European networks to learn and exchange further. Maribor's circular initiatives cover several sectors, including waste management, construction, energy, mobility, water, planning as well as the social economy.

Key actions

- Urban Soil for Food – This project aimed to make use of urban bio- and mineral waste to produce quality soil to be used in urban gardens, landscaping and construction. This innovative method for the production of safe, certified soil was piloted in four urban gardens on unused municipal land, also contributing to food self-sufficiency and regional, seasonal consumption. An agri-living lab will be established alongside the urban gardens to further support economic development and innovation.

- **Re-use Event** – As part of the European Waste Reduction Week 2021, Maribor hosted a 2-day public festival to raise citizen awareness and encourage active participation of circular consumption by asking people to bring and donate their unwanted products (like books, textiles, toys), use of a mobile electronics repair station, distribution of reusable cups and ecological seeds.

- **City Water Circles** – This project has the goal to reform outdated urban water infrastructure systems with circular principles by promoting a water saving culture. Techniques include adopting urban rainwater harvesting and utilisation as well as greywater recovery measures at city level. The pilot action will demonstrate the potential of using treated wastewater and rainwater to produce secondary raw materials (SRM)-based construction products. Materials produced from recycled water will be used for road maintenance works.

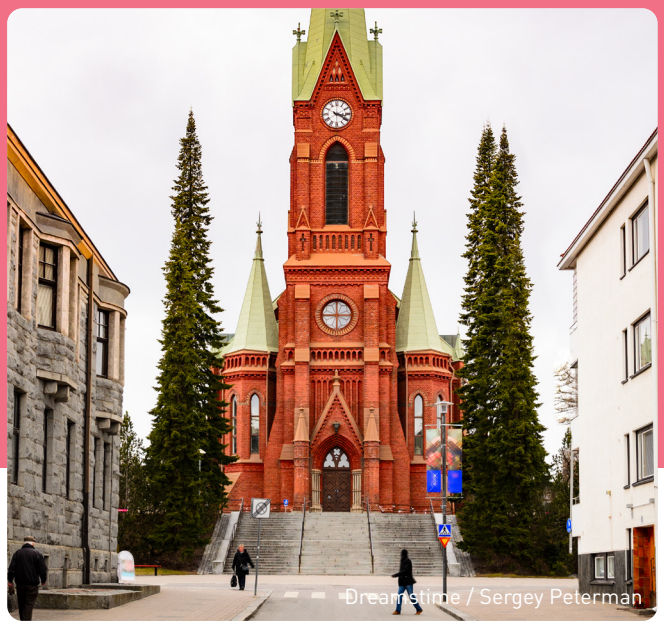
- **Education for Sustainable Food and Nutrition** – As part of the European Union's Development Education and Awareness Raising Programme, Maribor is working to raise awareness amongst young people about the importance of sourcing locally grown food in the context of sustainable eating. In Food Wave, activities involving local youth organisations aim to encourage self-preparation and avoid fast, often unhealthy diets.

- **Citizen Involvement** – Maribor organised an online peer review to tackle the city's policy challenge on circular economy citizen engagement. Thematic experts and six peers shared their experience and provided recommendations such as long-term citizen involvement and creating a holistic strategy for citizen participation.

Mikkeli, Finland

General information

City population: **52,121**
Mayor: **Janne Kinnunen**


Dreamstime / Sergey Peterman

Strategy & governance

As part of the City Strategy, the Climate Programme was approved in November 2021 via Mikkeli council deliberations. The whole organisation is involved in its delivery from food services, real estate, procurement and environmental services. The Climate Programme is governed by the Environmental Council. Mikkeli's central target is to achieve climate neutrality by 2035. To achieve this there are specific targets related to the construction and demolition waste, bio-waste and procurement. Progress is monitored in relation to each target area. For bio-waste, metrics include greenhouse gas emissions from waste management / year (CO_2 eq), shares of recovery fractions and bio-waste in the total amount of waste, and biogas production and sales (tonnes / euro / year).

