

The Circular Economy in the Eurométropole of Strasbourg, France



OECD Regional Development Papers

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Collaboration between the OECD and the European Commission

The OECD Programme on the Circular Economy in Cities and Regions and the European Commission's Circular Cities and Regions Initiative (CCRI) provide support to selected European cities and regions to: i) build new knowledge and evidence at local and regional levels in Europe on the state of the art of the circular economy; ii) identify new solutions and innovative governance options for the transition to a circular economy; iii) deepen knowledge on the transition to a circular economy at regional level, especially in terms of value chains coordination; and iv) provide cities and regions with action plans to move from a linear to a circular economy.

Definition of circular economy

The circular economy is a system where the value of products, materials and resources is retained in the economy for as long as possible by returning them to the product cycle at the end of their use, thus minimising the generation of waste (EC, 2015^[1]). In cities and regions, the circular economy should ensure that: *services* (e.g. ranging from water to waste and energy) are provided while preventing waste generation, making efficient use of natural resources as primary materials, optimising their reuse and allowing synergies across sectors; *economic activities* are planned and executed in a way to close, slow and narrow loops across value chains; and *infrastructure* is designed and built to avoid linear lock-in, which uses resources intensively and inefficiently (OECD, 2020^[2]).

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The case study was drafted by a team composed of Oriana Romano, Head of Unit, Ander Eizaguirre, Policy Analyst, Water Governance, Blue and Circular Economy Unit, and Felipe Bucci Ancapi, Researcher at the Delft University of Technology (The Netherlands). Nadim Ahmad, Deputy Director of the CFE, and Aziza Akhmouch, Head of the Cities, Urban Policies and Sustainable Development Division in the CFE, provided comments on the draft. Special thanks are conveyed to the local team led by Lisa Herledan, Circular Economy Project Manager, Eurométropole of Strasbourg (France) for the excellent collaboration throughout the policy dialogue, to Laura Blair, Partner for Circular Cities & Regions, at Zero Waste Scotland (United Kingdom) for participating as peer-reviewer, and to Lucie Blondel, Policy Officer, DG RTD, European Commission for sharing her expertise.

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Executive summary

Located in the Grand Est region of France, next to the German border, the Eurométropole of Strasbourg (EMS) is an intermunicipal authority comprising 33 municipalities. Its population is growing (+7% between 2009 and 2020), ageing (people aged 60 or more represent 22% of the total population in 2020) and improving its level of education (+10% increase in the share of people completing tertiary education between 2009 and 2020). A quarter of the population of the city of Strasbourg (26%) lives below the poverty line (21% in the EMS). Household waste generation has consistently decreased (-16%) between 2010 and 2022 and is primarily treated through incineration for energy recovery.

The EMS started its circular journey in 2010 with a focus on waste prevention, characterised by a number of initiatives including on biowaste reduction, reuse, and education. This was followed in 2019 by the development of a Circular Economy Roadmap, which aimed to integrate circular economy principles into EMS' public procurement and operations, while promoting resource efficiency in the metropolitan area, and which is being updated to strengthen the circular economy agenda beyond waste reduction. In addition, three industrial symbiotic clusters (i.e. *CLES*, *Rhenan Ecoparc* and *Plaine des Bouchers*) and pilots for circular construction and urban development (i.e. *Citadelle District*) have been developed and launched in recent years.

To further drive progress, in October 2023, the Department of Economy and Attractiveness of the Eurométropole of Strasbourg carried out a self-assessment based on the OECD Scoreboard on the Governance of the Circular Economy in Cities and Regions. It identified several challenges, including in relation to: *regulation* conducive to a circular economy, beyond waste management and prevention; *policy co-ordination and scale* as co-ordination across the 33 municipalities is challenging due to limited human and technical capacities; and *financing*, including a lack of economic incentives for circular businesses models.

A policy dialogue with 50+ stakeholders of the metropolitan area, facilitated by the OECD in November 2023, confirmed the need for actions on these areas not least given additional challenges emerging from the energy transition, and highlighted the need to further strengthen engagement civil society. The dialogue also highlighted the importance of strengthening the spatial approach to the circular economy to improve its attractiveness. On this basis and by using the OECD 3Ps (people and firms, policies and places) framework, this case study suggests the following ways forward:

- *People and firms*: Thus far the approached adopted by the EMS on the circular economy has been largely top-down, with limited engagement from the civil society. In addition, as the 'connector' and promoter of regional development across 33 municipalities, the EMS holds key competences to leverage in the transition towards a circular economy, notably in terms of transport, water and sanitation, household waste collection, housing and planning. . The updated version of the Roadmap, expected by mid-2024, is therefore an opportunity to reinforce engagement with civil society through a "*people-centred*" approach whilst also strengthening "solidarity" across municipalities.
- *Policies*: In part reflecting increased geopolitical global risks and their consequences on raw material price and supply, "doing more with less" has becoming increasingly important. The updated version of the circular roadmap expected mid-2024 should therefore look to adopt this

underlying principle by moving from a “waste reduction” approach to a culture of “consumption reduction” that also encourages sustainable eco-design (e.g. through the launch of an eco-design centre for the development of innovative technical eco-design projects) and by encouraging businesses to transition from linear “take-make-dispose” models to circular business models (e.g. through ad hoc services for companies to encourage resource efficiency).

- *Places*: A spatial approach to the circular economy can also improve the attractiveness of the EMS through the development of “circular economy areas”. Capitalising on existing capacities and expertise in its industrial symbiosis clusters, the EMS could: conduct an urban metabolism analysis; promote the development of circular areas (e.g., experimental zones, incentives to support investments), soil recovery for social value (e.g., bioremediation of former industrial soils, ecological corridors) and closed material cycles (e.g., building design for material recovery and reuse, repair facilities); develop circular areas that expand synergies with and between non-polluting industries, businesses and residential complexes; and further implement circular land planning through urban renewal projects .

Snapshot of the Eurométropole of Strasbourg

Located in the Grand Est region of France, next to the German border, the Eurométropole of Strasbourg (EMS) is an intermunicipal authority established in 2015 comprising 33 municipalities¹ (Eurométropole of Strasbourg, 2020^[3]). In the last decade, the population of the EMS has grown from 474 976 inhabitants in 2009 to 511 552 in 2020 (resulting in a population increase of 7%). More than half of the EMS population (57%) is concentrated in the city of Strasbourg, which hosts European institutions such as the Council of Europe, the European Court of Human Rights, the European Parliament, and the European Ombudsman. The population of the EMS is also ageing: the proportion of people between 60-74 years of age and 75 years or more old increased by 2% and 1% respectively between 2009 and 2020, while lower age ranges remain stable. They represented 14% and 8% respectively of the total population in 2020. The level of education has increased in the EMS in the last decade: between 2009 and 2020, while individuals who only received primary education decreased from 26% in 2009 to 18% in 2020, those who obtained a tertiary education diploma increased from 31% to 41% in the same period. In 2021, 26% of the population (35 000 households) of the city of Strasbourg lived below the poverty line², i.e., less than EUR 1 063 per month for a single person, before social benefits (INSEE, 2023^[4]).

Between 2011 and 2012, the gross domestic product (GDP) of the EMS increased by 12%: from EUR 31 600 to EUR 35 600 per capita, which remained 3% below the national average in 2021 (EUR 36 670 per capita) (Eurostat, 2023^[5]). Key contributors to the EMS's economic landscape in 2019 were the tertiary economy, constituting 19.2% of the GDP, along with the social and solidarity economy (13.8%), and the tourism sector (8.4%). The Port of Strasbourg is the second largest river port in France. Between 2017 and 2022, the number of new companies created annually increased from 6 192 in 2017 to 9 634 in 2022 (+56%) (INSEE, 2022^[6]). In 2022, the top 10 start-ups supported by the Sciences, Business and Market Incubator of Alsace (*Sciences, Entreprise et Marché, Incubateur d'Alsace, SEMIA*)³ generated EUR 75 M (i.e., 1% lower than in 2021). Yet, only 3.9% of jobs (8 243) were related to the circular and green economy in 2019 (Agence d'urbanisme de Strasbourg Rhin supérieur, 2023^[7]). The unemployment rate in the EMS

¹ Achenheim, Bischheim, Blaesheim, Breuschwickersheim, Eckbolsheim, Eckwersheim, Entzheim, Eschau, Fegersheim, Geispolsheim, Hangenbieten, Hoenheim, Holtzheim, Illkirch-Graffenstaden, Kolbsheim, Lampertheim, Lingolsheim, Lipsheim, Mittelhausbergen, Mundolsheim, Niederhausbergen, Oberhausbergen, Oberschaeffolsheim, Osthoffen, Ostwald, Plobsheim, Reichstett, Schiltigheim, Souffelweyersheim, Strasbourg, Vendenheim, La Wantzenau, and Wolfisheim.

² According to the National Institute of Statistics and Economic Studies (*Institut national de la statistique et des études économiques, INSEE*), the poverty line is set by agreement at 60% of the median standard of living of the population. It corresponds to a disposable income of EUR 1 102 per month for a person living alone and EUR 2 314 for a couple with two children under the age of 14 (INSEE, 2023^[4]).

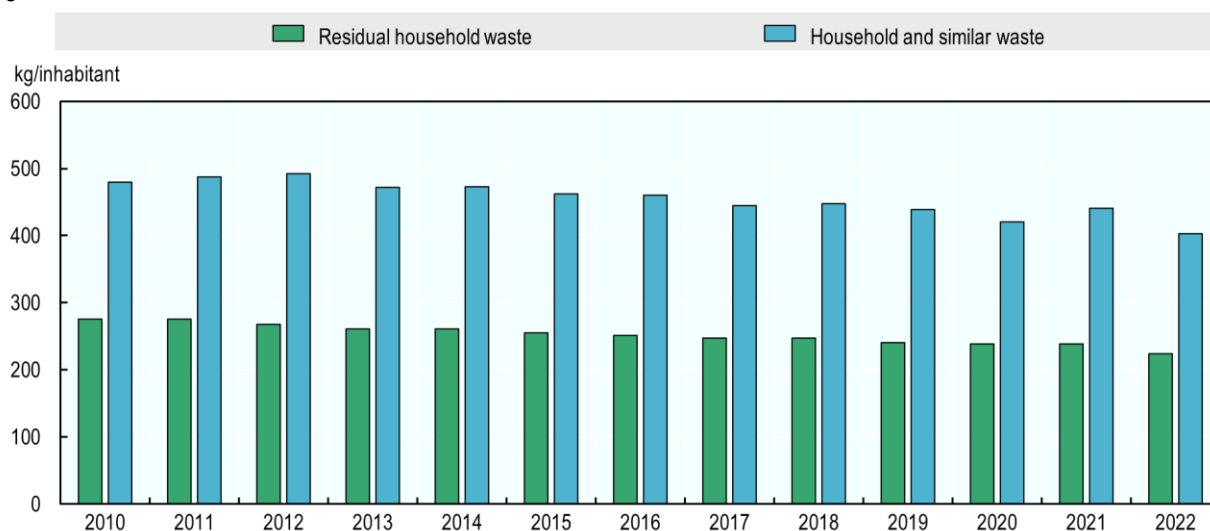
³ SEMIA brings together universities, scientific institutions and economic players of the Eurométropole of Strasbourg

was 10% in 2020, lower than the national average at 14% in the same period. Unemployment has remained stable during the last decade with a slight increase of 1% relative to 2009 (INSEE, 2023^[8]).

