

2 Towards the circular economy in Tallinn, Estonia

This chapter details and analyses the main components of existing circular economy initiatives promoted in Estonia and the city of Tallinn. At the national level, the first step towards a circular economy in Estonia is reflected in the *Circular Economy White Paper* published in 2022. At the local level, the city of Tallinn transformed its Waste Management Department into a Circular Economy Department, with the intention of co-ordinating action towards the implementation of a future circular economy strategy for the city.

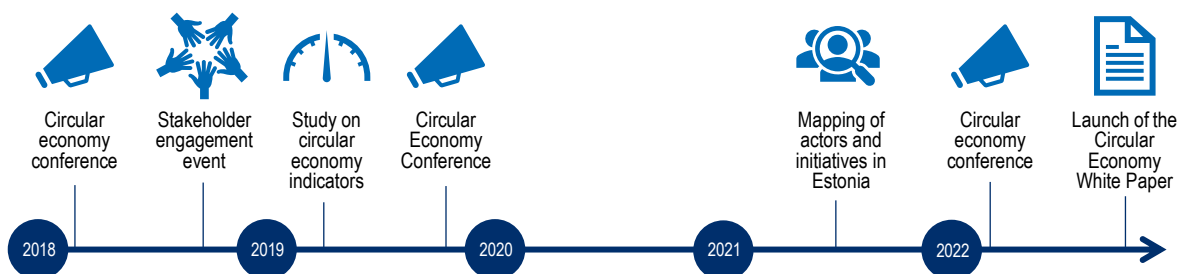
Progress towards a circular economy in Estonia

As acknowledged by the national strategy Estonia 2035, the transition to a circular economy can contribute to environmental objectives (Government of the Republic of Estonia, 2021^[1]). They include: i) reducing the total net greenhouse gas (GHG) emissions to 8 million tonnes of CO₂ equivalent (tCO₂e) by 2035; ii) reaching a circular material reuse rate of 30% by 2035 (17.3% in 2020); iii) reducing the energy consumption of residential and non-residential buildings from 16.7 terawatt-hours (TWh) to 14.5 TWh by 2035; and iv) reducing GHG emissions from the transport sector from 2 395 000 tCO₂e in 2019 to 1 700 000 tCO₂e in 2035 (Statistics Estonia, 2022^[2]). National strategy Estonia 2035 recognises: the key role of the private sector in reducing waste generation and increasing material recycling; the importance of raising awareness across society to adopt sustainable practices; and digital solutions to enable reliable data to measure progress.

The first step towards a circular economy in Estonia is reflected in the Circular Economy White Paper (*Ringmajanduse valge raamat*), launched in 2022 and co-ordinated since 2018 by the Ministry of the Environment. The white paper highlights the importance of business, sustainable production and consumption, digitalisation, skills, economic and regulatory frameworks, and awareness in the circular economy. The paper also acknowledges the existence of barriers in the country to move towards a circular economy such as: unclear roles and responsibilities; limited environmental and circular economy awareness in society; lack of circular economy experts and innovative solutions; and the siloed approach to a circular economy. Nevertheless, this document does not contain specific objectives for the circular economy policy. While it identifies stakeholder groups that could be engaged in the priority areas (national government, municipalities, entrepreneurs, citizens), it does not provide a clear definition of what the role and contribution of local authorities should be.

The development of the white paper was led by a steering group consisting of representatives of all Estonian ministries and the Government Office. It was informed by multi-stakeholder events carried out between 2018 and 2022 (Figure 2.1) to identify how the circular economy could stimulate innovation and become a driver of competitiveness (Estonian Ministry of the Environment, 2022^[3]). The ministry also commissioned studies on international experiences in measuring the circular impacts and the implementation level of the circular economy in Estonia in the construction, plastics, textile and wood industries, and services sectors (i.e. accommodation and shopping centres) (Estonian Ministry of the Environment, 2019^[4]).

Figure 2.1. Timeline of circular economy initiatives in Estonia, 2018-22



Source: Own elaboration based on Estonian Ministry of the Environment (2022^[5]), *Creating a Strategy and Action Plan for Circular Economy in Estonia*, <https://ringmajandus.envir.ee/en/creating-strategy-and-action-plan-circular-economy-estonia>.

The steering group continued to play a role after the launch of the white paper, identifying the actions to be taken in strategic areas, such as the ban on single-use plastics. Municipalities, on the other hand, are called to contribute to the following four strategic actions (Table 2.1): favouring the use of sustainable products and services, promoting the sharing economy, raising awareness and implementing environmental management measures.

Table 2.1. Priorities, actions and key stakeholders of the Circular Economy White Paper in Estonia

Priority areas for development	Strategic actions	Key stakeholders
Resources are used responsibly and based on demand, resource use is well-considered and waste production is minimised.	Showing a preference for sustainable products and services	National government Municipalities Entrepreneurs Citizens
	Promoting the sharing economy	National government Municipalities Entrepreneurs Citizens
	Ensuring safe material circulation	Entrepreneurs
	Using the best possible approach, implementation of green public procurement	Entrepreneurs
The business models of Estonian companies are forward-looking and circular.	Increasing the interoperability of supply chains	Entrepreneurs
	Involving science in creating circular economic solutions	National government
	Encouraging businesses and partnerships between businesses and research institutions	National government Entrepreneurs
	Encouraging co-operation between businesses and the state	National government Entrepreneurs
The necessary know-how and expertise for implementing a circular economy is ensured and the co-operation between stakeholders and sectors is well-functioning.	Ensuring expertise, know-how and succession	National government
	Ensuring access to skilled labour, including foreign labour	National government Entrepreneurs
	Promoting cross-sectoral co-operation, including participation in international co-operation networks	National government
Functional digital solutions have been created to support the circular economy and high-quality data for monitoring the situation have been ensured.	Creating sharing and collaboration platforms	Entrepreneurs
	Ensuring interoperability between databases and collaboration platforms	National government Entrepreneurs
	Implementing innovative digital solutions, including those using artificial intelligence	National government Entrepreneurs
The circular economy is well co-ordinated and there is a supportive legal and economic environment.	Updating legislation and regulations	National government
	Defining roles, functions and responsibilities of stakeholders	National government
	Developing and applying principles and standards for gathering information	National government
	Creating digital platforms for collecting, analysing and exchanging information	National government Entrepreneurs
Environmentally conscious thinking and environmentally friendly behaviour are mainstreamed in society.	Awareness raising	National government Municipalities Entrepreneurs Citizens
	Guiding consumer behaviour	National government Entrepreneurs Citizens
	Implementing environmental management measures	National government Municipalities Entrepreneurs

Source: Estonian Ministry of the Environment (2022^[6]), *Circular Economy White Paper for Estonia*, https://ringmajandus.envir.ee/sites/default/files/2022-06/Ringmajandus_valge_raamat.pdf.