Key actions

- **Circular construction** – Within the Horizon 2020-funded CityLoops project, Mikkeli has been applying pre-demolition audits and selective demolition approaches to boost the regional recycling and reuse of construction materials. A drone-based building scanning methodology is also being developed to identify and track construction material flows. The Finnish RAPURC project also focuses on promoting business opportunities and models for the reuse of construction materials and components.

- **Bio-waste** – Within CityLoops, Mikkeli is carrying out demonstration projects aimed at a) improving the quality and quantity of separate bio-waste collection, and b) testing a number of treatment and valorisation approaches for the waste collected. The city is also looking to adjust procurement processes to promote a more circular bio-waste sector. The NGO "Support from welfare organisations in South Savo", reduces food waste and builds community spirit by serving free communal lunches made from food unused in five local schools. The NGO ViaDia Mikkeli reduces the grocery shop waste by distributing unused food in fabric bags to people in need. The funding comes from ViaDia's own recycling and reusing business.

- **Recycling Centre** – KIEPPI The city of Mikkeli has implemented additional identification and sorting of waste sourced from residents and small businesses in order to improve recovery of recyclables.

- **Wastewater management** – Blue Economy Mikkeli (BEM) centre of expertise is a strategic development platform of the city in wastewater management. The new wastewater treatment plant is utilised for developing solutions for wastewater reclamation, sludge valorisation, energy recovery and digital smart water solutions. BEM is a part of the Ecosystem Agreements Programme (2021 - 2027) by the State of Finland.

- **Biogas production from local resources** – Etelä-Savon Energia Oy (South-Savo Energy Ltd) produces biogas in two power plants. The raw material for biogas is agricultural side streams, manure, wastewater and bio-waste. In addition to fuel, the final product is soil conditioner and fertiliser.

Murcia, Spain

General information

City population: **447,182**
Mayor: **José Antonio Serrano Martínez**

Dreamstime / Tupungato

Strategy & governance

Murcia has a comprehensive Circular Economy Strategy which acts as an action plan for its activities and circular targets. This strategy cuts across all departments of the city council and includes other public entities, business and residents. Those departments with the most influence in Murcia are subject to monitoring and follow up,including the departments of tourism, trade and agriculture. The governance plan in the strategy (Section 5) defines the roles and relationships between stakeholders to effective implementation. The city will lead on the implementation of the strategy, creating various bodies as required. Circular economy goals and targets are set out in the MCES, this includes the overarching target of achieving 100% circularity by 2050.

Key actions

- **Bio-waste** – Murcia is currently participating in a large number of projects which seek to tackle food waste and promote a circular economy for bio-waste.
  - The VALUEWASTE project is focused on developing a system for urban bio-waste valorisation through different value chains, such as proteins and fertilisers.
  - Within the HOOP project Murcia is creating an online platform for knowledge exchange between like-minded cities to help support the implementation of large scale circular bio-waste projects. As part of the HOOP project, Murcia is also a member of BiowasteClub and participates biannually in workshops on the topic of bio-waste with seven other participating cities.
  - Murcia participates in the LifeEnrich project which aims to maximise the use of nutrients from wastewater sources by using them as fertilisers.
  - Murcia is also a replication zone within the CityLoops project, which is demonstrating a series of innovative tools and urban planning approaches, aimed at promoting circularity for the bio-waste and construction and demolition waste (CDW) material streams.
- **Regional networking** – At the "Circular Economy Fair", Murcia arranged more than 80 workshops, presentations, round-table events and speeches. Murcia brought together experts, politicians, private companies, non-profit companies, universities and citizens.The city also arranged for a public Hub to be set up for private companies operating in the circular economy, providing assistance to help them develop their circular initiatives.

Oslo, Norway

General information

City population: **702,543**
Mayor: **Marianne Borgen**

Unsplash / Oliver Cole

Strategy & governance

Circular economy principles are fully integrated into many of the municipality's planning documents such as the Climate Strategy, the Strategy for Future Consumption and the Action plan for reduced plastic pollution of the Oslo Fjord. Technical and environmental experts are involved in the areas of waste and resources while actions are overseen by the Department of Environment and Transport. Measures related to the circular economy are reported annually within Oslo's climate budget.