Between 2010 and 2022, the EMS reduced by 16% the generation of household waste (*déchets ménagers et assimilés*, DMA)⁴: from 480 kg per capita to 403 kilograms (kg) per capita (Eurométropole of Strasbourg, 2021^[9]) (Eurométropole of Strasbourg, 2023^[10]). In addition, residual household waste (*ordures ménagères résiduelles*) decreased by 19% during the same period, from 276 kg per capita in 2010 to 224 kg per capita in 2022 (Figure 1). Household waste represented 8% of total waste produced in the EMS in 2019. Household biowaste separation started in 2022 in the EMS, in collaboration with the local agricultural sector. Indeed, by 2026 the EMS aims to (i) increase the share of local productions in local markets, (ii) use organic waste a source of renewable energy through anaerobic digestion, and (iii) explore the re-use of wastewater (OECD, 2023^[11]). Waste production from economic sectors was mainly produced by public works and construction (46%), followed by industries (31%), the tertiary economy (23%), and farmers (1%). Yet, in 2022, three-quarters of waste was incinerated for energy recovery (INSEE, 2023^[12]). The EMS does not count using official information on material use and management in the metropolitan area (i.e., resource inputs, throughputs, and outputs), making it difficult to estimate the magnitude of material consumption within its territory. At the national level, in 2019, the French Domestic Material Consumption⁵ (DMC) was approximately 12 tonnes per capita, among the lowest in the OECD area and below the OECD average of 17 tonnes per capita (OECD, 2024^[13]).

Figure 1. Waste generation trends in the Eurométropole of Strasbourg 2010-22

Kg/inhabitant



Source: Eurométropole of Strasbourg (2021^[9]), Programme Local de Prévention des Déchets Ménagers et Assimilés 2021-2026 ; and Eurométropole of Strasbourg (2023^[10]), Waste management data.

Note: Household and similar waste (DMA) includes all waste produced by households. It is composed by household waste and smaller fractions of bulky household waste, hazardous household waste, cleaning waste, and green waste from local authorities. It also includes rubble (*gravats*).

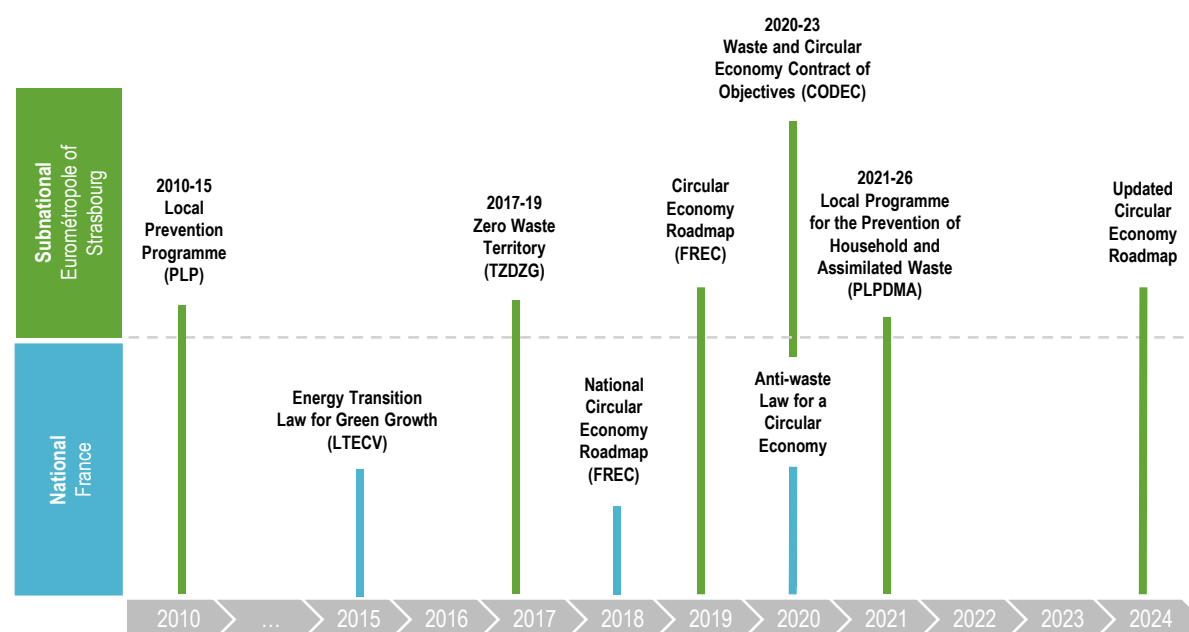
⁴ Household and similar waste (DMA) includes all waste produced by households. It comprises household waste and smaller fractions of bulky household waste, hazardous household waste, cleaning waste, and green waste from local authorities. It also includes rubble (*gravats*).

⁵ According to the OECD, DMC refers to the quantity of materials utilised within an economy, encompassing those sourced domestically (such as extraction or harvesting within the country) as well as imports, with exports subtracted from this total.

The Eurométropole of Strasbourg's circular journey

The Eurométropole of Strasbourg (EMS), France, started on its circular journey in 2010, following three main steps: i) a focus on waste prevention, through various initiatives including biowaste reduction, reuse, and education; ii) the development of the Circular Economy Roadmap (*Feuille de route pour l'économie circulaire*, FREC) in 2019, which aimed to integrate circular economy principles into EMS' public procurement and operations, while promoting resource efficiency in the metropolitan area, and; iii) the update of the roadmap, expected by mid-2024, to strengthen the circular economy agenda beyond waste reduction (Figure 2).

Figure 2. Circular economy policy timeline in the Eurométropole of Strasbourg, France



Source: Authors' elaboration.

First phase: Waste prevention

Since 2010, the EMS has set up waste prevention initiatives. In particular:

- The Local Prevention Programme (*Programme Local de Prévention*, PLP) (2010-2015) focused on household waste reduction and was structured around nine themes: i) reduction of biowaste; ii) reuse strategies; iii) promotion of tap water drinking; iv) reduction of unaddressed printed matter; v) eco-

consumption; vi) reduction of hazardous waste; vii) waste prevention education in schools; viii) optimisation of the waste collection and recovery service; and ix) development of local authorities as role model for sustainability. In 2015, the generation of household waste decreased by 7% compared to 2010 levels, meeting the initial target set for the PLP (Eurométropole of Strasbourg, 2021^[9]).

- In 2017, the French Ministry of Ecological Transition awarded the EMS the Zero Waste Territory (*Territoire Zéro Déchet Zéro Gaspillage*, TZDZG) label. The label consisted of a 3-year voluntary programme to achieve waste reduction targets set out in the 2015 French Energy Transition Law for Green Growth (*Loi de transition énergétique pour la croissance verte*, LTECV)⁶. Particularly, the TZDZG label provided financial support of EUR 100 000 per year. The EMS achieved a reduction of 15 kilograms (kg) of household waste per inhabitant in 2019 compared to 2015.
- The 2021 multi-annual Local Programme for the Prevention of Household and Assimilated Waste (*Programme Local de Prévention des Déchets Ménagers et Assimilés*, PLPDMA), also known as Objective Z, was implemented through the 2021-2026 Objective Z Action Plan, which aims for a 6% reduction of all managed and assimilated waste from the 448 kg per capita in 2018 to 421 kg per capita in 2026. To reach the target, the action plan includes eight thematic axes and a total of 27 actions categorised by axis (Table 1).

Table 1. Thematic axes and related actions of the 2021-2026 Objective Z Action Plan

Thematic axis	Actions
1. Developing eco-exemplarity	1.1. Supporting for local authorities in the Eurométropole of Strasbourg 1.2. Promoting eco-exemplarity among governmental departments 1.3. Promoting responsible public procurement 1.4. Promoting eco-responsibility among governmental employees
2. Extending the length of use through reuse and repair	2.1 Boosting re-use 2.2 Developing the recycling of textiles, household linen and footwear 2.3 Developing the cycle recycling sector 2.4 Developing the medical equipment re-use sector 2.5 Developing the information technology and digital equipment re-use sector 2.6. Promoting and raising the profile of repair facilities and structures
3. Combating food waste	3.1. Reducing food waste in commercial catering 3.2. Promoting food donations 3.3. Reducing food waste in school and collective catering
4. Promoting eco-consumption	4.1. Reducing packaging and promoting deposits 4.2. Promoting washable sanitary textiles 4.3. Combating unsolicited printed matter
5. Managing biowaste and reduction of green waste locally	5.1. Promoting individual composting 5.2. Developing collective composting 5.3. Reducing green waste and encouraging shredding and natural gardening
6. Raising awareness, mobilising and communicating in innovative ways	6.1. Making events more eco-responsible 6.2. Encouraging action 6.3. Raising the profile of prevention and raising awareness among the general public 6.4. Raising awareness among schoolchildren
7. Reducing waste from professionals	7.1. Supporting and raising awareness of waste prevention among professionals 7.2. Reducing construction waste
8. Service-related financing	8.1. Finalising the roll-out of the special fee system 8.2. Deploying incentive-based pricing in conjunction with service rendering

Source: Eurométropole of Strasbourg (2021^[9]), Programme Local de Prévention des Déchets Ménagers et Assimilés 2021-2026.

⁶ The French Energy Transition Law for Green Growth (*Loi de transition énergétique pour la croissance verte*, LTECV) set a 55% material recovery target by 2020 and 65% by 2025 (Ministère de la Transition Écologique et de la Cohésion des Territoires, 2017^[18]).