In parallel to the White Paper, at the national level, the government enables the transition to a circular economy through regulatory, financial and awareness-raising tools. First, in 2022, the Ministry of the Environment established mandatory requirements for green public procurement for furniture, cleaning products and services, office information technology (IT) equipment and copying and graphic paper, which should be implemented by all Estonian municipalities. In 2023, the ministry also established requirements for green public procurement for road vehicles (Estonian Ministry of the Environment, 2023^[7]). Second, its Environmental Investment Centre has supported 42 circular economy projects (mainly resource efficiency measures) in Harju County (where Tallinn is located) for a total of EUR 3.2 million for the period 2011-21 (EIC, 2022^[8]). Third, the ministry has created a one-stop-shop website that compiles the information available on the circular economy in the country, including circular economy solutions, success stories and a contact list of ministry representatives from the Department of Environmental Management.

A number of sectoral plans are making room for actions linked to the circular economy transition:

- The National Waste Management Plan (NWMP) 2022-28 by the Ministry of the Environment, to be launched by the end of 2023, will be consistent with the white paper. It will be the 4th National Waste Plan (Box 2.1). The strategic goal of the National Waste Plan is to implement the waste hierarchy principles and encourage the transition to a circular economy. The plan is expected to be based on four strategic objectives: i) sustainable and conscious production and consumption; ii) promotion of waste prevention and reuse; iii) increasing safe material circulation; and iv) consideration of the effects of waste management on both the human and natural environment as a whole (Estonian Ministry of the Environment, 2022^[9]; 2023^[10]).
- The forthcoming Food Waste Prevention plan sets out six areas for action to prevent, reduce and increase social responsibility for food waste throughout the food supply chain, from primary production to final consumption: i) data recovery and food waste generation mapping; ii) legislative framework and regulatory objectives; iii) implementation of effective co-operation; iv) innovation and research and development (R&D); v) promotion of food redistribution; and vi) awareness and communication. It was informed by five multi-stakeholder roundtables held in 2020 (Estonian Ministry of the Environment, 2022^[11]).
- Finally, the Estonian Environmental Strategy 2030 includes some specific targets linked to the circular economy, such as the reduction of the amount of waste disposed of in landfills and the objective of increasing the share of recovered waste (Estonian Ministry of the Environment, 2015^[12]).

At the international level, the Ministry of the Environment partners with Norway-based research organisation SINTEF to implement the project “Increasing the capacity of the circular economy”. Actions foreseen by this initiative include mapping the circular economy capacity of local governments, designing training programmes aimed at officials, creating circular economy training courses for teachers and information days as well as inter-school competitions, and developing digital and educational materials to raise awareness (Estonia Ministry of the Environment, 2021^[13]). Finally, the Ministry of the Environment collaborates with the Ministry of Environmental Protection and Regional Development of the Republic of Latvia for the cross-border implementation of the deposit packaging system (Estonian Ministry of the Environment, 2023^[14]).

Box 2.1. Waste management in Estonia

Waste management in Estonia is decentralised and falls under the responsibility of local governments. The Waste Act (2004) determines that local authorities should organise mixed municipal waste collection, transport and processing, while Producer Responsibility Organisations (PROs) collect packaging waste and other products of concern. According to the Local Government Organisation Act (State Gazette, 1993^[15]), municipalities must: i) ensure the adoption and updating of a waste management plan; ii) establish the rules for waste management in their territories; and iii) set the rules for the types of waste subject to

organised waste transport and establish the procedure for determining the size of the waste transport service fee. In 2015, a ruling by the Administrative Chamber of the Supreme Court of Estonia established that municipalities have the right to determine where municipal waste is to be delivered after collection. Nevertheless, despite available financial support, mainly through European Union (EU) funds, there is little interest in municipalities to apply for the financing of waste treatment investment projects. Private waste management operators are also eligible to apply for up to 50% grant financing of investments in waste treatment and recycling facilities. However, the five-year contracting period is not appealing for the private sector to generate a return on investments.

The overall policy direction in waste management is determined by the waste management plan developed by the Ministry of the Environment:

- The first National Waste Management Plan (NWMP) (2003-07) sought primarily to organise “environmentally safe, flexible, institutionally granted and economically justified waste management on all levels”. The plan started a major transformation of Estonia’s waste sector, particularly in light of the country’s accession to the EU. The transposition and implementation of EU waste legislation was a major focus of this plan, which set waste prevention and waste recycling as major goals. It also dealt with practical issues such as the establishment of new landfills and the closing of old ones, around 150 sites in 2001.
- The aim of the second NWMP (2008-13) was to reduce the amount of waste disposed in landfills, increase waste recovery and reduce negative impacts on the environment. In pursuing these objectives, the second plan aimed to implement the EU “waste hierarchy” – promoting waste prevention, recycling and recovery, and then reducing the amount of waste deposited in landfills. The plan foresaw waste-to-energy solutions.
- The third NWMP (2014-20) was extended by the government of Estonia until the end of 2022, including three strategic objectives. First, it established the goal of increasing waste recycling and reuse. Second, it pursued the reduction of environmental risks from waste, including via improvements in monitoring and enforcement. Priority areas of the second objective include completing closure work for 17 remaining landfills and reducing illegal waste disposal. And third, it promoted waste prevention and reduction, as well as the reduction of hazards of waste and GHG emissions from waste disposal.

Source: World Bank (2021^[16]), *Baseline Review of Estonian Municipal Solid Waste Management System*, <https://envir.ee/ringmajandus/jaatmed/jaatmevaldkonna-tervikanaluus>; State Gazette (1993^[15]), *Local Government Organisation Act*, <https://www.riigiteataja.ee/en/eli/ee/509012014003/consolide/current>.

Towards a circular economy in Tallinn, Estonia

Tallinn is in the process of defining its vision for the circular economy. The city acknowledges the key role of the circular economy within the “green transformation” pillar of city strategy Tallinn 2035,¹ which lays the foundation for the future vision of the city to become “green and global”. Moreover, the *Tallinn Sustainable Energy and Climate Action Plan 2030* recognises the key role of the circular economy in achieving climate goals, by: fostering reusable materials (especially in the built environment); producing energy from biowaste and wastewater; and transforming waste into heat and electricity (City of Tallinn, 2021^[17]).

The first step demonstrating the city’s commitment towards a circular economy was the transformation of the Waste Management Department into a Circular Economy Department (*Ringmajanduse osakond*) in 2021. The department is in charge of the waste management and circular economy policy of the municipality, as part of the Tallinn Strategic Management Office. Its main responsibilities include: i) leading the design of the city’s future circular economy strategy, as well as awareness-raising initiatives; ii) setting up public procurement

processes for waste management and transport (covering paper and cardboard, biowaste, bulky waste and mixed municipal waste); iii) verifying the performance of contracts and the quality of work carried out; iv) formulating the budget for the operational costs of waste management; and v) designing and updating the waste management plan in alignment with the NWMP. While the department's main focus is still on waste management, it is increasingly promoting reuse and repair as part of the circular economy vision (City of Tallinn, 2022^[18]).

The Tallinn Waste Management Plan 2022-2026, led by the Circular Economy Department, promotes the shift from traditional waste collection to reuse and repair, supports sustainable reuse solutions and promotes waste reduction campaigns. As part of the plan, Tallinn will create by the end of 2026 a network of Reuse and Repair Centres (*ringmajanduskeskus*). In 2020, the municipality opened dedicated spaces for reuse and repair within waste collection centres in Pääsküla and Paljassaare (Box 2.2).