Key actions

- **Developing circular indicators** – The city of Oslo is currently collaborating with three research institutions to establish a set of indicators to monitor the development of sustainable and reduced consumption in Oslo. The set of indicators will look at the 5 waste streams identified in the Strategy for Future Consumption; food, plastics, electronics, textiles and building and construction materials, as well as considering climate accounts for indirect/ consumption based emissions such as mobility. It will encompass all activities from the Oslo city administration as well as from citizens and businesses.

- **Resources centres** – Oslo is involved in the Resourceful Cities project. The project aims to support the development of "resources centres" which are physical spaces where citizens, businesses, researchers and the public sector can connect and co-create to close local resource loops and promote waste prevention, reuse, repair and recycling. Vollebekk Factories is a resource centre which provides affordable production and office spaces for entrepreneurs developing and testing circular solutions.

- **Circular Economy Partnership** – From 2017 to 2021, Oslo coordinated the Circular Economy Partnership, an initiative of the European Urban Agenda which involves a number of cities, member states and european institutions and aims to stimulate the reuse, repair, refurbishment and recycling of existing materials and products to promote new growth and job opportunities. With a focus on closing material loops, the sharing economy, and resource efficiency, the Partnership identified 12 actions and recommendations to be put forward to the EU, Member States and cities.

- **Valorising wastewater sludge into biogas** – On top of purifying wastewater from over 600,000 inhabitants and thus contributing to making the Oslofjord cleaner, the VEAS facility located south of Oslo valorises sewage sludge into biofertilizers and soil improvers whilst also producing biogas for energy production and fueling local buses.

Oulu, Finland

General information

City population: **209,648**
Mayor: **Päivi Laajala**

Dreamstime / Hilda Weges

Strategy & governance

The municipality of Oulu approved a circular economy roadmap in June 2021. The main focus areas of the roadmap are energy production and energy efficiency, construction and demolition, material flows and food systems. For all these areas the city has set clear, communicable targets. Between 2020 and 2030, it wants to decrease the use of fossil fuels by 60 - 80% and increase energy efficiency by 30%. A target is set to achieve 0% edible food waste by 2030. The city plans to systematically raise the recycling rate of municipal waste, but can report good successes in the recycling rates of construction and demolition waste, and sewage sludge, at 75% and 100% respectively. The city wants to further promote the Sharing Economy to lead to a more effective use of resources.

Key actions

- **Circular city planning and construction** – Within the Tahkokangas district development project a number of measures are being taken to promote circular planning and construction practices, in particular increasing the use of secondary materials.The project will also pilot circular demolition processes. A Circular Economy Manual will be produced, aimed at implementing these measures in future projects.

- **Circular education** – Oulu has created a circular economy guide for schools, to help children engage with the concept of sustainable living, and focuses on teaching transversal competences. The city believes that these skills are necessary for the circular economy of the future.

- **Circular economy store** – Within the CircHubs 2 project Oulu is creating a "circular economy store" concept - a new type of operating and service platform that can deploy service concepts with the principles of the circular economy and sustainable development. The target is to create an operation model that leads to the creation of a solidified "circular economy store". At the store customers will purchase upcycled products, use sharing economy services and repair their own products.

- **Reducing food waste & supporting job creation** – The Prikka kiertoon project aims to create a new system for promoting the use of food waste in Oulu. The food waste is collected from stores and other donors, sorted and distributed to food aid operators. The project also focuses on job creation in the circular economy, in particular in low-threshold tasks. The primary target groups for this are the unemployed, those at risk of unemployment and those in a vulnerable position outside the labour market.

Picanya, Spain

General information

City population: **11,409**
Mayor: **Josep Almenar i Navarro**

Strategy & governance

Picanya does not yet have a dedicated Circular City strategy, however all municipal areas, including the Mayor's office, European Projects Office, Sustainability, Rehabilitation and Maintenance Area, collaborate to coordinate the integration of circularity into public policies and monitor implementation. This ensures alignment with the Sustainable Development Goals. Local development goals are set in terms of compliance with the 2030 Agenda for the municipality.