Second phase: The Circular Economy Roadmap of the EMS

In 2019, the EMS launched its Circular Economy Roadmap (Eurométropole of Strasbourg, 2019^[14]). The roadmap was the result of a consultation with public, private, educational and cluster organisations in the metropolitan area⁷ in 2019, co-ordinated by the EMS Economic Development and Local Attractiveness Department (*Direction du Développement Économique et de l'Attractivité*, DDEA). The FREC aligned its ambition to reduce material consumption and non-hazardous waste to the 2018 French Circular Economy Roadmap (Box 1). The EMS' 2019 FREC identifies five objectives and related lines of action (Table 2). The circular economy was also included in Axis III (job creation and social inclusion) of the metropolitan area's 2019 Climate Plan (*Stratégie Plan Climat 2030*) (Eurométropole of Strasbourg, 2019^[15]).

Table 2. Objectives and lines of action of the EMS' 2019 Circular Economy Roadmap

Objectives	Lines of action
Introducing circular economy criteria in the EMS' public procurement and into local authority operations at all levels	<ul style="list-style-type: none"> • Mobilising public procurement to promote sustainable purchases, eco-design, reuse and second-hand purchases. • Fostering eco-design of infrastructure, facilities, public spaces and urban redevelopment projects. • Developing a strategy for recycling and redevelopment of land and buildings in the metropolitan area. • Optimising the operation of public infrastructure and facilities by, for instance, exploring the role of public transport in new intra-urban logistics needs.
Contributing to more efficient use of resources across the EMS	<ul style="list-style-type: none"> • Encouraging reuse and recycling of buildings and public works materials. • Developing local closed loops. • Promoting simple, reproducible and sustainable solutions for housing, transport, information and energy supplies by resorting to locally available resources and skills. • Supporting and promoting reuse and repair activities in the metropolitan area.
Supporting local stakeholders on the path towards a circular economy	<ul style="list-style-type: none"> • Identifying key sectors. • Facilitating the transition of traditional industries to more resource-efficient and low-carbon economic models. • Supporting companies in adopting sustainable sourcing, eco-design and energy and material efficiency. • Further developing industrial symbiosis in the metropolitan area. • Facilitating new material reuse and sharing channels, specifically in the construction sector. • Fostering circular innovation. • Creating a green cluster to articulate circular economy ecosystems.
Developing and disseminating a common circular economy culture through learning schemes and good practices	<ul style="list-style-type: none"> • Helping elected representatives and staff to familiarise themselves with the circular economy principles. • Helping economic actors become accustomed to the circular economy. • Networking for the dissemination of best practices and knowledge exchange. • Creating circular hubs. • Strengthening the local community of circular economy players within the EMS.

⁷ Consulted parties were the Departments of Economy and Attractiveness, Environment and Urban Public Services, Urban Planning and Territories, Construction and Built Heritage, Performance Consulting and Legal Affairs, Mobility, Public and Natural Spaces, Energy and Climate Plan. Other partners were representatives of economic chambers, the French Ecological Transition Agency (ADEME), the Regional Directorate for the Environment, Planning, and Housing (DREAL Grand Est) and the Rhine-Meuse Water Agency; education and training players represented by the University of Strasbourg, EM Strasbourg business school, the National Institute of Applied Science (INSA) and the University of Strasbourg; local businesses and their associations; innovation players (i.e. Grand E-Nov, Labo des Partenariats); resource and skills centres such as the Standard Organisation of France (AFNOR), the Urbanism Agency of Strasbourg (*Agence d'urbanisme de Strasbourg Rhin supérieur*, ADEUS), the Envirobot Grand Est resource centre, the cluster for construction materials Pôle Fibres Energivie, Hydreos water industry cluster, the Agency for Construction Quality (*Agence Qualité Construction*, AQC) and Idée Alsace regional network for sustainable development.

Enhancing participatory governance ensuring flexibility and transparency	<ul style="list-style-type: none"> • Promoting an integrated governance of all circular economy initiatives of the Eurométropole of Strasbourg. • Involving external stakeholders, such as economic players, to steer the circular economy transition. • Adopting a project-based approach for the implementation of the FREC. • Monitoring and disseminating the impact of the EMS' policies in favour of the circular economy.
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Source: (Eurométropole of Strasbourg, 2019^[14])

To support the implementation of the FREC, the EMS and the French Agency for Ecological Transition (*Agence de l'environnement et de la maîtrise de l'énergie*, ADEME) signed in 2020 the 2020-23 Waste and Circular Economy Contract of Objectives (*Contrat d'Objectifs Déchets et Économie Circulaire*, CODEC), aiming to: i) mobilise economic players to action towards a circular economy; ii) reduce household waste from 248 kg to 233 kg per capita in the 2018-23 period; and iii) reduce the production of all managed and assimilated waste from 448 kg to 430 kg per capita in 2023 relative to 2018. The CODEC also identified key areas of intervention, including eco-design, industrial and territorial ecology, responsible consumption and the extension of products' lifecycles in the region (Eurométropole of Strasbourg, 2021^[9]).

In 2020, the ADEME supported the EMS through the Areas Committed to the Ecological Transition (*Territoire Engagé Transition Écologique*) label (ADEME, 2024^[16]). The label offers support to local authorities in developing circular economy and environmental policies. Local authorities can obtain a score of 1 to 5 stars⁸ by adopting the label, depending on their overall performance. In 2020, the EMS was awarded one star on the circular economy, representing a level of minimum engagement in the circular economy transition. In 2023, the EMS prepared a new application for 2024, aiming to improve its 2020 performance by reaching three stars (OECD, 2023^[11]). For the environmental policies label *Label Climat-Air-Energie* (previously called *Cit'ergie*), the EMS achieved 4 stars out of 5 in 2021 (ADEME, 2024^[17]).

⁸ The Circular Economy label consists of 500 points divided among 5 areas. The label tiers are determined by the completion percentages (1 = <35%, 2 = 35%-49%, 3 = 50%-64%, 4 = 65%-74%, 5 = >75%), indicating the ratio between actions implemented and the maximum potential actions achievable by the local authority.

Box 1. An overview of the circular economy policy framework in France

The French Law on Energy Transition for Green Growth (*Loi de transition énergétique pour la croissance verte, LTECV*), enacted in 2015, was the first to introduce the circular economy in French legislation. It aims to: i) decrease household and similar waste generated per person by 10% by 2020, relative to 2010; ii) recycle 60% of non-hazardous, non-inert waste by 2025; and, iii) halve landfilling in 2025 relative to 2010 national levels. The LTECV enabled the adoption of the National Circular Economy Roadmap of 2018, which includes five objectives:

- Reduce resource consumption linked to French consumption: reduce resource consumption in relation to gross domestic product by 30% in 2030 compared to 2010.
- Reduce the quantities of non-hazardous waste sent to landfill by 50% in 2025 compared to 2010.
- Strive towards 100% recycled plastics in 2025.
- Reduce greenhouse gas emissions: save 8 million fewer additional tonnes of carbon dioxide each year through plastic recycling.
- Create 300 000 additional jobs, including the development of new professionals.

In 2020, the French Anti-waste Law for a Circular Economy (*Loi anti-gaspillage pour une économie circulaire, AGEC*) was established. It aims to: i) move away from disposable goods; ii) provide better information to consumers; iii) fight against waste and promote solidarity use; iv) act against planned obsolescence; and v) advance towards better production by extending polluter-pays schemes, introducing waste collection fees and mandating businesses to develop five-year eco-design plans.

In 2021, the Climate and Resilience Law (*Loi climat et résilience*) established the National Council for the Circular Economy (*Conseil national de l'économie circulaire, CNEC*), a consultative body replacing the National Waste Council (*Conseil national des déchets, CND*), which was set up in 2001 and focused solely on waste. The CNEC comprises 47 seats and is composed of 6 stakeholder groups: representatives of the state, local elected officials, civil society associations, companies, employees and members of parliament. This body aims to ensure regular dialogue and close involvement of these stakeholders in designing and implementing circular economy policies. The law also extended the list of product categories included in the AGEC (e.g. gardening tools and sports and leisure equipment) for which the manufacturer must make spare parts available to the seller or repairer for a minimum of five years or incur a penalty.

Source: (Ministère de la Transition Écologique et de la Cohésion des Territoires, 2017^[18]), (Ministère de la Transition Écologique et de la Cohésion des Territoires, 2018^[19]), (Ministère de la Transition Écologique et de la Cohésion des Territoires, 2020^[20]), (Agence de la Transition Écologique, 2021^[21]) (Ministère de la Transition Écologique et de la Cohésion des Territoires, 2021^[22]).

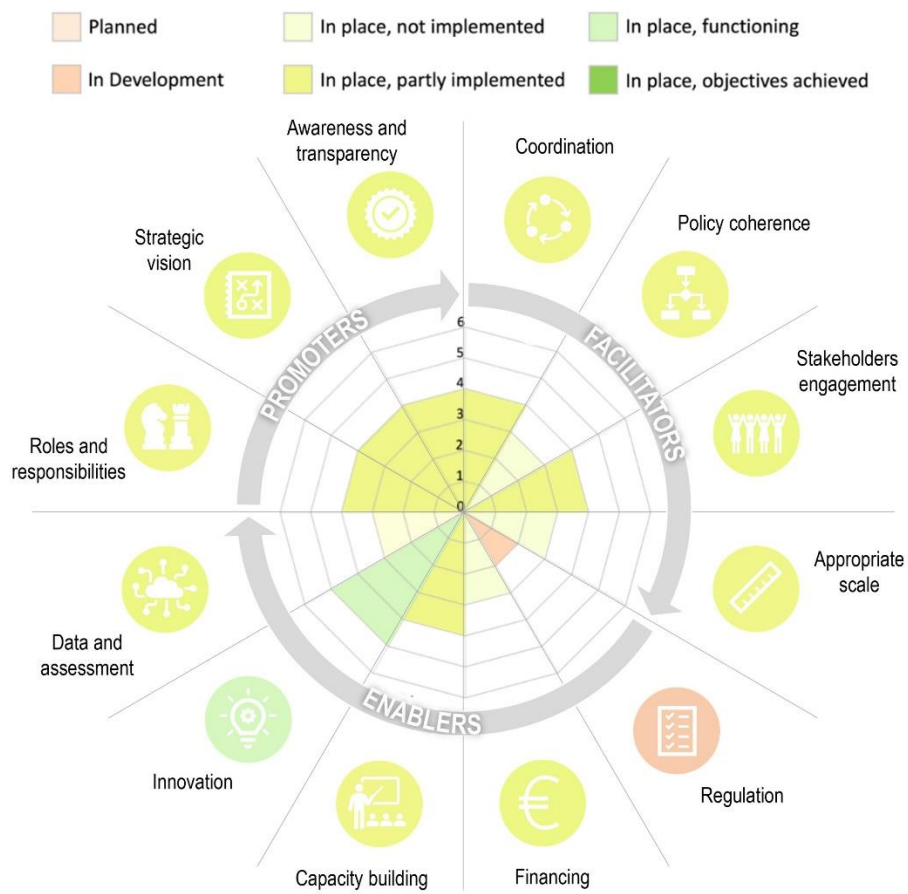
Third phase: Updating the Circular Economy Roadmap of the EMS

By mid-2024, the EMS aims to update the 2019 Circular Economy Roadmap (FREC). The updated Circular Economy Roadmap aims to build on the objectives of the 2019 FREC with three main purposes: First, harmonise objectives, targets and actions specifically related to the circular economy in a single document to facilitate the exchange of information. Second, move beyond the prevailing focus on waste reduction towards more ambitious circular economy principles such as material and energy flow accounting. Finally, due to the change of government in the EMS from 2019, the updated FREC, aims to mobilise elected representatives and consolidate the political commitment of the EMS to move towards a circular economy as a strategic priority.

