1 Drivers for the circular transition in Tallinn, Estonia

This chapter provides an overview of the rationale for the circular economy transition in the city of Tallinn, Estonia, by looking at the main socio-economic and environmental data and trends that have an impact on resource management, including population growth. The circular economy can play a key role in the building and maintenance of infrastructure and housing, as well as in shifting towards sustainable production and consumption patterns while lowering greenhouse gas (GHG) emissions in key sectors such as buildings, transport and energy. The city of Tallinn conceives the circular economy as a means to contribute to environmental goals while creating opportunities for jobs and stimulating innovation through a systems approach. The city aims to reach carbon neutrality by 2050, as set by the Tallinn 2035 Development Strategy and reported in the Tallinn Sustainable Energy and Climate Action Plan 2030.

The circular economy in cities and regions: An overview

As the places where people live and work, consume and dispose, cities and regions play a fundamental role in the transition to the circular economy. By 2050, the global population will reach 9 billion people, 55% of which will be living in cities, high-density places of at least 50 000 inhabitants (OECD/EC, 2020[1]). By 2060, total emissions are projected to reach 75 gigatonnes of carbon dioxide equivalent (Gt CO_2-eq), of which materials management would constitute approximately 50 Gt CO_2-eq. Global material use is projected to more than double in 2060 (from 89 Gt in 2017 to 167 Gt) (OECD, 2019[2]). The pressure on natural resources will increase, while new infrastructure, services and housing will be needed. Already, cities represent almost two-thirds of global energy demand (IEA, 2016[3]), release up to 70% of GHG emissions (World Bank, 2009[4]), consume 70% of food (FAO, 2023[5]) and produce 50% of global waste (UNEP, 2013[6]). As such, for cities and regions, the circular economy represents an opportunity to rethink production and consumption models, services and infrastructure (OECD, 2020[7]).

While there are many definitions of the circular economy (Box 1.1), three main principles characterise it: i) design out waste and pollution; ii) keep products and materials in use; and iii) regenerate natural systems (Ellen MacArthur Foundation, 2019[8]). According to the OECD (2020[7]), in cities and regions, the circular economy implies a systemic shift, whereby: *services* (e.g. from water to waste and energy) are provided making efficient use of natural resources as primary materials and optimising their reuse; *economic activities* are planned and carried out in a way to close, slow and narrow loops across value chains; and *infrastructures* are designed and built to avoid linear lock-in (e.g. district heating, smart grid, etc.).

The circular economy can increase competitiveness through production savings and material reuse. According to the European Environmental Agency (EEA), the increase in competitiveness through production savings is estimated at EUR 600 billion in the EU-27 by 2030 (EEA, 2016[9]). Some activities, such as those related to the construction and food sectors, are projected to bring relevant economic benefits in terms of added value. The transition towards a circular economy is also expected to produce a positive net effect on job creation provided that workers acquire the skills required by the green transition (EC, 2020[10]). Yet, the transition should be “just” by taking into account people’s social well-being, quality of life and equity.

However, the circular economy is not an end per se but a means to an end. It provides an opportunity to do more with less, better use available natural resources, reduce waste generation and transform waste into new resources. It can play an important role in achieving carbon neutrality (OECD, 2019[11]). For instance, the city of London, United Kingdom (UK), is pursuing circularity in order to make a substantial contribution to the city’s aspiration to become a zero-carbon city by 2050. The city of Oulu, Finland, developed in 2019, an environmental programme (Environment Program 2026 - Towards Carbon Neutral Oulu) that sets the goal to become carbon-neutral by 2040 (City of Oulu, 2019[12]). The city of Joensuu, Finland, included circular economy actions within its climate programme (Carbon Neutral Joensuu 2025) that aims to transform Joensuu into a carbon-neutral city by 2025 (City of Joensuu, 2020[13]). In Scotland, UK, it is estimated that a more circular economy could reduce carbon emissions by 11 million tonnes per year by 2050 (OECD, 2020[7]).