Key actions

- **Waste management** – Awareness campaigns target improved selective collection for urban solid waste, including the use of recycling parks. A mobile 'eco-parc' promotes the collection of small electrical appliances and household goods for repair and reuse. Further, the local waste collection company runs a second-hand shop providing door-to-door collection of unwanted and bulky household goods.

- **Renewable energy rebates** – Picanya offers municipal tax rebates to encourage the installation of renewable energy self-consumption systems in households and commercial buildings. For those who install PV panels on their building, there is a 95% discount on the Constructions, Installations and Works (ICIO) Tax, akin to the fee for a construction permit. Further, there is a 50% discount on the municipal property tax (IBI) for homes, or 25% discount for businesses, for the year following the installation.

- **Sustainable mobility** – Picanya published a **free guide to the local cycle lanes** with suggested tours promoting cultural heritage and natural resources. Electric vehicle charging points are installed around the city.

- **Citizen engagement** – To involve citizens actively in more sustainable lifestyles and consumption behaviour, the city's initiatives include organising used book exchange points called 'Libros Libres', providing fresh and seasonal food in the school canteens, distributing reusable and recycled bags and takeout containers to markets and commerce and promotion of **buying from local shops**.

- **Public procurement** – Public buildings are being renovated to improve energy efficiency, including solar panel installation on roofs. Paper and event supplies in the public administration are procured considering secondary material content and minimal environmental impact.

Porto, Portugal

General information

City population: **231,962**
Mayor: **Rui Moreira**


Unsplash / Gyovannazeredo

Strategy & governance

Porto has developed a "Roadmap to a circular city" plan which sets out its ambitions for a circular transition across a number of themes including the food system. The responsibility for implementing this plan sits with the Environmental Planning and Management Department but many other departments are key stakeholders, including the Green Structure Municipal Office. The strategy is structured around four areas; production and consumption, natural resources and environmental balance, circular constructions and sharing resources and waste prevention and management. While these themes are linked to eight of the Sustainable Development Goals (SDGs), there are also clear links with relevant European and National policies, directives and targets. Porto reports its progress through many mechanisms including voluntary commitments (Circular Cities Declaration, Carbon Disclosure Project), and local and national statutory reporting.

Key actions

- **European Funded Initiatives in the Food sector** – Porto's work with projects funded at the European level includes CityLoops, FoodLoop (through CityLoops), Good Food Hubs, INTHERWASTE and ECOVAL. With varying focuses and levers, these projects all contribute to the creation of a circular economy for organic waste in the region and the reduction of food waste. FoodLoop, for example, is a competition Porto promoted to encourage the application of circular ideas and business models for the food system in the city and in the region.

- **Local initiatives in the Food sector** – At a local level, Porto has developed many circular initiatives including Organic Products Market, Municipal Network of Solidarity Restaurants, Organico, Home and Community Composting and Municipal Urban Vegetable Gardens.

- **Sustainable Procurement Policy** – beyond organic waste, Porto aims to develop a roadmap and political guidelines for sustainable public procurement to guide the process of service and product acquisition in the municipality, and had already set up an internal cross-departmental task force to carry out the co-construction of a Sustainable Public Procurement Policy, including circular principles.

- **Water treatment infrastructure** – The municipality is investing to upgrade the water treatment infrastructure to include reuse of treated wastewater, recovery of nutrients and the elimination of micropollutants.

- **Computer recycling and sharing** – Through citizen and stakeholder engagement, Porto is educating its citizens on repair markets. A local network has been implemented to train citizens to repair donated computers which are in turn donated to citizens in financial and technological vulnerability (ReBOOT initiative).

Prague, Czechia

General information

City population: **1,275,406**
Mayor: **Zdeněk Hřib**


Unsplash / Ouael Ben Salah

Strategy & governance

Prague has developed the Circular Prague 2030 strategy, which is part of the wider Prague Climate Plan 2030. The plan was developed based on a metabolic city scan of Prague carried out by the organisation "Circle Economy". While supervised by the Deputy Mayor for the Environment, it is the Department for Environmental Protection of Prague city hall that is responsible for its implementation.The aim of the Prague Climate Plan 2030 is to transform the city into a climate responsible and environmentally friendly metropolis. There are 69 measures within the plan including a CO_2 reduction target of 45% of 2010 levels by 2030.Biannual implementation plans are issued and monitoring of progress against the targets and actions in the plans is required on a yearly basis.