Box 2.2. Waste management in Tallinn, Estonia

The Tallinn Waste Management Plan 2022-2026 is based on the NWMP and supported by local regulations. The main orientations for the development of the plan are: i) promoting waste prevention; ii) promoting and increasing separate collection and recycling of waste; iii) improving waste management and monitoring; iv) supporting the implementation of circular economy principles; v) raising awareness. In addition, the plan sets out a number of initiatives to achieve these objectives, together with detailed implementation procedures, including costs per activity, possible sources of funding and the monitoring process. The main change foreseen in the plan is to make separate collection of biowaste mandatory on all properties in 2023.

The city of Tallinn is divided into 13 administrative waste management areas (Figure 2.2) whereby 2 areas are served by a municipal-centred model and 11 by a decentralised one. In accordance with the amendment of the Waste Act, municipal-centred models will last until the end of their contracts (2023 in the case of Tallinn) and will be replaced by decentralised ones, selected through a concession procedure for 5 years.

The Circular Economy Department of the Tallinn Strategic Management Office is responsible for setting up public procurement processes for waste management and transport, which covers paper and cardboard, biowaste, bulky waste and mixed municipal waste. The frequency of collection can vary considerably depending on the administrative area: the minimum collection frequency for single-family houses is once a month but, for businesses, it can range up to six times a week for multi-storey buildings (World Bank, 2021^[16]).

The Circular Economy Department handles the solid waste stations, hazardous municipal waste collection sites, package waste collection sites (in co-operation with three Producer Responsibility Organisations or PROs) and the future Reuse and Repair Centres that will be operational in 2026. There are also several collection points for clean textiles and clothing. In addition, separate collections of packaging waste, electrical and electronic waste, tires, batteries and accumulators are implemented through producer responsibility schemes and organised by the respective PROs. The collection of packaging waste is regulated by the Packaging Act (State Gazette, 2004^[19]) and is the responsibility of packaging PROs, which agree on the location of collection points with municipalities. In 2022, there were about 400 collection points in Tallinn and the actual number needs to be increased to 500, according to the Packaging Act. However, despite regulations requiring a packaging waste collection point within 500 metres of every household, the amount of waste collected is low. This could be due to a number of factors, including: a lack of economic incentives for citizens, the fact that collection points sometimes remain full for long periods, the high collection costs for packaging PROs or the limited capacity of households to sort packaging waste. Glass,

plastic and metal packaging of soft drinks and light and strong alcoholic beverages are covered by a deposit system organised by a PRO (*Eesti Pandipakend OÜ*).

Figure 2.2. Waste management areas in Tallinn



Source: Municipality of Tallinn (2022^[20]), Organized waste transport, <https://www.tallinn.ee/est/keskkond/Korraldatud-jaatmevedu>

The main source of financing for the door-to-door collection of household waste is provided by the citizens, who pay directly to the waste management company. Exceptionally, the Tallinn Waste Centre (*Tallinna Jäätmekeskus*) collects the fees directly from the customers and pays the contracted waste management company. Fees are established during the tender process through market competition and vary depending on the type of waste. In Tallinn, the fee per lift of an 800-litre container is approximately EUR 5.50 including VAT. However, to incentivise separation at source, the fee for separately collected waste fractions included in the municipal waste management system is significantly lower than the fee for mixed waste, while there is no additional fee for paper and cardboard collection. In Tallinn, the biowaste collection fee is 50-75% lower than the mixed waste fee. The fee for bulky waste for door-to-door collection is around 16 EUR/m³ and 10 EUR/m³ in waste stations. Citizens can bring construction and demolition (C&D) waste to waste stations. Reusable materials like plastic, wood, cardboard, metal, different packages and a certain amount of hazardous waste are free of charge.

Source: City of Tallinn (2022^[20]), Organized Waste Transport, <https://www.tallinn.ee/est/keskkond/Korraldatud-jaatmevedu>; State Gazette (2004^[19]), Packaging Act, <https://www.riigiteataja.ee/en/eli/ee/513052021001/consolide/current>; World Bank (2021^[16]), Baseline Review of Estonian Municipal Solid Waste Management System, <https://envir.ee/ringmajandus/jaatmed/jaatmevaldkonna-tervikanaluu>.

Regarding financial support, the city of Tallinn will provide funds (EUR 0.5 million) for the creation of future Creative and Circular Economy Centres (*loome- ja ringmajandus keskus*) by 2023, led by the Tallinn Creative Incubator (*Tallinna Loomainkubaator*) (City of Tallinn, 2021^[21]). This first centre, which should be operational by the end of 2024, will support new and existing companies in circular product design and advice on how to advance towards the circular economy. It is embedded in Tallinn's city action plan of the European Green Capital 2023 programme (City of Tallinn, 2021^[22]; 2021^[23]). The city intends to leverage the award as European Green Capital for 2023 to transition from a linear to a circular economy. Within the framework of the green capital, some of the scheduled events and projects aim to raise awareness and build capacities in areas related to the circular economy such as waste prevention and reuse. For example, the event Trash - Let's Change the Attitude, Trash vs. Raw Material, organised in March 2023, showcased options for reducing waste generation and extending the lifespan of products, as well as waste pursuing collection by type, and raising awareness on why it is necessary (Green Tallinn, 2023^[24]). Before Tallinn, various European Green Capitals have taken action towards sustainable waste management (Box 2.3).

Box 2.3. Sustainable waste management practices in selected European Green Capital cities

The European Green Capital Award is an annual prize established and administered by the European Commission (EC) to recognise cities that best protect the environment and the quality of life of their citizens. Each year, the winning city is a model of green action and shares its practices with other cities. Some of the cities that have received the award since its launch in 2010 have made significant progress towards sustainable waste management. Some examples are as follows:

- **Nantes, France:** The city was designated European Green Capital in 2013 and adopted its circular economy roadmap in 2018. It has improved the performance of waste management with the Tri'sac system, which consists of two different coloured bags that are placed in the same container. At the treatment plant, a dedicated separation line equipped with optical sensors separates the yellow bags (recyclable) from the blue bags (residual waste). The sealed packaging is then sent to a sorting centre for recycling.
- **Ljubljana, Slovenia:** In 2014, Ljubljana became the first capital city in the EU to commit to a zero waste target and was awarded European Green Capital in 2016, largely due to its performance in waste management. The city has improved the separate collection of organic waste and reduced the amount of waste sent to landfill by 95%.
- **Oslo, Norway:** The city of Oslo was awarded the title of European Green Capital in 2019. This title is the result of Oslo's long-term efforts to achieve ambitious goals for sustainable urban development and the circular use of resources. Starting in 2010, the FutureBuilt programme piloted 54 building projects for climate-neutral buildings and urban areas based on the recycling and reuse of existing building stock. The initiative resulted from a collaboration between the municipal authorities of Oslo, the Ministry of Local Government and Modernisation, the Norwegian State Housing Bank and a wide range of stakeholders. As a follow-up, the strategy for Oslo European Green Capital 2019 called on businesses and private actors to implement circular practices in the building sector towards emission-free construction sites.
- **Lisbon, Portugal:** The city was granted the European Green Capital award in 2020, setting off the launch of the *Lisbon Commitment - Climate Action 2030* charter. The charter includes targets on waste and the circular economy for energy efficiency, endorsed by more than 200 organisations. The municipality brought together a broad network of stakeholders to develop an application/information and communication technology (ICT) that can identify food sources and food waste in the city and help improve waste prevention and source separation of biowaste. Lisbon also provides free compost bins to households and bans single-use plastics at public events.