In Tallinn, the transition towards a circular economy is conceived as a means to contribute to environmental goals, while creating opportunities for jobs and stimulating innovation through a systemic approach. Awarded European Green Capital 2023, the city aims to reach carbon neutrality by 2050, as set by the Tallinn 2035 Development Strategy and reported in the Tallinn Sustainable Energy and Climate Action Plan 2030 (City of Tallinn, 2022[14]). The circular economy holds great potential to contribute to this goal: globally, material mis-management is responsible for two-thirds of annual GHG emissions (OECD, 2019[2]). The adoption of a circular economy framework in five key areas for cities (steel, plastic, aluminium, cement and food) could achieve a reduction of 9.3 billion tonnes of GHG in 2050 (Ellen MacArthur Foundation, 2021[15]).

Box 1.1. Definitions of a circular economy

There are more than 100 definitions of a circular economy. Examples of definitions of the circular economy include:

- An economic system that replaces the end-of-life concept, with reducing, alternatively using, recycling and recovering materials in production/distribution and consumption processes. It operates at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim of accomplishing sustainable development, thus simultaneously creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations. It is enabled by novel business models and responsible consumers (Kirchherr, Reike and Hekkert, 2017[16]).
- The circular economy is one that has low environmental impacts and makes good use of natural resources through high resource efficiency and waste prevention, especially in the manufacturing sector, and minimal end-of-life disposal of materials (Ekins et al., 2019[17]).
- The circular economy is restorative and regenerative by design. Relying on system-wide innovation, it aims to redefine products and services to design waste out while minimising negative impacts. A circular economy is then an alternative to a traditional linear economy (make, use, dispose) (Ellen MacArthur Foundation, 2018[18]).
- The circular economy is where the value of products, materials and resources is maintained in the economy for as long as possible by returning them into the product cycle at the end of their use, thus minimising the generation of waste (EC, 2015[19]).
- There are three different layers of circularity, with increasingly broad coverage: i) closing resource loops, which is defined relative to a traditional economic system; ii) slowing resource loops and materials flows; and iii) narrowing resource loops, which implies a more efficient use of materials, natural resources and products within the linear system (OECD, 2019[2]).

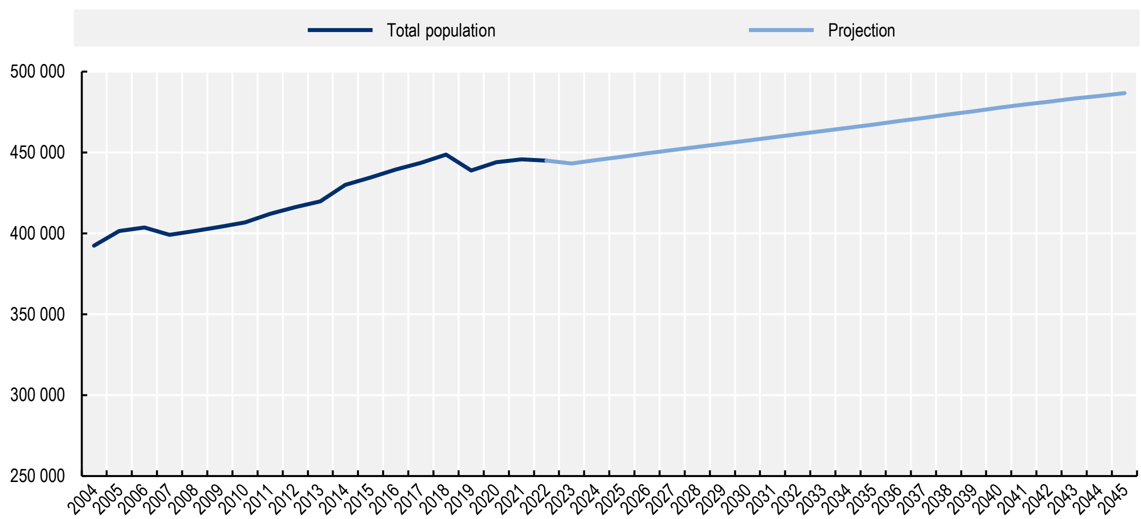
Source: Kirchherr, J., D. Reike and M. Hekkert (2017[20]), "Conceptualizing the circular economy: An analysis of 114 definitions", https://doi.org/10.1016/j.resconrec.2017.09.005; Ekins, P. et al. (2019[17]), "The circular economy: What, why, how and where", https://www.oecd.org/cfe/regionaldevelopment/Ekins-2019-Circular-Economy-What-Why-How-Where.pdf; Ellen MacArthur Foundation (2018[21]), *What Is a Circular Economy?*, www.ellenmacarthurfoundation.org/circular-economy/concept; EC (2015[19]), *Circular Economy – Overview*, https://ec.europa.eu/eurostat/web/circular-economy; OECD (2019[2]), *Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences*, https://doi.org/10.1787/9789264307452-en; OECD (2020[7])The Circular Economy in Cities and Regions: Synthesis Report, https://doi.org/10.1787/10ac6ae4-en.