Key actions

- Circular Prague 2030 – This is the main strategic document of the City of Prague for the transition toward a circular economy, adopted in January 2022. The strategy contains strategic and specific goals with 34 project cards in 7 main areas: Construction, Water, Food,Waste, Procurement, Business and Governance.

- **Climate Action Plan 2023-2026** – The aim of Prague's climate action plan is to elaborate on concrete implementation steps based on the Circular Prague 2030 strategy. It should represent a compact and easily understandable document containing timelines and monitoring indicators, and detail individual circular projects including identifying the responsible organisations and outlining the budget.

- **Reuse, Repair and Refurbishment** – Prague has a comprehensive plan to meet the 3 Rs (reduce, reuse, recycle). 3 REUSE points have been set up around the city, 1 furniture bank has been established and "Green Sunday REUSE" meetups are held on a monthly basis in various city districts. Currently a circular map to inform residents about the management of bulky waste and end destinations for specific wastes is being developed.

- Closed Loop Biomass Processing – In 2021 Prague implemented a food waste collection system for households. 15,000 of 90,000 collection points have registered for an organic waste bin so far. A pilot is now being run to collect non-compostable food waste. Additionally, Prague has purchased a biogas plant and plans to develop a state-of-the-art circular biomass centre on the outskirts of the city.

- Circular Packaging – Prague's goal is to separate at source 65% of post-consumer packaging waste produced per year by 2030. While this would require a substantial increase from the current rate achieved of 31%. It is hoped that improving kerbside collection of plastics, metals and cartons will enable this. Prague is currently opening up a state-of-the-art waste separation facility, supported by city-wide communication campaigns and a ban on single use plastics.

Roskilde, Denmark

General information

City population: **51,793**
Mayor: **Thomas Bredam**


Unsplash / Daniel Marshall

Strategy & governance

Sustainability is a core theme of Roskilde's recently developed Property Strategy which centres on economic, environmental and social qualities. This means for example that projects worth more than one million euros must be preceded by life cycle analysis (LCA) and life cycle costing (LCC) studies. This strategy, which has generated wide political backing, places circular principles at the forefront of all new building projects and sets the scene for some of the city's ambitious forthcoming objectives; namely raising re-use and recycling rates by 2030 and ensuring that construction in the city is both circular and profitable. The city also has targets in place relating to the LCA/LCC commitments, requirements for durability within design and climate neutrality across the municipality including within the heating network.

Key actions

- **Design for Disassembly** – The City of Roskilde constructed a new parking garage for 240 cars with the principles of 'designing for disassembly' considered throughout. In addition, more than 1000 tonnes of concrete found at the site were reused in the construction, primarily as aggregate material (backfilling).

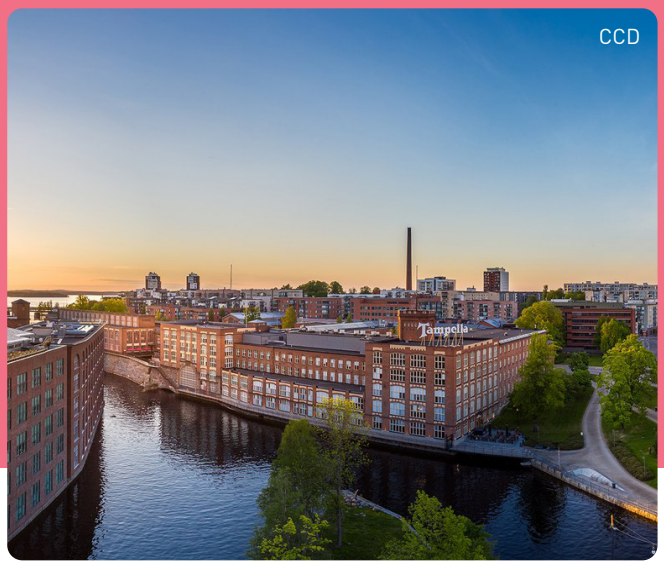
- **Resource Efficient Construction Projects** – Construction of waste sheds in the development of the Musicon Area involved reusing materials. A key outcome of this project was to define a new standard within the municipality regarding how to use "end of waste criteria''. This project also implemented a new process for the city to work with its contractors, finding ways to collaborate creatively to ensure constructions are buildable and sustainable.