Challenges and opportunities for the Eurométropole of Strasbourg's circular transition

The self-assessment carried out by the Department of Economy and Attractiveness of the Eurométropole of Strasbourg (EMS) in October 2023, based on the OECD Scoreboard on the Governance of the Circular Economy in Cities and Regions (Figure 3), identified several challenges, including regulation, policy coordination, scale, financing, data and evaluation, which scored the lowest among the 12 key governance conditions (Box 2). While circular economy initiatives exist, they mostly focus on waste prevention. Also, the fragmentation of these activities hinders the implementation of a coherent circular economy framework with clear targets and roles for public government and stakeholders. Coordination across the 33 municipalities proves challenging due to limited capacity both in the EMS and within each of the municipalities. Financial constraints also hamper progress, especially due to a lack of economic incentives for circular businesses models. Compared to other dimensions, "innovation" scored higher, due to the setting up of three industrial symbiotic clusters (i.e. *CLES*, *Rhenan Ecoparc* and *Plaine des Bouchers*) and pilots for circular construction and urban development (i.e. *Citadelle District*). This paper argues that the EMS can act as a promoter, facilitator and enabler the circular economy transition. Key actions to consider are indicated below (Table 3; Table 4; Table 5).

Figure 3. Applying the OECD Scoreboard on the Governance of the Circular Economy in Eurométropole de Strasbourg



Source: OECD Survey (2023^[11]) based on the OECD Scoreboard on the Governance of the Circular Economy (2020^[2]).

Box 2. The OECD Checklist for Action for the Circular Economy in Cities and Regions

The OECD Checklist for Action, based on 12 key governance dimensions, provides guidance to governments to promote, facilitate and enable the circular economy. It is divided into three clusters that reflect the complementary roles of cities and regions in the circular economy:

- **Promoters:** Cities and regions can lead by example, communicate clearly and set goals and targets for the circular economy. They can do this by clarifying roles and responsibilities, developing a circular economy strategy, and promoting a circular economy culture and transparency.
- **Facilitators:** Cities and regions can support dialogue and collaboration and provide infrastructure and services for circular businesses. They can do this by implementing effective multi-level governance, fostering policy coherence, engaging stakeholders and adopting a functional approach.
- **Enablers:** Cities and regions can create the conditions for the circular economy to thrive, e.g.: adapting regulations, mobilising financing, building capacities, supporting innovation and generating data and assessment.

Figure 4. The 12 governance dimensions of the OECD Checklist for Action



The Checklist is accompanied by the OECD Scoreboard on the Governance of the Circular Economy in Cities and Regions, a self-assessment tool for governments aiming to assess the advancement towards the implementation of each of the 12 governance dimensions. The potential scores that may be given for each governance dimension range from 1 to 6 or not applicable, corresponding respectively to: (1) Planned; (2) In development; (3) In place, not implemented; (4) In place, partly implemented; (5) In place, functioning; and (6) In place, objectives achieved.

The OECD scoreboard offers to cities and regions undertaking the assessment:

- An overview of the current situation concerning the 12 governance dimensions to base decision-making processes on facts and clear objectives.
- Guidance to improve policy areas needed to promote, facilitate, and enable the circular economy transition.

- A tool for dialogue in multi-stakeholder processes to improve policies and tools, to raise awareness of the opportunities about the circular economy, and to build consensus on the main challenges and potential ways forward.

In October 2023, the EMS Department of Economy and Attractiveness conducted a self-assessment of the progress towards a circular economy, as visualised in Figure 3. For each dimension of the scoreboard, the department provided: a score, a description of the governance dimensions and the level of implementation. The OECD Secretariat integrated considerations on the level of implementation and provided recommendations to overcome the gaps, thanks to interviews with EMS elected representatives and 7 thematic discussions with over 50 stakeholders from public, private, academic and social entities during the OECD mission to Strasbourg (21-23 November 2023) (Annex Table 1).

Source: OECD (2020^[2]), The Circular Economy in Cities and Regions: Synthesis Report, <https://doi.org/10.1787/10ac6ae4-e>

Table 3. Applying the OECD Scoreboard and Checklist for Action in the EMS - Promoters

Evaluation of governance dimensions through the OECD Scoreboard on the Governance of the Circular Economy	Ways forward based on the OECD Checklist for Action
<p>Roles and responsibilities <i>In place, partly implemented</i></p> <p>The Economic Development and Local Attractiveness Department (<i>Direction du Développement Économique et de l'Attractivité – DDEA</i>) is responsible for circular economy related policies. Three elected EMS Council members are in charge of sustainable economy, municipal waste, and social and solidarity economy. They serve as link between the administrative and political bodies of the EMS. With the introduction of the 2019 Circular Economy Roadmap, the EMS started to implement actions towards the circular economy, ranging from preventing waste generation, extending product lifespans and reintegrating secondary resources into the local economy. Nonetheless, while there has been progress in sustainable public procurement and construction, renovation and demolition projects, there is room to further integrate circular economy principles in all its policies and activities. For instance, although the 2021-2026 Socially and Ecologically Responsible Purchasing Promotion Schemes (SPASER) includes circular economy principles such as encouraging the use of bio-sourced or recycled materials, there is a lack of circular criteria and incentives for circular business models to further reduce resource consumption in internal operations. The lack of application of circular models within the EMS activities and operations is a gap to overcome to put the “<i>practice what you preach</i>” principle to action.</p>	<p>→ Lead by example and act as a role model for public, private, and civil society organisations by integrating circular economy principles in the services and infrastructure of the EMS. For instance, through circular renovation of its assets (e.g., buildings, equipment, catering, office supplies), the development and inclusion of SMART (specific, measurable, achievable, relevant and time-bounded) circular economy criteria based on the objectives of the SPASER in procurement processes and tenders in order to attract suppliers and innovative solutions, and the adoption of circular business models such as Product-as-a-Service and Collective Consumption to ensure long-term maintenance of products and reduction of resource consumption through sharing in internal operations.</p>
<p>Strategic vision <i>In place, partly implemented</i></p> <p>The strategic vision for a circular economy within the EMS was formalised in the 2019 Circular Economy Roadmap. Nevertheless, despite progress in its implementation, further efforts would be required to engage the municipalities in the metropolitan area, and match human and financial resources to scale up projects and initiatives.</p>	<p>→ Raise the political commitment of the EMS Council to improve the consistency and the continuity of the work on the circular economy beyond electoral cycles, including the full implementation of the updated roadmap, which would require proper financial and human resources.</p> <p>→ Include specific targets beyond waste reduction and treatment (which need further improve) in the updated circular economy roadmap and monitor progress. These new targets may reflect measurable progress in the reduction of resource consumption per capita (e.g., water, energy and materials), the increase in the percentage of renewable and secondary material use, the increase in the share of circular economy related jobs and firms in the EMS, and the integration of eco-design and circular procurement criteria in all departments of the EMS (e.g., 5-10% of</p>

Evaluation of governance dimensions through the OECD Scoreboard on the Governance of the Circular Economy	Ways forward based on the OECD Checklist for Action
<p>Awareness and transparency <i>In place, partly implemented</i></p> <p>The EMS counts with a dedicated website to share information related to the 2021-2026 Objective Zero Action Plan and support to local businesses⁹. In 2022, the EMS launched a guide of social economy shops providing options to reduce resource consumption in food, mobility, leisure, etc. (EMS, 2022^[23]). It also developed a map of organisations working towards a circular economy (Zéro Déchet Strasbourg, 2023^[24]) However, the business community finds it difficult to identify the available tools (e.g., subsidies, grants, regulations) to accelerate the transition towards a circular economy, as information on circular economy opportunities is scattered across policy documents and websites. In addition, there is limited awareness of the 2019 Circular Economy Roadmap. The EMS faces challenges in reaching citizens beyond the reduced number of associations involved in sustainability awareness campaigns.</p>	<p>total procurement in 2024).</p> <p>→ Elaborate a one-stop-shop circular economy online information system, targeting business, citizens and municipalities.</p>

Table 4. Applying the OECD Scoreboard and Checklist for Action in the EMS – Facilitators

Evaluation of governance dimensions through the OECD Scoreboard on the Governance of the Circular Economy	Ways forward based on the OECD Checklist for Action
<p>Co-ordination <i>In place, partly implemented</i></p> <p>As a result of the 2020-2023 Waste and Circular Economy Contract of Objectives (CODEC), in 2021 the EMS created a working group for the circular economy to strengthen intra-organisational co-ordination and share information across departments, such as water, waste management, construction, economic development, and planning. At vertical level, the EMS started a long-standing collaboration with the ADEME, which supports the EMS through two directorates: one at the national level in charge</p>	<p>→ Create a circular forum across municipalities of the metropolitan area to discuss common needs, prioritise courses of action and set common goals to improve co-ordination and scale up projects.</p> <p>→ Maintaining a database with relevant information (e.g. focal points in each of the 33 municipalities, planned and delivered actions, updates on key indicators, and common issues to which local authorities can provide joint solutions) for the implementation of the updated circular economy roadmap.</p>

⁹ <https://www.strasbourg.eu/financements-dispositifs-de-soutien-et-appels-a-projets>