Socio-economic factors

Demography

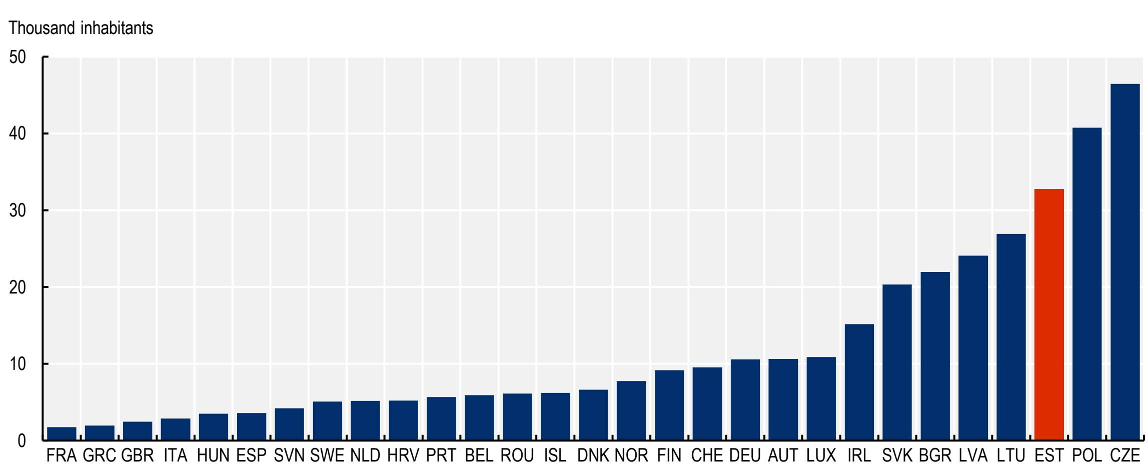
Contrary to the national trend, Tallinn's population is expected to grow by 2045, potentially implying the need for investment in infrastructure and housing. Located on the northern coast of the country, Tallinn is the capital of Estonia, hosting one-third of the country's total population (445 002 out of 1 328 400 inhabitants in 2022, reaching 600 000 inhabitants comprising the metropolitan area). Between 2004 and 2022, Tallinn's population has grown by 13.4% and, by 2045, it is expected to increase by 9.3% compared to 2022 (Figure 1.1). On the other hand, by 2045, the Estonian population is projected to decrease by 3% from 2019 levels (City of Tallinn, 2022[22]). In 2022, the population was composed prevalently of the Estonian community (52.9%) and the Russian community (35%) (City of Tallinn, 2022[22]). Moreover, as a consequence of Russia's large-scale aggression against Ukraine, Estonia had welcomed about 70 000 Ukrainians[1] by March 2023 (UNHCR, 2023[23]). Estonia is one of the leading OECD countries receiving refugees as a percentage of its total population (32.7 per 1 000 inhabitants) (Figure 1.2) (UNHCR, 2023[24]). The permanent settlement of Ukrainian refugees in Estonia could help maintain the growing demographic curve between 9 and 40 years, which would vary depending on the number of refugees staying in the country for a long-term period (estimations suggest between 10 000 and 60 000) (ERR, 2022[25]). Demographic changes will potentially impact the need for infrastructure and housing. How infrastructure is designed, built and operated can help reduce the use of fossil fuel and make heating and cooling more efficient (OECD, 2022[26]).

Figure 1.1. Population trends and projections in Tallinn, 2004-45



Source: City of Tallinn (2022[22]), *Statistics and Yearbooks*, https://www.tallinn.ee/et/node/19981; Statistics Estonia (n.d.[27]), *RV088: Population Projection 2020-2080: Demographic Indicators by County and Sex*, https://andmed.stat.ee/en/stat/rahvastik__rahvastikunaitajad-ja-koosseis__rahvaarv-ja-rahvastiku-koosseis/RV088/table/tableViewLayout2.