- **Soil Reuse** – In negotiation with a potential contractor, the city influenced its practices to ensure that instead of disposing of soil and using newly extracted resources from a gravel pit, the contractor reused all soil and concrete on the construction site, which decreased the cost of the development by ~ 25% while also reducing CO_2 emissions by six tonnes.

Tampere, Finland

General information

City population: **244,233**
(greater urban area: **403,000**)
Mayor: **Anna-Kaisa Ikonen**



Strategy & governance

Tampere's climate response takes the form of its "Climate Neutral Tampere 2030 Roadmap" which sets measures for climate action through 6 themes. Within theme 5 "Sustainable Consumption", 10 measures due to be implemented before 2025 are related to the circular economy. Tampere's first action plan on circular economy, accepted in spring 2022, presents the strategy and the scheduled implementation plan including the responsible parties. The plan is implemented and its progress is monitored as part of the city's new strategic development program "Climate Neutral Action", where circularity is one of its 3 focus areas. Tampere's City Strategy also recognises the importance of the circular economy. In its ambitions to be a "city of the future", Tampere states "We support industrial renewal, accelerated by the green transition,and the potential of the circular economy. We boldly take advantage of the opportunities of digitalisation in service development".

Key actions

- **Procurement** – Tampere has developed a set of public circular economy procurement procedures which it has applied to the procurement of street construction, including the street of Yliopistonkatu where this was first implemented. The procurement received a national award and was also a finalist in 2022 Procura+ Awards.

- **Circular Economy Partnerships** – Tampere's "Partnership model for sustainable neighbourhoods" (KIEPPI) project has worked with consultants to develop a model for partnership working to advance the circular economy. The model enables organisations to analyse their own activities and that of others to find synergies where the circular economy can be developed. Companies operating in the city, the city's internal departments, KIEPPI and technical advisors undertook this work. The city also ran a Circular Economy and Cleantech Ecosystem linking businesses of all sizes to further their commitments to the circular economy and cleantech.

- **Construction Sector Projects** – Tampere is part of the EU-funded ReCreate project enabling the city to evaluate and develop policies to promote circular construction practices. It has also long been working with the construction sector to enable a circular economy for soil and rock. A soil management programme was approved in 2021 and the city specifically employs a member of staff for this function.

- **Promotion of the Circular Economy** – Tampere is a member of the KIERTO (Circulation) project which aims to simultaneously promote the circular economy and develop employment opportunities. Both aims have been recognised locally as very important.

Torres Vedras, Portugal

General information

City population: **83,072**
Mayor: **Laura Rodrigues**

Unsplash / Adam Hornyak

Strategy & governance

Although there is no formal action plan or road map for the circular economy in Torres Vedras, first steps are being taken in this direction. Once in place, it is expected that the circular economy strategy will have its own governance body comprising the Mayor and Members of the Council. The municipal circular economy strategy will be transversal, relating to the entire local community, but with particular emphasis on the operation of municipal services linked to the urban planning, construction, water and urban waste sectors.

Key actions

- **Circular procurement** – Torres Vedras has so far launched two public tenders based on circular procurement procedures, namely for the supply of school meals and for the supply of specialist working clothes.

- **Pact for the Valorization of the Circular Economy** – Torres Vedras became a signatory to the Institutional Pact for the Valorisation of the Circular Economy in the Centre Region which is coordinated by the Commission for the Coordination and Regional Development of the Center (CCDRC). Its commitments as a signatory relates to raising awareness of the circular economy, tackling the use of single-use plastics and fighting against food waste. Food waste reduction will be in part achieved through the development of the School Meals Sustainability Programme.