- **Lahti, Finland:** European Green Capital in 2021, the city now uses one-third of household waste to produce recycled materials and the other two-thirds to produce energy. The city-owned company, Lahti Energy, uses solid recovered fuel, mainly from plastic, cardboard, wood and paper products unsuitable for recycling, to supply all the city's electricity and heat needs. Ninety-five percent of Lahti Energy's district heating is produced with renewable or recycled fuels, and 90% of its electricity is emission-free. Lahti aims to become a zero-waste city with a fully circular economy by 2050.

Source: Green Lahti (2021^[25]), "Lahti is full of energy expertise", <https://greenlahti.fi/en/lahti-is-full-of-energy-expertise>; Circular City Funding Guide (2020^[26]), *Lisbon: The First EU Green Capital in Southern Europe*, www.circularcityfundingguide.eu/case-studies/lisbon-the-first-eu-green-capital-in-southern-europe/; Nantes Metropole (2019^[27]), *Nantes European Green Capital 5 Years Report*, <https://circabc.europa.eu/ui/group/c6e126de-5b8c-4cd7-8d36-a1978a2a63de/library/1c87af1c-a25e-419e-a418-41c49e27d9ad/details?download=true>; City of Ljubljana (2023^[28]), *Circular Economy Examples in the City of Ljubljana*, www.ljubljana.si/en/ljubljana-for-you/environmental-protection/towards-circular-economy/examples-of-circular-economy/; FutureBuilt (2019^[29]), *What is FutureBuilt*, www.futurebuilt.no/English.

Existing national and local circular economy-related initiatives in Tallinn and Estonia

The circular economy aims to: i) design out waste and pollution in a way that they can be repaired, reused and recycled, as well as generate the least amount of waste (including air pollution); ii) keep products and materials in use, through business models based on sharing, reselling or by doing maintenance, repair and refurbishment activities; and iii) transforming waste into resources, going from extraction to regeneration (OECD, 2020^[30]; Ellen MacArthur Foundation, 2018^[31]). The section below provides an overview of the main initiatives already in place in the city of Tallinn and Estonia, based on the information obtained on the OECD mission to Tallinn (16-19 November 2021), desk research and the responses to the OECD Survey on the Circular Economy in Cities and Regions (OECD, 2021^[32]). Each of the actions has been classified into ten different categories² and three main phases of the circular economy: i) preventing waste generation and designing out pollution; ii) keeping resources in use in the economy; iii) transforming waste into resources (Table 2.2). Activities are related mostly to the built environment, food, tourism and events and textile.

Preventing waste generation and designing out pollution

Tallinn has put in place several initiatives to reduce waste generation. They consist of applying regulatory tools, developing capacity-building and awareness-raising initiatives, as well as implementing ad hoc projects to avoid food and textile waste. Details are provided below.

Through a **regulation** set out in 2019, the city banned the use of single-use plastic plates and utensils at public events (ERR, 2019^[33]). From June 2023, only reusable dishes (plates, cups) and cutlery are allowed in public events in Tallinn with less than 30 000 visitors per day. At the national level, from January 2024 only reusable dishes and cutlery will be allowed at all public events, regardless of the number of visitors. Organisers of public events in Tallinn are obliged to ensure that at least mixed municipal waste, biodegradable waste and recyclable packaging are sorted and, if the event generates other types of waste (e.g. paper cardboard and returnable bottles), these should also be collected separately. With this restriction, Tallinn aims to reduce the amount of plastic waste produced, increase waste awareness and promote the use of reusable tableware. In terms of public procurement, Tallinn is participating in the Interreg 2021 project "StratKIT - Innovative Strategies for Public Procurement: A tool for sustainable procurement in the Baltic Sea Region", which aims to promote the use of sustainable catering services.

Table 2.2. Existing national and local circular economy-related initiatives in Estonia

Phase	Category	Action	Leading institution	Sector
Preventing waste generation and designing out pollution	Regulation	Ban of single-use plastic plates, cups and utensils at public events (2019).	City of Tallinn	Not sector specific
		Ban of single-use dishes (cups, plates) and utensils at public events. Only reusable dishes and cutlery are allowed at public events with less than 30 000 visitors/day in Tallinn (starting 1 June 2023).	City of Tallinn	Not sector specific
		Ban of single-use dishes (cups, plates) and utensils at public events. Only reusable dishes and cutlery are allowed at public events in Estonia (starting 1 January 2024).	Ministry of the Environment	Not sector specific
		StratKIT - Innovative Strategies for Public Catering: a tool for sustainable procurement in the Baltic Sea Region.	City of Tallinn	Not sector specific
	Capacity building	Capacity building for companies and start-ups to move towards the circular economy.	Tallinn Creative Incubator	Not sector specific
		Training course: "Circular economy training for companies - How to take the first step".	Estonian Environmental Management Association	Not sector specific
	Awareness raising	Annual Waste Reduction Week, ongoing since 2016.	Ministry of the Environment City of Tallinn	Not sector specific
		Let's Cook Together! campaign.	Schools in Tallinn	Food
		Respect Food Completely! campaign, with a list of recommendations and tips to contribute to the prevention of food waste.	Ministry of the Environment	Food
		"Always respect food!" seminar on food waste and ways to save and share food.	Ministry of the Environment	Food
	Guidelines	Guide on prevention and reduction of food waste and food loss in schools.	Stockholm Environment Institute (SEI) Tallinn	Food
		Guidelines and recommendations to organise events in a sustainable way.	Visit Tallinn	Tourism
	Labels	Green Key eco-label.	Estonian Tourist Board Tallinn Centre of Stockholm Environment Institute	Tourism
	Ad hoc projects	Horizon 2020 project "Renewing the school food and catering paradigm to improve public health and food systems."	City of Tallinn	Food
		Fashion for Change project to provide support to fashion companies to integrate the principles of the circular economy.	Estonian Academy of Arts	Textile

Phase	Category	Action	Leading institution	Sector
Keeping resources in use in the economy	Reuse facilities and schemes	Reuse Centres for the promotion of reuse.	<i>MTÜ Uuskasutuskeskus</i>	Not sector specific
		Deposit reuse system (<i>Panditops</i>) for event organisers and catering companies.	<i>Eesti Pandipakend</i>	Not sector specific
		Deposit reuse system for event organisers and restaurant takeaway food (<i>Ringo</i>).	<i>Ringo Eco OÜ</i>	Not sector specific
	Capacity building	Capacity-building project "Old house in a sustainable way".	City of Tallinn	Built environment
		Training courses and communicating information on the construction sector.	SRIK - Information Centre for Sustainable Renovation	Built environment
	Financial support	Facade Makeover programme of grants for individuals and apartment associations aiming at improving apartment buildings' energy efficiency.	City of Tallinn	Built environment
		Co-operate with the Estonian food bank Toidupank, whose volunteers collect unsold food from shops and distribute it free of charge to families in need.	Toidupank City of Tallinn	Food
	Awareness-raising data and information	An interactive guide to food donation.	Ministry of the Environment	Food
		E-construction platform to increase the productivity of the built environment sector.	Ministry of Economic Affairs and Communications	Built environment
	Pilot testing and experimentation	Reusable food packaging containers for restaurants.	Bringpack recycling company	Food
		Wolfscape: transforms an underused area into a new liveable and climate-neutral district.	TalTech, Rohetiiger, Siemens, Hendrikson & Ko and <i>Arhitektuuribüroo PLUSS</i>	Built environment
Transforming waste into resources	Research activities	Study on recycling of building demolition waste.	Tallinn University of Technology Ministry of Economic Affairs and Communications Ministry of Finance Ministry of the Environment Estonian Association of Circular Economic Enterprises <i>AS Eesti Keskkonnateenused</i> (Waste management company)	Built environment