<p>of planning and research, and one at the regional level that provides financial support to circular economy activities (e.g., those included in the 2020-2023 CODEC). Co-ordination across the 33 municipalities has proven difficult due to limited capacity of local governments (OECD, 2023^[11]).</p>	
<p>Policy coherence <i>In place, not implemented</i></p> <p>The overall consistency of EMS strategic policies is challenged by the absence of a systemic approach. While the roadmap sets a clear definition of circular economy that is based on the French definition by ADEME with the 7 pillars¹⁰, reflections are ongoing on how to integrate effectively the circular economy transition to the energy transition and the decarbonisation agenda.</p>	<p>→ Map current policy strategies within the EMS that could be linked to the circular economy and integrate them into the updated circular Roadmap, with a view to clarifying how the circular economy, as a means to an end, can contribute to the achievements of objectives in key sectoral areas.</p>
<p>Stakeholder engagement <i>In place, partly implemented</i></p> <p>The Eurométropole of Strasbourg consulted several stakeholders to develop the 2019 Roadmap. In addition, the 2020 Pact Thinking, Planning and Building in Ecological Transition (<i>Le Pacte "Penser, aménager et construire en transition écologique"</i>)¹¹, initiated by the EMS Urbanism Department, gathered 130 partners to agree upon 60 thematic areas of work as key objectives for urban planning and real estate development in the EMS, which included decarbonisation and the circular economy.</p> <p>Despite the existing initiatives, engaging businesses and citizens in circular economy and waste management projects remains challenging (OECD, 2023^[11]). Various initiatives tested in 2022, such as webinars and onsite meetings with business and other local economic actors, have proven ineffective.</p>	<p>→ Map stakeholders (beyond usual suspects) based on their interests, influence, and potential contributions to the circular economy roadmap. The EMS could apply the Reflexive Monitoring approach to stakeholder analysis (Van Mierlo et al., 2010^[25]). The analysis is conducted through workshops where participants suggest actors and organisations. The aim is to identify 'less visible' actors that have capacities and resources of interest for the circular economy transition, and to establish causal links regarding the direction of financial and information flows among them.</p> <p>→ Foster partnerships and collaborations between the EMS, businesses, NGOs, academia, and other stakeholders to leverage their expertise, resources, and networks in advancing the circular economy transition, and develop know-how through quadruple-helix¹² collaboration.</p>

¹⁰ i) Sustainable extraction/use and purchasing; ii) eco-design; iii) industrial and territorial ecology; iv) functional economy; v) responsible consumption; vi) extend life cycle of products; and viii) recycling.

¹¹ <https://www.strasbourg.eu/demarche-pacte>

¹² Quadruple-helix collaborations respond to the need to expand the number of actors involved in decision-making from triple-helix (i.e., governmental actors, industry and academia) towards collaborations including the active involvement of citizens and civil organisations. These collaborations have the potential of supporting and

Appropriate scale

In place, not implemented

The EMS supports community projects, pilots, and experimentations at different scales. At the micro scale, the EMS has supported experimentation in recycling and reuse of secondary materials on two construction sites. In 2022, secondary materials from the deconstruction of a former military hospital, Lyautey, were used to build outdoor spaces at the site. In cooperation with Toulouse Metropolis, the EMS is testing methodologies for deconstruction and local reuse. The EMS provides subsidies for individual households and community composting facilities. At the meso level, the EMS works actively in three industrial symbiosis clusters (i.e., CLES, Rhenan Ecoparc, and Plaine des Bouchers). The Citadelle District is a low-carbon urban redevelopment project where the EMS expects to experiment with circular construction methods. Yet, these initiatives do not reflect a full-fledged territorial approach to the circular economy, which has only been partially explored through micro and meso-level experimentation and projects. The achievements in industrial symbiosis remained confined to their industrial complex and have not found echo in commercial areas and neighbourhoods. Resorting to the installed capacity and local expertise regarding industrial symbiosis, this exploration could drive the EMS to develop a macro scale and more systemic and functional approach for the circular economy transition.

- Set testbed spaces for urban circular solution pilots within the intercommunal limits. This can be done by combining the use of brownfields available in the EMS and the France Experimentation Scheme (*dispositive France Expérimentation*) that allows companies to deviate from legislation or regulation hindering the implementation of an innovation project (French Government, 2024^[26]). Thus, the EMS can promote the identification, planning and testing of innovative solutions and technologies to enable a functional approach to close, narrow and slow resource cycles in the intercommunal territory.
- Explore linkages and opportunities for the development of urban and industrial symbiosis in the intercommunal territory. Analyse resource synergies (i.e. materials, energy and space) between urban development projects and the existing industrial symbiosis clusters in the EMS to close, narrow and slow cycles at the metropolitan level.
- Urban mining, or the identification of large amounts of secondary resources within the intercommunal limits, can provide a baseline assessment of the available materials at the EMS and serve as basis for long-term circular economy planning and local market development in collaboration with the Region.

Table 5. Applying the OECD Scoreboard and Checklist for Action in the EMS – Enablers

Evaluation of governance dimensions through the OECD Scoreboard on the Governance of the Circular Economy	Ways forward based on the OECD Checklist for Action
<p>Regulation <i>In development</i></p> <p>The EMS has limited regulatory statutory powers, with the exception of public procurement and the management of its own assets, which can be donated for reuse. The City and the Eurométropole of Strasbourg’s 2021-2026 Socially and Ecologically</p>	<ul style="list-style-type: none"> → Develop circular public procurement criteria based on the objectives of the SPASER. These criteria could be based on indicators that are specific, measurable, achievable, relevant, and time-bounded (SMART). These indicators could further specify the requirements contained in the SPASER (e.g. that products should

triggering more systemic responses to socio-technical issues such as waste prevention and material re-use, for they improve the acceptance of technical solutions from the design phase forward.

Responsible Purchasing Promotion Schemes (SPASER) include: socially responsible purchasing, eco-responsible and health-protecting purchasing, and fair-trade purchasing.

The EMS is developing Circular Economy Strategies for Construction and Demolition procurement in order to plan selective deconstruction and to foster the use of secondary construction materials. Both public and private actors in the EMS face difficulties navigating and complying with existing regulations on waste and w circular economy such as the French Anti-waste Law for a Circular Economy (AGEC).

Financing

In place, partly implemented

The EMS has foreseen a circular economy budget since 2021. In 2022 the total budget was EUR 747 229, 83% higher than in 2021 (EUR 407 281) (OECD, 2023^[11]). This was a result of the 2020-2023 CODEC signed with ADEME (ADEME, 2020^[27]).

The 2021-2026 *Objective Z Action Plan* included a call for organisations such as schools and professional associations aimed to reduce waste and improve recycling in the EMS. Selected projects received funding for up to EUR 10 000 to implement awareness campaigns, waste reduction and events for citizens on waste prevention and reduction. Between 2018-2023, the EMS has allocated approximately EUR 370 000 to a total of 59 projects (EMS, 2023^[28]).

In 2021, the EMS launched the Start-RSE call for companies that aim to strengthen their corporate social responsibility (CSR). Start-RSE engages firms through a process that includes diagnosis, concrete actions and financial assistance of up to EUR 1 500 per company. The circular economy is one of the dimensions of CSR that can be promoted through this call (EMS, 2021^[29]).

The EMS uses different instruments to garner additional financial resources. Since 2013, derived from the Household Waste Removal Tax (TEOM) –a tax ancillary to the French property tax–, a special fee has been applied to non-household waste produced by local businesses relative to the quantity of waste they generate (Ministère de l'Économie, des Finances et de la Souveraineté industrielle et numérique, 2023^[30]). Additional resources have been obtained by the EMS from the France Relance plan, which aims to accelerate the country's ecological, industrial and social transformations for the future (Republic of France, 2021^[31]). France Relance allocated a EUR 30 Bn budget in 2021 for the country's ecological and energy transition, and it is accessible through local projects. The EMS obtained a budget of approximately EUR 2.5 Bn from France Relance for the period 2021-2026 that will benefit 250 projects at the metropolitan level. The EMS states that 80% of investments will benefit local business, the renovation and extension of public buildings, renewal of public lightning, and greening of

be designed with easily separable components to facilitate disassembly, require products to contain a minimum percentage of secondary materials, set minimum durability and performance standards for products to ensure longer lifespan and less maintenance). Clear criteria will benefit transparency, improve competition, mitigate risks among suppliers, ensure legal compliance and facilitate evaluation and selection processes.

- Explore Public-Private Partnerships to attract private investments by reducing liabilities and risks in up-front investments for circular economy infrastructure such as circular business parks, bio-digesters for food waste, and spaces for co-creation and circular innovation (e.g., regarding circular construction). Public-Private Partnership can also help the EMS to build trust among stakeholder and demonstrate its long-term commitment in the transition.
- Mobilise resources based on a strategic financial plan with short, medium, and long-term objectives. Provide this strategic financial plan with Key Performance Indicators (KPIs) to ensure the effectiveness of the resources deployed in supporting the circular economy transition.

schoolyards. However, it is not clear to what extent this budget will be used exclusively for circular economy initiatives¹³. The EMS also resorts to the European Regional Development Fund (ERDF) for public and private projects related to the circular economy. Public funding is crucial in the EMS, for risk aversion is common among private investors, which has resulted in limited up-front private funding on circular economy projects. (OECD, 2023^[11]).

While several sources of funding are available at the EMS to support businesses, the social and solidarity economy and other organisations, the EMS has limited competences to provide financial support to economic actors, as structural financial assistance to companies constitutes a restrictive authority of the Grand Est region. The EMS can only provide financial support to companies through calls for projects on the basis of exemption agreements with the region (French Government, 2024^[32]).

Capacity building

In place, partly implemented

In terms of human resources, two professionals have been hired for circular economy related tasks, namely a Circular Economy Officer and a manager for circular construction projects. These two positions are funded as a result of the financial support of the French Agency for Ecological Transition (ADEME) through the 2020-2023 CODEC. As the circular economy agenda is foreseen to grow at the EMS, human resources remain a priority to consider for the implementation of the agenda, the coordination across departments and municipalities, which face capacity gaps.

The EMS has organised a number of trainings on waste management, functional economy and on eco-design. In particular, the 2023 MarkCCIng Durable eco-design training programme, in collaboration with ADEME and the Chamber of commerce of the Grand Est Region, proposes training programme to companies in the Grand Est each year, on the life cycle approach and eco-design tools and methods.