Figure 1.2. Number of refugees from Ukraine registered for temporary protection or similar national protection schemes



Note: Last updated March 2023. OECD calculations based on UNCHR, Operational data portal (2023[28]).
Source: OECD (2023[29]), *OECD Economic Surveys: Czech Republic 2023*, https://doi.org/10.1787/e392e937-en.

Both in Estonia and Tallinn, the population is ageing, potentially bringing changes in energy consumption. By 2045, the share of the population aged 65 years old and more will reach 21.5% of total residents in the capital (18.7% in 2022) and will represent more than one-quarter of the total population (26.7% in 2045; 22% in 2022). Meanwhile, the share of the population aged 0-14 years and 15-64 years will slightly decrease by 2045 compared to 2019, by 1.1% and 2% in the capital and 1.8% and 5.1% in the country respectively (City of Tallinn, 2022[22]; Statistics Estonia, 2022[30]). In addition, the population aged 60 or more has increased by 23% in the period 2008-22. While elderly people tend to make greater use of energy goods such as electricity, heat and gas (EC, 2008[31]; 2019[32]), they are also increasingly facing energy poverty: in 2019, 7.6% of EU-27 households were unable to keep their home adequately warm, due to low levels of household income, energy inefficient homes and high energy costs. Among households composed of a single adult aged 65 or more in the EU-27, this share represents more than 10.7% (Eurostat, 2020[33]).

The transformation of the household structure from two-three-person to single-person dwellings will have consequences for material efficiency. Between 2008 and 2021, the number of single-person households in Tallinn increased by 50% (from 61 290 to 92 503). Over the same period, the number of households with 3 and 4 members decreased by 14% and 3% respectively. In 2020, the highest proportion of dwellings that received a building permit were single-person houses (58%) followed by 3 to 5 dwellings (20%) (City of Tallinn, 2022[34]). Moreover, the ageing of the population leads to smaller households. The decline in household size implies a reduction in terms of material efficiency as common household services, including appliances and installations, are shared by a smaller number of individuals (EEA, 2016[35]). Some studies also suggest that single-person households consume more per capita electricity (between 23% and 77%) and gas (between 38% and 54%) and use close to 50% more land per capita in comparison with households composed of 2 or 4 people (Williams, 2005[36]). Per capita levels of waste generation also tend to grow as household sizes decrease (OECD, 2011[37]).

Economy

Estonia has endured the pandemic shock better than other OECD countries. Due to a large, timely and effective policy response to mitigate the COVID-19 shock, the gross domestic product (GDP) contracted by only 2.7% in 2020, one of the smoothest decreases in Europe. The second wave at the beginning of 2021 did not put the recovery on hold and GDP surpassed the pre-pandemic levels. OECD projections suggest that the war in Ukraine will slow this trend. After an annual GDP growth of 8.2% in 2021, high inflation is projected to hinder growth to 1.3% in 2022 and 1.8% in 2023 (OECD, 2022[38]).

Tallinn is Estonia's main economic node and the largest contributor to the Estonian economy. With a strong weight of the services sector in Tallinn, mainly linked to the information and communication technology (ICT) sector, the capital accounts for more than half of the annual GDP (51.4% in 2021) and its GDP per capita is 57% higher than the national average (EUR 37 034 and EUR 23 642 in 2021 respectively) (Statistics Estonia, 2023[39]). Services accounted for 84.1% of the local economy in 2019, followed by industry and construction (15.8%). Approximately one-third (29%) of the nearly 60 000 companies based in Tallinn were engaged in the ICT sector and technical and scientific activities in 2020 (City of Tallinn, 2022[22]).

Tourism is another relevant sector of the city, which holds considerable potential as a driver for the circular transition due to the links to many services (e.g. energy, water, waste management, food and transport) (OECD, 2021[40]). The Old Town has been registered on the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage List and the city welcomes more than 2.5 million foreign visitors every year (City of Tallinn, 2022[22]). In July 2022 only, the city accommodated a total of 147 287 non-resident tourists, 3 times more than in 2021 and 2 times more than in 2020 for the same month, yet 30% less than pre-pandemic levels (Statistics Estonia, 2023[39]). In 2022, the city scored 57 out of 100 on the Global Destination Sustainability Index[2] in its assessment (49.5 in 2021), ranking first in Eastern Europe (GDS Movement, 2022[41]).