Source: Own elaboration based on the OECD mission to Tallinn (16-19 November 2021), desk research and the responses to the OECD Survey on the Circular Economy in Cities and Regions.

Capacity-building initiatives focus on waste prevention and circular business models. The Tallinn Creative Incubator offers on its website seven educational videos on how companies and start-ups can move towards a circular economy. Specifically, the videos provide guidance on designing circular business models (e.g. product as a service), managing product manufacturing (e.g. material selection, managing production waste), circular design (e.g. promoting reuse, increasing durability) and opportunities in specific sectors (e.g. food) (Tallinn Business Incubators, 2022^[34]). In addition, the Estonian Environmental Management Association organised a circular economy training course for companies in Tallinn in 2019 (“Circular economy training for companies: How to take the first step”). The training was mainly aimed at manufacturing companies wanting to apply circular economy principles in the design and production of their products. After the course, ten selected companies participated in an assessment of their innovation and design capabilities in relation to the circular economy, resulting in a tailor-made action plan (Estonian Environmental Management Association, 2019^[35]).

Awareness-raising campaigns aim to engage residents, young people and other stakeholders in reducing waste generation by providing information on practices such as reusing, sharing and recycling. For example, Waste Reduction Week, organised by the Tallinn Strategic Management Office with the support of the Ministry of the Environment since 2016, focused on circular communities in 2021, calling for the best use of clothing collection points and reusable packaging (City of Tallinn, 2021^[36]). Many schools in Tallinn in 2018-19 adhered to the national campaign Let’s Cook Together!. Students were invited to prepare meals with the help of school chefs, using leftover food from the previous meal. The Ministry of the Environment also promoted the Respect Food Completely! campaign, which shares a detailed list of recommendations to avoid food waste (e.g. from information on preserving and freezing food, ideas on how to make use of leftovers and guidance on how to choose the right amount of food) (Estonian Ministry of the Environment, 2021^[37]). Moreover, on the occasion of the United Nations International Day of Awareness of Food Loss and Waste in September 2022, the Ministry of the Environment organised a seminar (“Always respect food!”) on food waste and ways to save and share food. The seminar presented practical solutions for food recovery and redistribution and highlighted the barriers that hinder food sharing (Estonian Ministry of the Environment, 2022^[11]).

Guidelines promote sustainable behaviour among producers and consumers. For example, the Stockholm Environment Institute Tallinn Center launched a guide to reducing food waste in school canteens in 2020 (SEI, 2018^[38]). Visit Tallinn, Tallinn’s official tourism portal, provides guidelines and recommendations on minimum sustainable requirements for event organisers, including reducing and sorting waste, using energy-saving light bulbs, reducing consumption (e.g. water, paper), producing new materials from secondary materials, reducing food waste, purchasing services from companies that apply sustainable principles and using tap water instead of bottled water (Visit Tallinn, 2021^[39]; 2021^[40]) (Annex Table 2.A.1). The Tallinn Strategic Management Office prepared similar guidance for sustainable events that was launched in 2023.

Labels are incentives to promote green, circular and sustainable practices. For example, Estonia joined in 2021 the Green Key, an eco-label awarded in 56 countries (Visit Estonia, 2022^[41]). The Estonian Business and Innovation Agency co-ordinates the Green Key award process in co-operation with Stockholm Environment Institute Tallinn. In addition to hotels, these labels measure and evaluate the sustainable and environmental commitments of other tourist attractions such as museums, visitor centres, parks, zoos, etc. Some of the requirements of the label are related to the circular economy, including: selecting shower equipment and dishwashers based on water-saving principles, avoiding over-packaging, banning disposable cutlery and purchasing recycled office paper.

Another way to promote waste prevention is through **ad hoc projects**. In the fight against food waste, Tallinn is involved in a four-year Horizon 2020 project entitled “Renewing the school food and catering paradigm to improve public health and food systems”, officially launched at the end of 2022. The main objective of this initiative is to create a sustainable food culture in schools that promote the prevention of

food waste. Additionally, the Fashion for Change project, led by the Estonian Academy of Arts, aims to prevent waste generation in the fashion industry and provide support (e.g. mentoring programmes, international networks) to textile companies to integrate circular economy principles into their business models.

Keeping resources in use in the economy

In Tallinn, measures to maximise resource efficiency and keep them in use in the economy consist, for example, of extending the life of buildings or facilitating reuse by offering second-hand products. They are implemented through, financial support, awareness raising and capacity-building activities and pilot testing and experimentation.

The promotion of the extension of the use of the products is fostered through **reuse facilities and dedicated schemes**. The Reuse Centres (*MTÜ Uuskasutuskeskus*) facilitate reuse by offering second-hand products that can compete with new products. The Reuse Centre, whose business model is based solely on the sale of donated products, has 16 shops throughout Estonia, 8 of which are located in Tallinn. Products accepted for reuse include clean and usable clothing in good condition, furniture, crockery, toys, books, shoes, accessories, hobby equipment, music/movies, houseplants and other equipment. One of the main obstacles the Reuse Centres face is the difficulty in managing the clothes they receive, as in many cases their poor condition (e.g. dirt, holes) prevents them from being reused (MTÜ Uuskasutuskeskus, 2022^[42]). In 2019, *Eesti Pandipakend* launched a deposit reuse system (*Panditops*) for event organisers and catering companies, aiming to minimise the use of disposable cups, dishes (plates, bowls) and cutlery (forks, knives and spoons) at all types of events held in Estonia. The deposit cup works on the same principle as the deposit return system for beverage containers (Eesti Pandipakend, 2022^[43]). In 2021, three municipal buildings and eight large office buildings located in the city centre joined the Ringo system. Owners of commercial buildings who have joined the scheme will place a large general collection box in their building and small return boxes in office kitchens. Ringo Eco provides the collection, washing and deposit handling for reusable packages suitable for events, takeaway food and commercial use (Ringo Eco, 2022^[44]).