Despite these efforts, the EMS has been unable to guarantee sufficient and longer term dedicated human resources from its own budget for implementing the circular economy actions outlined in the 2019 circular economy roadmap. The lack of dedicated personnel is thus a major barrier to the transition.

- Structure a training circular economy programme for public officials. Given the initial state of development in the EMS, circular economy concepts and applications can vary throughout time. The EMS could provide new staff with an introductory programme on the principles, applications and actions related to the circular economy in the EMS. Such a programme could also be updated over time to ensure consistency in shared knowledge and objectives during the transition.
- Develop a skills forecast to map required capacities and future needs to accelerate the transition, especially for the private, social and solidarity sectors, in collaboration with key partners (e.g. the Chamber of Commerce and Industry, the Chamber of Art and Craft). This will contribute to future-proofing education and training programmes for the circular economy in the EMS.

Innovation

In place, functioning

- Support businesses that can have the potential to be scaled up after the pilot phase. Building on existing initiatives (i.e. MAkCCIng

¹³ <https://www.strasbourg.eu/-/bloc-notes-2-5-milliards-relevance-transition-ecologique-ems>

The EMS has signed different agreements with the Chamber of Commerce (CCI) on eco-design and sustainable purchases; with the Chamber of Art and Craft (CMA) on the *Répar'acteurs* and *Eco-défis* labels; and with ADEME on the 2020-2023 CODEC. The EMS has also signed a convention with “Club EFC (*économie de la fonctionnalité et de la coopération*)” for the adoption of a “functional economy” approach into the public procurement tenders. In partnership with four social and non-profit organisations, through a service of general economic interest (*Service d'Intérêt Economique Général - SGEI*)¹⁴, the EMS promoted experimentation of second-hand clothing and footwear collection with four operators from 2017 to 2021. The positive results (i.e. 80% increase in collection (nearly 1 800 tonnes per year) prompted the authority to renew the SGEI for 2022-2026. In 2023, the EMS launched project to repair and re-use broken and abandoned bicycles left in public spaces and in 2024, the EMS plans to launch a new SGEI for electronics (OECD, 2023₍₁₁₎).

Established in 2013, the Local and Environmental Cooperation in Synergies (*Coopérations Locales et Environnementales en Synergies*, CLES), is an industrial symbiotic complex gathering 32 synergic companies of the Port of Strasbourg. From 2020, 23 companies within the existing *Rhenan Ecoparc*, have identified through workshops more than 70 possible symbiotic links amongst themselves. In 2023, the EMS started an initiative to create a new industrial symbiotic network in the South of its territory (*Plaine des Bouchers*), yet no further official information is available in this project. Economic actors in the EMS point out the need for supporting mechanisms to allow start-ups to scale-up and to sustain the demand for circular products and services.

→ durable, Climaxion) the EMS can help navigate and simplify administrative processes for the management of projects on the circular economy, as well as technical and business support services in areas of, development, technology implementation and regulation compliance. These kinds of support are non-financial in essence and can be provided by the EMS within its statutory powers.

→ Stimulate demand for innovative circular solutions (e.g. bio-based and modular buildings, product-as-a-service office supplies and equipment) through tenders developed jointly between knowledge centres and the business sector.

¹⁴ SGEI are services that would not be carried out by market partners in absence of public intervention.

Data and assessment

In place, not Implemented

The EMS has two Barometers on the Local Economy and the Ecological transition, which act as benchmarking platforms (Agence d'urbanisme de Strasbourg Rhin supérieur, 2023^[71]). Yet, these barometers provide only two indicators regarding the circular economy: the number of green and circular jobs created in 2019 and the reduction of household waste per capita. Within the industrial symbiosis clusters, especially in CLES, companies have signed non-disclosure agreements, which have resulted in limited information sharing and exchange among public and private partners. General data and information on household waste, the circular economy (e.g., public documents), and local sustainable economy indicators are available through different legal reporting mandates.

Data availability is a major challenge for the EMS, the main source of data being the preliminary study of waste from economic activities that informed the design of the 2019 FREC. Available data do not include information on the performance of material flows in the EMS. The difficulties the EMS encounters in maintaining updated data on reduction of resource use is also likely to affect the design implementation and promotion of circular business models in the medium and long-term.

- Develop an open access, centralised and up-to-date database on resources and material management in the EMS.
- Foresee a robust monitoring framework of the Roadmap to assess the EMS-wide progress towards the circular economy and identify what can be improved to bring about more systemic circular solutions.

Source: Author's own elaboration.

Accelerating the circular economy transition of the Eurométropole of Strasbourg

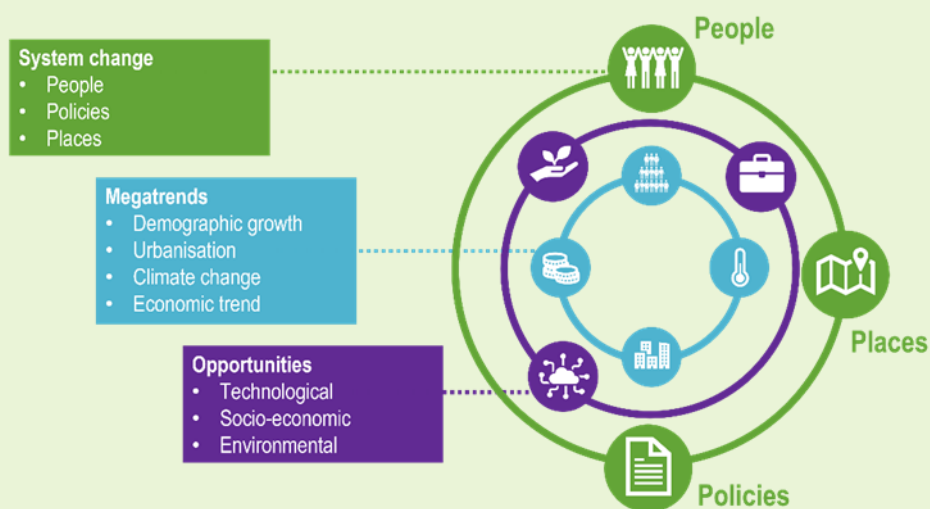
Based on the OECD 3Ps analytical framework – *People and firms, Policies, and Places* (Box 3), the following key governance recommendations are highlighted for the Eurométropole of Strasbourg:

- *People and firms*: Thus far the approach adopted by the EMS on the circular economy has been largely top-down, with limited engagement from the civil society. In addition, as the ‘connector’ and promoter of regional development across 33 municipalities, the EMS holds key competences to leverage in the transition towards a circular economy, notably in terms of transport, water and sanitation, household waste collection, housing and planning. The updated version of the Roadmap, expected by mid-2024, is therefore an opportunity to reinforce engagement with civil society through a “*people-centred*” approach whilst also strengthening “solidarity” across municipalities.
- *Policies*: In part reflecting increased geopolitical global risks and their consequences on raw material price and supply, “doing more with less” has become increasingly important. The updated version of the circular roadmap expected mid-2024 should therefore look to adopt this underlying principle by moving from a “waste reduction” approach to a culture of “consumption reduction” that also encourages sustainable eco-design (e.g. through the launch of an eco-design centre for the development of innovative technical eco-design projects) and by encouraging businesses to transition from linear “take-make-dispose” models to circular business models (e.g. through ad hoc services for companies to encourage resource efficiency).
- *Places*: A spatial approach to the circular economy can also improve the attractiveness of the EMS through the development of “circular economy areas”. Capitalising on existing capacities and expertise in its industrial symbiosis clusters, the EMS could: conduct an urban metabolism analysis; promote the development of circular areas (e.g., experimental zones, incentives to support investments), soil recovery for social value (e.g., bioremediation of former industrial soils, ecological corridors) and closed material cycles (e.g., building design for material recovery and reuse, repair facilities); develop circular areas that expand synergies with and between non-polluting industries, businesses and residential complexes; and further implement circular land planning through urban renewal projects .

Box 3. The OECD 3Ps framework: People and firms, Policies and Places

The 3Ps approach (People and firms, Policies, and Places) provides a conceptual framework to make the circular economy happen in cities and regions.

Figure 5. The OECD 3Ps framework: People and firms, Policies and Places



People are at the centre of a cultural shift towards new business and governance models within a circular economy. The circular economy is a shared responsibility across levels of government and stakeholders. The business sector can determine the shift towards new business models (e.g. using secondary materials, recycling, sharing, etc.). Knowledge institutions contribute to boosting innovation and research. Not-for-profit organisations are at the core of bottom-up initiatives in a wide range of sectors, such as food and the built environment, to raise awareness and build capacities. The role of these stakeholder groups is described below.

The circular economy calls for a holistic and systemic approach that cuts across sectoral policies. As somebody's waste can be someone else's resource, the circular economy provides an opportunity to foster complementarities across policies, such as environmental, regional development, agricultural and industrial policies.

Adopting a functional approach going beyond the administrative boundaries of cities and regions is important for resource management and economic development. Cities and regions are not isolated ecosystems but spaces for inflow and outflow of materials, resources and products connected with surrounding areas and beyond. Therefore, linkages across urban and rural areas (e.g. related to agriculture and forestry) are key to promoting local production and recycling organic residuals for use close to where they are produced, avoiding negative externalities related to their transportation. At the regional level, loops related to a series of economic activities (e.g. the bioeconomy) can be closed and slowed.

It is important to note that actions proposed and based on the 3Ps approach are neither compulsory nor binding. They represent suggestions, for which adequacy and feasibility should be carefully evaluated by each city/region, involving stakeholders as appropriate. In turn, the combination of more than one action can be explored, if necessary. Moreover, actions need to be prioritised acknowledging that not all recommendations can be tackled at the same time. Steps taken towards a circular transition

should therefore be progressive, according to the needs and the capacity of the city/ region. When prioritising and assessing the adequacy and feasibility of the suggested actions, the resources needed to put these actions into practice should be carefully evaluated, as well as the role of stakeholders who can drive the implementation forward. Finally, proposed actions should be updated in the future as new steps and objectives may emerge as actions start to be implemented. Implementation will not be possible without engaging several stakeholders and levels of government.