Estonia is the European Union (EU) leader in terms of digital public services and is among the top EU countries for digital skills (ranked fifth in the EU, with almost two-thirds of citizens having at least basic digital skills) (e-Estonia, 2021[42]). In Estonia, elections have been held on-line since 2007 and 99% of administrative services are digitalised. Consequently, digital signatures save up to 2% of the national GDP. There are two main initiatives that determined Estonia's leadership in the digital field. First, the Tiger Leap programme, launched by the national government in 1996, boosted digitalisation in schools by equipping them with technology, building ICT capacities for teachers and improving access to the Internet (Education Estonia, 2022[43]). Moreover, in 2014 the government launched the e-Residence initiative, which aims to enable non-Estonians to access general Estonian services through a transnational digital identity. Services available include among others: setting up a business, managing accounts and payments through Estonian banking institutions and contributing to the payment of taxes (Republic of Estonia, 2022[44]). Nevertheless, Estonia's digital solutions also generate significant environmental costs, for example, through the energy consumption of ICT equipment. In 2022, the total impact of the ICT equipment life cycle of all Estonian state agencies was estimated at 26 000 tonnes of CO_2 equivalent (tCO_2e), accounting for more than 1% of Estonia's total GHG emissions (EY, 2022[45]).

Tallinn is exploring how digitalisation can contribute to the achievement of environmental targets as well as to the circular transition while minimising environmental costs and externalities (e.g. increasing CO_2 emissions). Tallinn can build on existing digital tools. For example, in 2020, the Tallinn Dashboard[3] made available municipal data on COVID-19 updates, traffic live streams, population, data on the use of streets and roads, noise level, electricity usage and detailed planning information of building lots and three-dimensional (3D) models of the city (City of Tallinn, 2020[46]). Another initiative that aims to help companies implement smart and digital solutions in the city is Tallinnovation. Since 2020, the city of Tallinn in collaboration with Tehnopol Science and Business Park launch an annual innovation competition to implement smart city solutions to make the city greener and more sustainable. The programme is open to Tallinn-based companies, which can submit their ideas to receive financial support, pilot their project, obtain contacts and advice from the city of Tallinn and benefit from the support of the Tehnopol Science and Business Park mentorship programme. Selected companies also receive financial support of EUR 100 000 and testbed solutions for their projects (City of Tallinn, 2021[47]).

Living standards and employment

Income segregation is increasing in the city, with large differences between Tallinn's districts, while the COVID-19 pandemic raised the level of unemployment. A total of 16.7% of the population is at risk of poverty and some districts are home to almost a third of the total subsistence beneficiaries, 32% of them residing in Lasnamäe and 26% in Northern Tallinn. Due to COVID-19, the unemployment rate increased to almost double between 2019 and 2020 (from 3.5% to 6.5%). Despite the effect of the pandemic, Tallinn's unemployment level in 2020 stood at 6.5%, slightly below the national level (6.8% in 2020) and the OECD average (6.9% in December 2020). Since then, the city has not recovered pre-crisis employment levels, registering 6.6% by 2021 and 2022, above the national (6.2% in 2022) and OECD (4.9% in December 2022) levels. Moreover, the impact on unemployment was milder than the last economic shock, the 2008 financial crisis, when unemployment in Tallinn reached 16.8% in 2010 (City of Tallinn, 2022[22]; OECD, 2022[48]; 2022[49]).