Training courses on life cycle management and building maintenance developed by academic institutions in Tallinn provide designers, professionals and businesses with information and tools to maximise resource efficiency. For example, courses cover the reuse of building materials, renovation solutions as well as durable assembly and adaptive construction (TalTech, 2021^[45]; 2021^[46]). In 2014, Tallinn launched a capacity-building project in the building sector Old House in a Sustainable Way, addressing the following topics: i) installation of homemade solar panels; ii) renovation of old windows; iii) renovation of old floors; iv) maintenance of roofs; and v) ventilation systems in old houses. The main objective of the initiative was to raise awareness and involve residents in the preservation of buildings through restoration (Tallinn City Council, 2013^[47]). Other actions include the collection and dissemination of information and the organisation of training courses in the construction sector, such as the replacement of old windows, the renovation of facades and the restoration of furniture (SRIK, 2022^[48]). The action was led by the Information Centre for Sustainable Renovation (SRIK), which operates under the umbrella of the Estonian Heritage Society and aims to contribute to the preservation of buildings valuable for their architecture, history and environment.

The city offers **financial support** to individuals and housing associations to improve the energy efficiency of apartments by renovating buildings and installing environmentally friendly equipment (e.g. installation of photovoltaic panels). The Facade Makeover programme, managed by Tallinn City Council Property Department, has provided grants to more than 200 apartments since 2010. The maximum subsidy rate is 10% of the construction costs, with a limit of EUR 20 000 per apartment building. The municipal budget for this initiative amounted to EUR 400 000 in 2022 (City of Tallinn, 2022^[49]). In addition, the city supports and co-operates with the Estonian food bank Toidupank, whose volunteers collect unsold food from shops and

distribute it free of charge to families in need. The city signed a memorandum of understanding (MoU), committing to provide logistics (storage, distribution and sorting) and financial support (EUR 75 000 in 2019 and EUR 130 000 in 2020). In 2020, Toidupank provided weekly food aid to more than 3 000 residents.

Awareness-raising initiatives, data and information also aim to promote appropriate use of goods and extend their life cycle, through guides and online platforms to combat food waste and introduce circular principles in the built environment sector. For example, the Ministry of the Environment has published an interactive guide on food donation, which provides data on the amount of food waste generated annually in Estonia and its environmental impact, includes a question and answer section to clarify doubts about the food donation process and shares a map with all Estonian partners to collaborate on food donation (Estonian Ministry of the Environment, 2022^[50]). The e-construction platform, launched in 2017 by the Ministry of Economic Affairs and Communications, facilitates the digital and secure exchange of information and data between the parties involved in the entire lifecycle of buildings (from design to demolition) (Estonian Ministry of Economic Affairs and Communication, 2020^[51]). Information on the materials and technologies used in the building helps to plan future replacements or repairs. In addition, e-construction includes digital twins that allow a replica of the buildings to be visualised in three dimensions (3D). The ministry's next steps are to make progress in calculating the carbon footprint of buildings. However, the main problems of the platform are related to the lack of harmonisation of data and comparability with other EU countries.

Pilot testing and experimentation are important tools in Tallinn to keep resources in use. For example, food packaging deposit system Bringpack kicked off a pilot project in the Tallinn Baltic Station market, where customers were able to buy food at selected restaurants in a reusable container and then return it to a new collection point. However, the project did not go beyond the trial phase (Postimees, 2022^[52]; Estonian World, 2021^[53]). Launched in 2017, the Hundipea project aims to transform the former industrial and harbour area of Noblessner, in the northern district of Tallinn, into the country's first climate-neutral neighbourhood. For this purpose, it will transform 480 000 m² of land into an environmentally friendly area with sustainable housing accommodating nearly 16 000 residents. The district's building blocks include mobility networks to minimise car use, smart buildings, a circular waste management system and greening of landscapes and buildings. The project will act as a testbed for new methods and strategies that could be applied to other areas of Tallinn (Hundipea, 2022^[54]).

Transforming waste into resources, putting them back in the system

In 2021, approximately 50-55% of waste was separately collected and designated for recycling in the city, while, in 2017, the recycling rate was 47%. However, due to the small local market, most of the collected recyclables are exported abroad for processing. For instance, scrap metals are nearly entirely exported because there are no metallurgy processing capabilities, with the exception of a recycling facility for lead-acid batteries in Sillamäe (Estonia). Paper and cardboard are mostly exported with limited capacities available for reprocessing paper to insulation materials, some cardboard products and packages. Finally, in terms of biowaste, used cooking oil is mostly collected for export to produce biofuel and the main treatment method for all other biowaste has been composting (World Bank, 2021^[16]).

The final phase of closing the loop in Tallinn takes place through **research activities** on how to put the resources back into the system. For instance, in 2022, TalTech, the Tallinn University of Technology, led some research on the application of circular economy principles in construction and the Ministry of Economic Affairs and Communications, in co-operation with the Ministry of Finance, the Ministry of the Environment, the Estonian Circular Economy Industries Association (*ECEIA*), commissioned a study from TalTech on recycling building demolition waste. The research identified opportunities for selective dismantling as well as regulatory and economic barriers to the reuse of materials (Ehitus, 2022^[55]). Various international examples are available on this issue. For example, the city of Mikkel, Finland, is applying circular material management methods to carry out the demolition of a healthcare centre and a hospital.

After a selective demolition procedure, the municipality will digitally track the recovered materials through material passports, which will be eventually put to new use in a building materials market (City Loops, 2021^[56]).

Taking stock of existing initiatives: Connecting people, policies and places

As demonstrated above, while Tallinn is making a progress towards minimising wasted resources, keeping resources in use and transforming waste into resources, it lacks a systematic approach that integrates circular economy principles into all of the city's strategic priorities. Further barriers include limited funding and financial incentives to promote the circular economy and low awareness of the opportunities of the circular economy among key stakeholders (see Chapter 3).

Such a systems approach to transition to a circular economy requires connecting people, places and policies. This “3Ps” framework implies a shift towards sustainable production and consumption pathways as well as new business and governance models (people). It also requires a holistic and systems approach that cuts across sectoral policies and a functional approach going beyond the administrative boundaries of cities and linking them to their hinterland and rural areas to close, narrow and slow loops at the right scale (places) (OECD, 2020^[30]). Figure 2.3 provides an overview of a tentative application of the three dimensions to the case of Tallinn in order to support a forward-looking and systems approach to the circular economy. The 3Ps framework was first developed in 2016, based on a multilevel governance analysis and survey across 48 cities on water governance in cities (OECD, 2016^[57]).

- **People:** Many stakeholders in Tallinn showed limited awareness of their possible role within the circular economy transition, which is an aspect that the city could develop through the future circular economy strategy. The circular economy is a shared responsibility across levels of government, stakeholders and firms. As such, it is key to identify the actors that can play a role in the transition and allow the needed cultural shift towards different production and consumption pathways, and new business and governance models. In the case of Tallinn, Figure 2.4 provides a first mapping of stakeholder groups that could be engaged in circular economy-related activities.
- **Policies:** In the case of Tallinn, the built environment, food, tourism and events sectors hold potential but are not yet linked to the circular economy in their strategic documents. As such their potential in reaching the carbon neutrality goal of the city, while boosting innovation and jobs, has still to be exploited. The circular economy requires a holistic and systems approach that cuts across sectoral policies. As somebody's waste can be someone else's resource, the circular economy provides the opportunity to foster complementarities across policies. The variety of actors, sectors and goals makes the circular economy systemic by nature. It implies a wide policy focus through integration across often siloed policies, from environmental, regional development, agricultural to industrial.
- **Places:** Although Tallinn has experimented with circular initiatives at the neighbourhood level, there has been little interaction with the surrounding areas. Cities and regions are not isolated ecosystems but spaces for inflows and outflows of materials, resources and products, in connection with surrounding areas and beyond. Indeed, circular economy initiatives take place at various scales, ranging from the micro level (e.g. neighbourhood) to the metropolitan, regional and national levels, where, in some cases, linkages across urban and rural areas are particularly relevant (OECD, 2020^[30]). Therefore, adopting a functional approach going beyond the administrative boundaries of cities is important for resource management and economic development.