Source: OECD (2020^[21]), The Circular Economy in Cities and Regions: Synthesis Report, <https://doi.org/10.1787/10ac6ae4-e>

People and firms

Make the transition “people-centred” and enhance “solidarity” across EMS municipalities

While the EMS has taken action first on waste prevention and then on the development of a circular roadmap in 2019, the approach to move towards a circular economy has been mainly top-down, with limited engagement from civil society. As the connector across 33 municipalities and promoter of regional development, the EMS has key competences to leverage on in the transition towards a circular economy, notably in terms of transport, water and sanitation, household waste collection, housing and planning, based on the principle of solidarity. The updated version of the roadmap, expected by mid-2024, could foster a “people-centred” circular transition and enhance solidarity across EMS municipalities, in particular by:

- **Establishing spaces for reuse, sharing resources and repairing, which are visible in the municipalities, accessible and affordable.** The EMS could map existing vacant and underused public (and private) spaces to facilitate the donation, exchange and resale of goods for circular economy activities. This can contribute to improving the visibility of the circular economy in the EMS as well as position the EMS as a role model in the transition. The initiative could be accompanied by awareness-raising of the benefits of the circular economy and capacity-building actions.
- **Making sure that big events,** including the Christmas market in Strasbourg that attracts millions of tourists, **incorporate circular principles to raise awareness.** Concrete actions for the EMS could include: setting standards to incentivise equipment rental; avoiding plastic waste (replacing disposable plastic cutlery and cups with reusable ones, encouraging guests to bring reusable bottles); developing collaborations across the supply chain to reduce waste generation from the source and scale up best practices through knowledge sharing and promoting local production to reduce raw material imports.
- **Opening challenges and a participatory budget** for citizens to contribute to innovative ideas that can improve the quality of life in neighbourhoods, according to the circular economy principles of regenerating nature. Seed funds and participatory budgets could trigger communities to re-think habits and find or co-create circular solutions by themselves. In addition, the EMS could define a series of challenges or pre-defined issues at the metropolitan level to be solved by citizens, communities or start-ups through solutions that should include circular economy principles.
- **Fostering vocational education, and apprenticeships** to equip local administrations, companies and civil society with the skills needed for the transition to a circular economy. The EMS could collaborate with the Grand Est region (which holds the competency for education and training), local economic actors, and secondary and higher education institutions to develop a long-term plan to teach, train and continuously adapt current and future workers to circular economy principles, methods and solutions. This plan should cover all levels of qualified education, from vocational to professional degrees, to ensure the preparedness and adaptation of the skilled workforce. For example, in the case of circular construction, the EMS should target engineers, architects, urban planners, project managers, accountants and material and component suppliers, among others.
- **Ensuring that people have access to services that reduce resource and material use and facilitating sharing options.** Ensuring widespread access to services that promote resource and material efficiency is essential to advance towards a circular economy. A key action entails emphasising sharing opportunities, which not only reduce individual consumption but also optimise the use of current resources. For instance, the EMS could create a public lending service for sport and outdoor equipment such as racing bikes,

tennis rackets, life jackets, and hiking gear. This service could be based on donations and second-hand purchases. Through sharing services communities could significantly reduce the need for new products and waste

generation, while providing access to low-income individuals and families.

International practices

- Tallinn, Estonia, has established space for reuse within its Municipal Waste Management Plan 2022-2026. The city has launched a network of reuse and repair centres near civic amenity sites for bulky waste, including reuse facilities and storage rooms for reusable items. Local residents can purchase reusable household items at nominal fees, while organisers benefit from extending the lifespan of reusable objects (OECD, 2023^[33]) (Interreg Europe, 2020^[34]).
- In the Netherlands, the Ministry of Infrastructure and Water Management launched in 2019 the **Green Deal Circular Festivals (GDCF)** initiative in cooperation with 49 European festivals, which aimed at reducing the environmental impact of European festivals. The main objective of the GDCF is to design and implement a model for circular festivals. The initiative includes an inventory of circular economy solutions being implemented in festivals in the areas of energy, materials, food and drink, mobility and transport, and water and sanitation (Circular Festivals, 2024^[35]). The official tourism portal in Tallinn offers guidelines and recommendations for event organisers, outlining minimum sustainable requirements. These include practices such as waste reduction and sorting, the use of energy-efficient light bulbs, minimising consumption (e.g. water and paper), promoting the production of new materials from recycled sources, cutting down on food waste, sourcing services from companies committed to sustainable principles and opting for tap water over bottled water (OECD, 2023^[33]).
- Since 2019, Lisbon, Portugal, has allocated funds for participatory budgeting exclusively earmarked for environmentally friendly projects, amounting to EUR 2.5 million for the 2021 cycle. Examples of projects funded include the development of green spaces on vacant land, installing secure bicycle parking facilities and establishing urban gardens. In 2021, 16 out of 251 proposals were centred around the implementation of circular economy criteria into built environment projects (OECD, 2022^[36]; Falanga, Verheij and Bina, 2021^[37]). In 2020, the city of Cleveland, United States, introduced the Circular Cleveland initiative, which included the Circular Cleveland Community Grants amounting to USD 40 771 from 2020 to 2023. The Circular Cleveland Grant Making Committee, composed of local residents engaged in circular economy efforts, selected recipients of funds based on their adherence to circular economy principles, community involvement and potential for initiative replication. Grant recipients used the funds to divert waste from landfills, reduce pollution, sustain the use of products and materials, and restore natural systems (Sustainable Cleveland, 2024^[38]).
- With the ambition to promote the circular economy, the city of Almere in the Netherlands launched the UpCycle City ideas competition in 2017 in collaboration with the province of Flevoland and the Dutch central government. The competition encouraged start-ups, businesses and research institutes to develop innovative business cases for resource reuse and sustainable investment plans. Two winners emerged, one proposing a reuse initiative for local street furniture and the other planning to set up a concrete plant using mineral streams from the city. Both winners received EUR 3 million in co-funding over 3 years to implement their respective projects (ECESP, 2017^[39]).
- The city of Paris, France, is advancing the circular and solidarity economy by adopting a people-centred approach. The city has set the objective of supporting the opening of solidarity reuse centres, with the aim of achieving 1 centre per 50 000 inhabitants. This commitment is reflected in various initiatives, including the 2017 Circular Economy Plan, the 2019 Local Programme for Waste Prevention and the 2018 Climate Energy Plan. Since 2016, over 60 social and solidarity economy structures, such as recyclers, repair workshops and co-operatives, have received support from the city, including the creation of Les Canaux, a space for innovation in the solidarity and circular economies, training programmes and business development orientation. These entities play a

crucial role in combatting resource scarcity and environmental degradation by producing goods and services sustainably, promoting eco-design, extending product lifespans and fostering shared ownership models (City of Paris, 2023^[40]).

- In 2013, the municipality of Forshaga, Sweden, opened Fritidsbanken, a public lending service for sports equipment, toys and leisure items. Fritidsbanken enables people to borrow a range of equipment, including skis, skates, rollerblades, life jackets and snowboards. The service receives donated sports items from private individuals, local businesses and public entities. When necessary, the items are repaired before being catalogued and made available for borrowing at no cost (Fritidsbanken, 2024^[41]).

Policies

Adapt the concept of “sobriété” (sufficiency) through the circular economy

Due to the increasing geopolitical risks and related consequences on volatility of prices for raw material, availability of resources and inflation, “doing more with less” is becoming an imperative for businesses and individuals. In 2022, France set out the Energy Sufficiency Plan (*Plan de Sobriété Énergétique*), which aims to reduce energy consumption by 10% between 2022 and 2024 (Ministère de la Transition Écologique et de la Cohésion des Territoires, 2022^[42]). The plan offered solutions to face risks in terms of gas and electricity supply due to the reduced availability of nuclear power plants, and identified 15 concrete actions across five priority areas: i) buildings; ii) mobility; iii) the public administration; iv) territorial units (*collectivités territoriales*); and v) companies. The call to “sobriété”, a term that can be translated as simplicity, frugality and sufficiency, aligns with circular economy principles as a quest for moderation in the production and consumption of goods and services requiring energy or material resources (ADEME, 2019^[43]). As such the updated version of the circular roadmap expected mid-2024 could adapt the concept of “sobriété” to the circular economy policy by:

→ **Moving from a “waste reduction” approach to a “consumption reduction” culture:**

Sufficiency policies seek to satisfy societal needs by using fewer resources. They differ from resource efficiency as they provide for “needs”, not “wants”, thus reducing absolute consumption and waste output by design (Ness, 2022^[44]). The EMS could include “sobriété” as a strategic pillar of the updated strategy to reduce resource consumption, focusing on the importance of moving beyond recycling and eco-design and as a driver to reflect on the consumption needs of the metropolitan area. Concrete actions for the EMS could consist of including “sobriété” as a criterion for public procurement policy and all of the projects subject to EMS funding, as well as working with companies that have achieved a minimum level of performance in terms of “sobriété”. The EMS could also communicate the environmental, social and economic benefits of reducing material consumption while showing the dependence level on resource exports from outside the metropolitan area.

→ **Encouraging sustainable eco-design:**

Although the EMS set eco-design objectives in the 2019 Circular Economy Roadmap (FREC), concrete actions are still lacking in the shift from linear practices to more circular ones. Tenders are an effective starting point for the adoption of eco-design. The EMS can provide incentives through public procurement prioritising building

infrastructure, renting equipment and purchasing goods that require secondary materials (e.g., doors, used bricks for façades or recycled plastic chairs) or through reused furniture and with repurposing as a final objective. For instance, regarding the built environment, the EMS could set circular and eco-design requirements for contractors and guidelines for civil servants in charge of procurement processes. These new requirements can include biobased and modular construction, deconstruction and material management through reverse logistics.

→ **Encouraging businesses to transition from linear “take-make-dispose” models to circular ones, prioritising resource efficiency and sufficiency in daily activities.**

Building upon existing collaborations on sustainable development and corporate social responsibility, the EMS could collaborate with strategic business partners (e.g. the Chamber of Commerce and Industry, the Chamber of Art and Craft) to raise awareness of the higher R-Ladder strategies (e.g. refuse and reduce) of the circular economy, which can directly lead to a reduction of resource consumption as well as more transformative behavioural changes compared to recycling. Current collaborations with EM Strasbourg Business School and the Chamber of Commerce and Industry could be expanded to incorporate circular economy

principles. This collaboration with business partners could take the form of joint funding schemes for companies to test projects based

on the principle of “doing more with less” and promoting alternative business models based on the sharing economy and repair.