- **Circular Economy Strategy development** – It is considered essential to ensure the involvement of the local community and all sectors of economic activity in the transition from a linear to circular economy. The integration of circularity principles in the urban metabolism of the city of Torres Vedras assumes particular relevance, since the urban planning and construction sector has a considerable weight in the use of resources and in the production of waste. This paradigm shift will encourage innovation, creativity and the establishment of new synergies between public, private and social actors, to make Torres Vedras more sustainable and resilient.

- **CityLoops Replicator** – Torres Vedras Water, Waste and Waste Management, which is fully owned by the municipality of Torres Vedras, but operates autonomously, applied and was accepted as a CityLoops replicator. Torres Vedras believes it can learn from a wide variety of tools, processes and actions related to two of the most important waste streams in Europe: Construction and Demolition Waste (CDW), and Bio-waste (BW). This includes Seville's work with wastewater infrastructure; pre-demolition screening of CDW and Mikkeli's public procurement guidelines for organic municipal waste (BW).

Trikala, Greece

General information

City population: **81,355**
(Trikala region: **131,085**)
Mayor: **Dimitris Papastergiou**

Unsplash / Nestoras Argiris

Strategy & governance

Trikala's Circular Economy activities are referred to in its Sustainable Urban Development Plan and the Local Waste Management Plan. While there is no separate Circular Economy Strategy, these two plans along with two specific plans in development; the Sustainable Energy and Climate Action Plan and the Roadmap of the city for Climate Neutrality set out the proposed approach for furthering the circular economy in the region. Tasks to implement these strategies will be spread across the departments of the city administration, likely involving the Smart City Department; the Department of Cleaning and Recycling; the Department of Social Care; and the Environmental Department. The Roadmap for Climate Neutrality is expected to define targets until 2030.

Key actions

- **Food and first aid supplies redistribution** – Local companies, city departments and other local institutions have all been involved in the collection and redistribution of materials and products such as meals for the vulnerable and first aid supplies for social services. Redistribution networks for textiles have also been established in conjunction with the Department for Cleaning, citizens and non-government organisations (NGOs), whereby textiles are collected, reused where possible and recycled wherereuse is not an option.

- **Household Composting** – residents of Trikala were provided with home composting bins in collaboration between the City and the Regional Environmental Development Company. This initiative supported the city's Local Waste Management Plan and supports the efforts of Trikala to reduce waste.

- **Circular Projects** – the city has organised two circular projects; BIOCanteens and Circ4food. Circ4food aims to study and develop agri-food systems inspired by the circular economy that combine composting and rainwater harvesting to create opportunities for urban vegetable gardens. The BIOCanteens Transfer Network focuses on distributing 100% organic food and where possible, locally sourced products, reducing food waste and food miles.

- **Repurposing, Reuse and Recycling** – the city has transformed a municipally run Christmas theme park into a household recycling and reuse centre. In addition, it has repurposed an old wind turbine blade into a bench for visitors to the park and implemented separate collection of 5 streams of recycling.

Turku, Finland

General information

City population: **195,301**
Mayor: **Minna Arve**

Unsplash / Juho Luomala

Strategy & governance

In late 2021, Turku's City Council approved the Circular Turku roadmap. The roadmap was developed in partnership with ICLEI and Sitra, the Finnish Innovation Fund, and aims to make Turku carbon-neutral by 2029 and resource-wise by 2040. In the roadmap, five sectors (food, water, energy, construction and mobility) have been identified as priority to achieve this dual objective. The roadmap was developed by the Climate and Environmental Policy Unit. The complete process involved more than 200 circular economy actors from different sectors including education, research, public administration, and companies.

Key actions

- **Multi-Stakeholder collaboration** – Turku is actively collaborating with a number of actors at regional and national levels to operationalise the circular economy. A mapping exercise identified over 700 relevant circular economy actors and 90 local circular projects, prompting the establishment of a working group to discuss thematic issues with local stakeholders,. A number of clusters, such as the Bastu business incubator and the circular economy hub Topinpuisto have also been set up to foster circular businesses.