Figure 2.3. The 3Ps framework applied to the case of Tallinn, Estonia

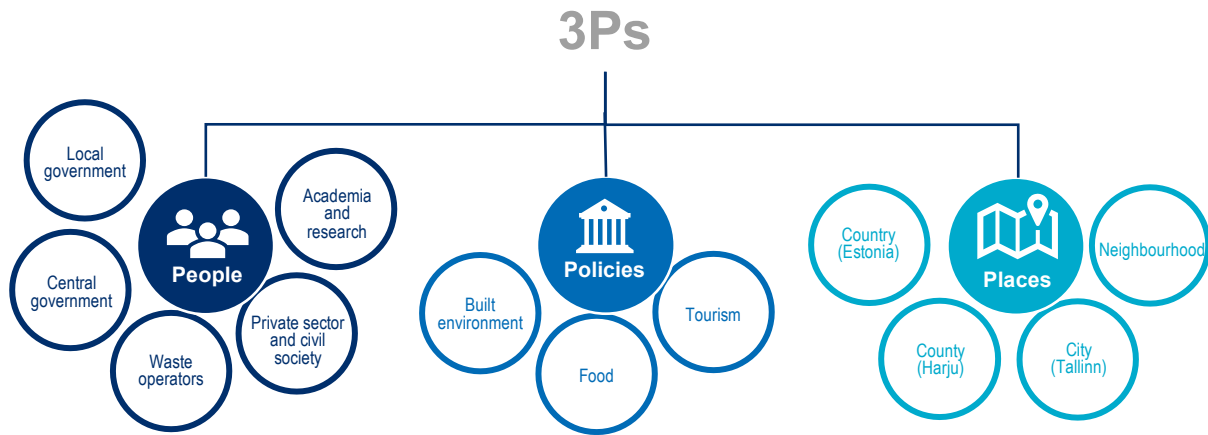
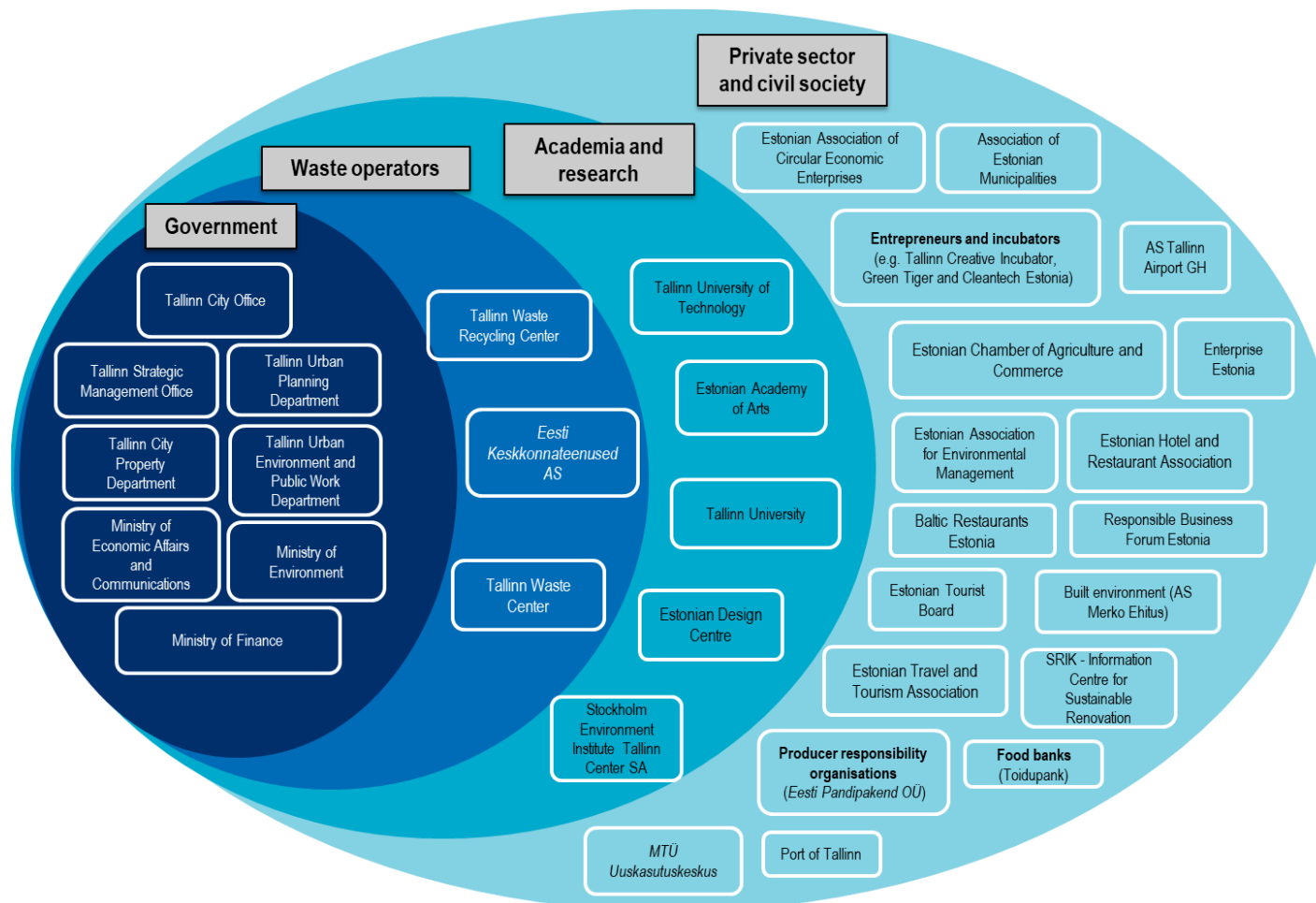


Figure 2.4. Stakeholders' map in Tallinn, Estonia



Note: This stakeholder's map is based on the OECD fact-finding mission to Tallinn held on 16-19 November 2021.