International practices

- The 2020 Circular Economy Strategy of Île-de-France (*Stratégie régionale en faveur de l'économie circulaire*, SREC) sets the ambition to promote “sobriété” and replace non-renewable resources with renewable ones in order to achieve the objective of becoming a leading region in the transition to a circular economy. Most of the resources that supply the regional metabolism are obtained from outside the region (80%), with half coming from other regions in France (52%) and the other half from abroad (48%). This dependence exposes the Paris region to potential resource shocks and volatile commodity prices. The strategy recognises the urgency of reducing the consumption of resources, emphasising the need to go beyond recycling and eco-design, focusing on the needs of society with a view to sobriety (Île de France Region, 2020^[45]). The Strategy for a Circular Economy in Normandy (*Stratégie pour une économie circulaire en Normandie*), France, establishes as a priority the development of a competitive economy building on the “sobriété”. As such, it should become a key criterion in all projects (land use, choice and organisation of production tools, supplies, storage, purchasing policy, etc.) promoted by the region. The strategy includes specific actions to be taken by the region: i) integrating eco-efficiency and “sobriété” into investments and the organisation of industrial sectors; ii) recognising companies that have achieved a good level of performance and commitment in terms of “sobriété”; iii) promoting innovation and the development of services in logistics to provide eco-efficient solutions based on the “sobriété” approach (Region of Normandy, 2020^[46]).
- The city of Frankfurt, Germany, promoted a programme targeting the under-occupancy of housing. A bonus system incentivises tenants to move to a smaller home when their space needs change (e.g. when children move out of the house). As a result of this initiative, under-occupied social housing levels decreased, the waiting lists for families in need of three-, four- or five-room apartments shortened and potentially contributed to reducing the need for new buildings in the long term (European Environmental Bureau, 2023^[47]).
- In the Basque Country, Spain, the Basque Ecodesign Center (BEdC) operates as a partnership among private firms, industrial clusters and the Basque government. Its aims to position the Basque Country as a leader in eco-design in the European Union. The main focus of the BEdC is the development of innovative technical projects on eco-design, including: i) the integration of life cycle thinking in supply chains; ii) environmental assessment and improvement of organisations and buildings through a life cycle approach; iii) research into and pilots of new circular business models; iv) projects aiming to change consumption patterns. Through the work of the BEdC, the Basque government expects to embed eco-design in both private and public sectors (Ihobe, 2024^[48]).
- Through ReLondon, a partnership between the Mayor of London and the London Waste and Recycling Board, the city of London, United Kingdom, offers the “Redesign your business” service. It provides financial and expert support to retail businesses to develop “beyond waste” ideas and make better use of waste/surplus materials and ingredients, reusable packaging and product refill, repair services and sharing spaces, among others. ReLondon offers grants of between GBP 2 500 and GBP 5 000 to up to 20 London-based street-level retailers. Eligible businesses must come under one of four categories: food and drinks; take away; retail; and high street services (e.g. hairdresser, barber, chemist) (ReLondon, 2024^[49]).

Places

Improve the attractiveness of the EMS through the development of “circular economy areas”

A spatial approach to the circular economy transition can improve the adoption of circular economy solutions. By capitalising on existing capacity and expertise around industrial symbiosis clusters (i.e., *Coopérations Locales et Environnementales en Synergies* (CLES), *Eco-Parc Rhénan* and *Plaine des Bouchers*), the EMS can promote “circular economy areas” that expand synergies from and between non-polluting industries, businesses and residential complexes to close, narrow, slow down and regenerate resource cycles in mixed-use neighbourhoods. This means moving beyond industrial symbiotic clusters to places wherein production, work and living coexist and benefit from each other through the exchange of resources.

→ **Conducting an urban metabolism analysis:**

Urban metabolism analysis is a combination of material flow analysis, lifecycle assessment and environmentally-extended input-output analysis. Material flow analysis identifies the total amount of materials and energy used by cities, lifecycle assessment serves to build an inventory of emissions related to product production, transportation, use and disposal, while environmentally extended input-output analysis helps to characterise the material needs regarding sectors and economic functions within an economy. The EMS could seek opportunities for collaboration with universities and research centres to conduct the analysis. Urban metabolism analysis can provide the EMS with a snapshot of its resource use, leading to data-driven policy making and priority setting for updating the circular economy strategy, including targeting resources that can be avoided or reduced in production processes.

→ **Developing circular areas:** Developing self-sufficient areas that close, narrow, slow and regenerate resource loops can ensure

long-term achievements for the circular economy, as well as sustain gradual and consistent behaviour change among residents. These areas are structured to minimise reliance on external resources and enhance interaction among residents. They often generate their own energy and manage wastewater locally, boosting resource efficiency and security and fostering new economic opportunities. The EMS could facilitate the advancement of these areas by providing both direct and indirect economic incentives to improve the attractiveness and competitiveness of the EMS for businesses in the circular economy.

→ **Further implementing circular land planning through initiatives like urban renewal projects.**

The EMS could create guidelines to incentivise the implementation of circular economy solutions in the renovation and construction of buildings. Designing more self-sufficient and circular neighbourhoods requires collaborative efforts involving municipalities within the EMS, land developers, construction and waste industries and building owners.

International practices

- In 2015, the Environment and Energy Agency of the Brussels-Capital Region, Belgium, commissioned an urban metabolism analysis. The study weighed the region's metabolic balance, gave key insights into consumption patterns and drivers behind the consumption and provided an in-depth analysis of five flows (local extractions, imports, disposals into the environment, exports and unused local extractions). The Brussels Institute for Statistics and Analysis tracked data on energy use at the regional and municipal levels for 40 years and water use for 70 years. By 2023, the Brussels-Capital Region had gathered 108 datasets, 96 academic publications, 57 maps and other datasets on social, economic, geographical and biophysical characteristics, as well as stocks and flows, to support the analysis of its urban metabolism (Eco City Builders, 2018^[50]).
- The former industrial area of Hiedanranta in Tampere, Finland, was transformed into a circular area through a redevelopment project led by the municipality. The initiative is built upon four planning principles: diverse and flexible urban structure, integrated green and blue structures, subareas with identity and sustainable transport and parking. In addition, a specific circular economy plan and guidelines for private and public buildings in the area will be elaborated to incentivise the independent implementation by the residents of circular economy solutions in renovation and new build projects (City of Tampere, 2020^[51]).
- In 2014, the city of Amsterdam, Netherlands, decided to redevelop an old industrial area into a showcase for circular area development. Buiksloterham, a neighbourhood in the north of Amsterdam, is expected to be a mix of residential and work spaces by 2034. The strategic development plan for Buiksloterham considered interventions to ensure systemic change (e.g. experimental zones, inclusive governance, incentives to support investments) including energy sufficiency (e.g. passive solar design, retrofitting existing office stock), innovation and smart technologies (e.g. above ground stormwater management systems, urine separation infrastructure), soil recovery for social value (e.g. bioremediation of former industrial soils, ecological corridors), sustainable mobility (e.g. reduced parking availability, vehicle sharing programmes) and closed material cycles (e.g. building design for material recovery and reuse, repair facilities and incentives for zero packaging stores) (Metabolic, 2014^[52]).
- ECO3 is a public-private partnership established in 2014 and managed by the city of Nokia, Finland, based on co-operation between private companies and universities. By 2020, the ECO3 network comprised 28 partner organisations from a variety of industries. Since the launch of the industrial symbiosis activities, an estimated EUR 70 million in committed investment has been achieved and around 200 jobs have been created. ECO3 makes use of urban inputs and outputs in its operation: for example, the integration of a biogas plant at ECO3 triggered a tender for gas-powered vehicles in the city, as well as the construction of two private gas stations for commercial use (Lander Svendsen et al., 2021^[53]).
- In 2018, the province of Zuid-Holland in the Netherlands collaborated with local universities and research centres to explore a circular development approach for the Binckhorst area in The Hague, a former industrial site spanning 130 hectares. This transformation aligned with circular economy principles to facilitate mixed-use urban development, encompassing residential and small-scale industrial activities. Through this project, the province of Zuid-Holland recognised that short-term plans for circular development should create the conditions for long-term functioning (e.g. translating circular ambitions into concrete targets, incorporating circular criteria into land allocation and using existing local infrastructure and stakeholders to promote circularity) (Accez, 2021^[54]).

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Annex A. List of consulted stakeholders consulted during the policy dialogue

Annex Table 1. List of consulted stakeholders consulted during the policy dialogue

Institution	Name
ADEME	Emilie Albisser
ADEUS	Fabien Monnier
Agence du climat	Emmanuel Rivière
Agence Qualité Construction	Bertrand Chauvet
BOMA	Sabrina Ferlay
Bouygues Construction	Matthieu Heller
CCI	Ronan Sebilo
Chambre de Métiers d'Alsace	Judith Zebst
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Collectivité européenne d'Alsace	Armand Girondier
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	Ariane Bussard
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	Janie Mantelet
	Sandrine André
	Ludan Andres
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	Hugo Saillard
	Jean Melounou
	Olivier Hervé-Bazin
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ENSAS	Emmanuel Dufrasnes
Envie	Nathalie Faivre
GEM	Sébastien Haller
Green Phoenix	Daniel Monjaraz Perez

Groupement des usagers du port	Stéphanie Treger
Habitation moderne	Françoise Lanarre
Hydreos	Agnès Martin-Cocher
Initiatives Durables	Simon Pingeon
KS Group	Mylène Princet-Heyd
La Renouveau	Caroline Kraemer
Office du tourisme	Marie Schueller
Relais 2D	Gilles Grosclaude
SAMINS	Christine Lollier-Brassac
SEMIA	Laura Lehmann
SUEZ	Laurent Anselmo
UMIH	Aline Kuentz
	Christophe Weber
Uzaje	François Satin
Veolia	Jean-Philippe Kahn

OECD Programme on the Circular Economy in Cities and Regions

The OECD Programme on the Circular Economy in Cities and Regions supports local and regional governments in designing and implementing policies allowing the transition from a linear to a circular economy in a shared responsibility with national governments, with a strong focus on the governance framework conditions required for the transition. The OECD Roundtable on the Circular Economy in Cities and Regions, a multi-stakeholder network gathering 100+ cities, regions and institutions, facilitates knowledge exchange.

European Commission's Circular Cities and Regions Initiative (CCRI)

Launched and funded by the European Union as part of the Circular Economy Action Plan, the Circular Cities and Regions Initiative (CCRI) focuses on implementing the circular economy across Europe's cities and regions. The CCRI aims to increase synergies among projects and initiatives, disseminate relevant knowledge, and give greater visibility to best practices. Combining this knowledge sharing with technical and financial support, it offers comprehensive support to stakeholders across Europe's cities and regions.