- **Innovative water management** – Acknowledging the need to reinvent water management in the region to both improve the water quality and protect local ecosystems, Turku Region Water Ltd. and Turku Region Wastewater Treatment Plant Ltd. have developed innovative water management techniques to improve the sustainability of water networks in the Turku region. Focus is placed on energy recovery using heat pumps to provide district heating and cooling, wastewater nutrient recovery and continuous improvement of process circularity through research and development.

- **Supporting circular food systems through public procurement** – In order to contribute to the city's 2029 carbon neutrality target and reduce emissions associated with local food services, the strategic procurement department of Turku set the following objectives: (1) reducing food loss from 12% to 6% and (2) doubling the proportion of vegetarian meals from 24 percent to 48 percent. To date greenhouse gas (GHG) calculators have been applied to service contracts for the City and additionally the proportion of vegetarian meals in the educational division has increased from one vegetarian meal per week to eight vegetarian meals in a six-week period.

- **Industrial symbiosis to redesign the chemistry sector** – In 2015, Turku set up the Smart Chemistry Park as a platform for regional companies in chemistry and chemical engineering to collaborate and identify synergies. The chemistry park fosters symbiotic relationships and provides technical expertise to a wide variety of industrial sectors such as metal, energy, paper and packaging, building, and life science industries. The stakeholders have access to shared laboratory spaces and the possibility to pilot and expand production to an industrial scale.

Umeå, Sweden

General information

City population: **130,224**
Mayor: **Marie-Louise Rönnmark**

Dreamstime / Emmoth

Strategy & governance

Umea has a Strategic Environmental Plan and is developing its Action Plan for Climate Goals. While this means that there is no dedicated circular economy document, the city does employ a full-time project manager whose remit is the circular economy.

There are a number of key departments which are involved in the Strategic Environmental Plan and its work on the circular economy including the Urban Planning, Property Management, Procurement, Waste Management and Business Developments. The area most closely monitored at the moment is the Waste Management Plan, developed by VAKIN.

Key actions

- **Networking and Collaboration** – through applications for Green Deal projects, Umea has worked with ICLEI and a range of local enterprises, universities and civil society. This has provided the city with the opportunity to expand its network of key stakeholders in the region who have an interest in applications of the circular economy.
- **Procurement** – Umea has reported its first use of circular criteria in the procurement of goods and/or services. The city is looking at developing its sustainable procurement capacities and will employ two advisors on the topics of circularity and sustainability to further embed circular principals into its procurement procedures.

Wiltz, Luxembourg

General information

City population: **7,533**
Mayor: **Fränk Arndt**


Dreamstime / Oleksandr Tkachenko

Strategy & governance

Designated as Luxembourg's first "Circular Economy hotspot", the municipality of Wiltz has set out its ambition in a commitment charter for the circular economy. Circularity is then put into practice across all projects led by the municipality through the following 6 fields of application; health and well-being, innovation and capacity building, water and energy, spatial planning and developments, the local economy and resources and finally services and logistics. A "circular economy" service has been created to support other departments in the implementation and monitoring of progress. Within the Pacte Climat initiative, Wiltz also receives some expert and thematic support on circularity from Luxembourg's national government.

Key actions

- **Sustainable and circular construction for the Campus Géizt** – The municipality has commissioned the construction of a new school campus including a primary school, a kitchen, a day care centre, a children's museum, a music school and a sports hall. Circularity is central to the project, notably regarding the choice of construction materials, the ability to change the use of the structures over time, reuse of rainwater, reduction of greenhouse gas emissions and use of renewable energy.
- **Circularity in planning and new developments** – In the Op Heidert district, the municipality has integrated circular economy principles in the planning and the development of a new residential area with 102 building plots. Plot purchases will be subject to circular criteria and the provision of a sustainable construction guide. A community centre will be co-constructed with future residents and circular business models promoted for property management. The same ambitions can also be found in the redevelopment of the Wunne mat der Wooltz district.
- **Circular Innovation HUB** – Wiltz has set up a dedicated hub to raise awareness about the circular economy and engage local stakeholders. The ambition is for the hub to become a national centre of competence and training on this topic. A number of activities are organised annually for schools, residents and businesses. The hub further engaged municipalities from all over Luxembourg through the annual Circular Economy Day.

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