Annex 2.A. City guidelines for environmentally friendly events in Tallinn, Estonia

Annex Table 2.A.1. Guidelines for environmentally friendly events in Tallinn, Estonia

Category	Minimum requirements	Recommendations
Materials	<ul style="list-style-type: none"> • Visitor badge holders must be reusable and will be collected and reused at the next event. • Use recycled paper. • Decorations must be reusable. • Replace paper materials (invitations, publications, etc.) with electronic alternatives. • Avoid over-packaging goods, gifts and other items. 	<ul style="list-style-type: none"> • Distribute as few souvenirs and gifts as possible, prioritising green services and donations. For physical gifts, for example, give preference to local food and tastes or reusable items. • The design and selection of labels, education, training and other materials should be reusable. Organisers should make the return and collection of these items convenient and clear to the visitor. • When ordering materials and equipment, choose moderate quantities to ensure that surpluses are kept to a minimum. It is advisable to co-operate with other organisers of similar or simultaneous events when purchasing larger quantities of materials, equipment, etc., to optimise packaging and reduce the need for transport. • When using flowers and other plants, renting or the use of pot plants is preferred.
Food and water consumption	<ul style="list-style-type: none"> • The use of single-use plastic, mixing sticks, cocktail garnishes and single-use utensils and cutlery is not allowed. • The remaining food is guaranteed to be donated or taken away by organisers and customers, preferably in reusable containers. • Edible food must not be thrown away. • When choosing food and caterers, make sure that plant-based staples are offered. For catering, order at least one whole food dish and include at least a couple of caterers offering whole food dishes in the catering. 	<ul style="list-style-type: none"> • Invite participants to bring their own reusable bottles and their own food. Provide a dishwashing facility at the event. • Make clean tap water available free of charge at events and place water points near food areas. • Avoid serving bottled water (and other bottled beverages) wherever possible and offer refillable bottles. • Fill the glasses according to the visitor's needs, do not fill them without the visitor's request. • Give preference to fair trade coffee, tea, sugar and local herbal infusions and honey. • Avoid serving food in small containers. • Give preference to caterers offering local and/or organic food.
Waste management	<ul style="list-style-type: none"> • Waste must be collected separately, with a minimum of separate collection of biowaste, packaging and mixed municipal waste. • If waste containers are ordered from a waste management company, they must be of the correct colour and marked with the appropriate waste type pictogram: biowaste; glass packaging; paper and cardboard; mixed municipal waste; and hazardous waste. • Category collection is supported by clear and comprehensible labelling of waste containers/frames in Estonian and, if necessary, in foreign languages. • Waste collected in bulk must be handed over to a waste manager holding the relevant environmental permit issued by the Environment Agency. The organiser of the public event must provide proof of the handover and the quantities of waste at the request of the local authority. • Places used for permanent events must provide organisers with facilities for separate collection and disposal of waste. 	<ul style="list-style-type: none"> • Waste containers will be accompanied by instructions explaining how to separate waste. • At the waste collection points, volunteers supervise the separate collection of waste.

Category	Minimum requirements	Recommendations
Transport	<ul style="list-style-type: none"> Always inform participants how to get to the event by public transport and where the parking areas are to avoid congestion at the event. Include a recommendation to come to the event by public transport, bicycle or on foot in all promotional material. When choosing a venue, make sure it is easily accessible by public transport, bicycle and on foot. 	<ul style="list-style-type: none"> Run private buses/trains where possible. Provide bike parking (with the possibility of locking the bike or with a manned guard) at the venue (or in its immediate vicinity). Encourage organisers to sell tickets for certain events on a per-car basis: one ticket per car, regardless of the number of passengers. Provide information to foreign visitors on how to offset the climate impact of air travel.
Energy and resource efficiency	<ul style="list-style-type: none"> In the case of multi-day events outside opening hours, electricity use at the venue must be kept to a minimum. If the location of the event allows it, a permanent power supply solution should be chosen instead of temporary generators. The organiser must ensure that there is no loss of resources during and after the event. 	<ul style="list-style-type: none"> Give preference to electricity from renewable energy sources. When ordering special transport, give preference to vehicles with low CO₂ emissions. Ensure that the equipment used at the event is as energy efficient as possible. Use the least amount of electricity-consuming equipment necessary to run the event. Use fixtures and fittings at the event that minimise the possibility of wasting resources: hand-washing stations with pumps or timers, motion-activated lighting, refillable instead of disposable containers, etc. When organising conferences, give preference to Green Key labelled or renewable energy venues.
Respect for the surrounding area and community	<ul style="list-style-type: none"> After the event, the event site must remain in the same good condition as before the event. Arrangements for transport/parking should be made to ensure minimal disruption to local life. Damage to the landscape must be restored. Owners of surrounding properties will be informed of the event and any traffic and other changes at least one week in advance. Sound and light pollution associated with the event is kept to a minimum (e.g. where possible, lighting installations are preferred to fireworks; the event venue is not left fully lit, music playing all night, etc.). The place of the event and its surroundings must be cleaned up within eight hours of the end of the event or by the deadline specified in the public event permit. 	<ul style="list-style-type: none"> Involve, where possible, the local community and people in the area of the venue in the organisation of the event, offering them participation as volunteers or discounted admission, shopping, etc. Where possible, showcase the cultural heritage associated with or near the venue.
Communication	<ul style="list-style-type: none"> Environmental rules must be communicated to visitors and made publicly available at least one week before the event. Partners/traders must be informed of the environmental rules in writing at the time of the conclusion of the co-operation agreement or sufficiently in advance of the event to enable the trader/partner to fully comply with the environmental rules. Environmental rules will also be explained on the spot during the event to both visitors and partners. Environmental communication should be supported by public communication of the event as well as onsite infographics (reusable signs, signage, etc.). Using simple language and visuals and avoiding jargon. 	<ul style="list-style-type: none"> To explain the rules on environmental care and waste management, create simple and clear guidelines that reach the target groups (e.g. traders, participants in exhibitions, etc.) in good time. Production and setup teams, as well as traders/showgrounds and partners, need to be reminded of the greening rules on the spot immediately before and during the event. Prepare possible responses to critical questions from the community, participants and the media (e.g. accusations of littering and dismissive attitudes towards extra efforts by the visitor).

Source: Visit Tallinn (2021^[39]), "Recommendations for the company", <https://www.visittallinn.ee/est/professionaal/praktiline-info/%C3%A4tkusuutlik-turism/soovitused-ettev%C3%B5ttele>.

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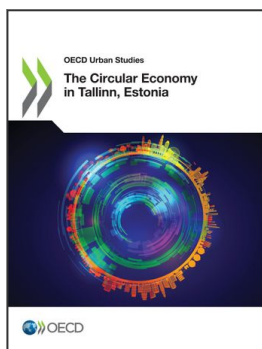
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Notes

¹ The strategy consists of 6 strategic goals and 13 areas of action. The strategic goals are the following: i) friendly urban space; ii) creative global city; iii) healthy mobility; iv) green transformation; v) kind community; and vi) home that includes the street. The areas of action are the following: business environment; education and youth work; environmental protection; municipal order; culture; mobility; urban landscape; urban planning; preservation and development of city property; social welfare; sports and physical activity; utility networks; health and healthcare.

² These categories include: i) ad hoc projects; ii) awareness raising; iii) capacity building; iv) financial support; v) guidelines; vi) labels; vii) pilot testing and experimentation; viii) regulation; ix) research activities; and x) reuse facilities and schemes.



From:
The Circular Economy in Tallinn, Estonia

Access the complete publication at:

<https://doi.org/10.1787/06abc3de-en>

Please cite this chapter as:

OECD (2023), "Towards the circular economy in Tallinn, Estonia", in *The Circular Economy in Tallinn, Estonia*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/12dc479a-en>

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