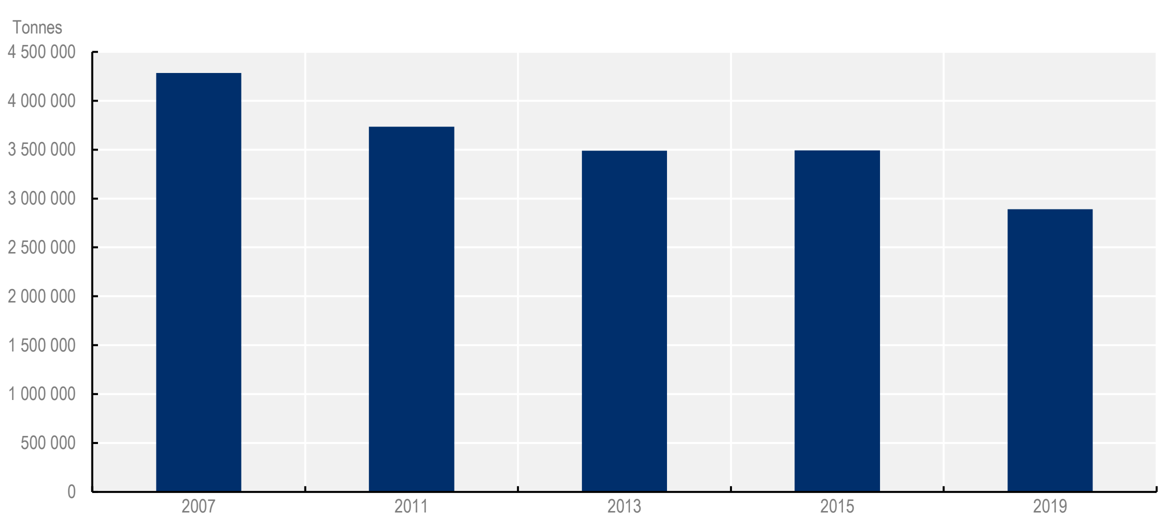
Environmental data and trends

Emissions and energy

Estonia is characterised by a carbon-intensive economy among OECD countries. Estonia's high GHG emissions have declined substantially since 1990 (-71% in 1990-2020) but further progress is needed to reach the OECD average (OECD, 2022[50]). The GHG emissions generated in Estonia in 2018 (15.1 tCO2e per capita) are above the OECD average of 11.5 tCO_2e per capita. In 2019, activities related to sewerage and waste management accounted for 8.4% of total GHG emissions in the country (no data are available at the city level). In 2020, GHG emissions, excluding land use, land use change and forestry (LULUCF), were already 72% lower than in 1990. Estonia is aiming for net zero emissions by 2050 (OECD, 2022[38]). Along the same line, *Tallinn* 2035 strategy and the Climate-neutral Tallinn plan set the goal of reducing GHG emissions by 40% by 2030 and achieving climate neutrality by 2050 (City of Tallinn, 2021[51]). The city aims to lower GHG emissions in key sectors such as buildings, transport and energy generation and consumption.

In Tallinn, CO_2 emissions related to the combined combustion of fuels and energy generation accounted for 2 890 688 t CO_2 in 2019 (-33% from 2007 levels, Figure 1.3), of which 24% originated from the transport sector, 31% from households, 19% from energy production, 16% from the service sector and 10% from industry and construction (City of Tallinn, 2020[52]). Yet, the latest CO_2 emissions inventory from 2019 showed a downward trend in the city mainly due to lower emissions from households, energy production and the industrial sectors.

Figure 1.3. CO_2 emissions in Tallinn, Estonia, 2007-19



Source: City of Tallinn (2020[52]), *Analyses and Emissions Inventory*, https://www.tallinn.ee/et/energiaagentuur/analuusid-ja-heitkoguste-inventuur.

Estonia is heavily dependent on oil shale for the generation of electricity. In 2019, the share of oil-shale-fired electricity represented 70% of the total, considerably above the OECD average (23%) (OECD, 2021[53]). Oil is the largest energy source in Estonia's energy consumption, accounting for 36% of total final consumption in 2017. Most oil is consumed in the transport sector. The rising price of key commodities, including oil, as a result of the war, could pose a challenge for Estonia and the EU, which is taking steps towards green energy (Box 1.2). Electricity is the second-largest energy source at 21% of total final consumption, followed by district heat (16%), and bioenergy and waste (15%) (IEA, 2019[54]). Estonia also has large domestic biomass resources, with bioenergy and waste accounting for 27% of domestic energy production and 19% of the total primary energy supply in 2018.

Box 1.2. The EU transition towards green energy

The production and use of energy account for more than 75% of the EU's GHG emissions. In response, the EU has adopted a series of measures to move away from fossil fuels to a clean energy system based on the increased use of renewable energy sources.

In 2019, the EU unveiled the Green Deal, which aims to make Europe climate neutral by 2050 by focusing on three key principles: i) ensuring secure and affordable EU energy supplies; ii) developing a fully integrated, interconnected and digitalised EU energy market; iii) prioritising energy efficiency, improving the energy performance of our buildings and developing an electricity sector based largely on renewable energy sources. In line with these objectives, the Clean Energy Package (CEP) adopted in 2019 comprises eight legislative acts on the energy performance of buildings, renewable energy, energy efficiency, governance and electricity market design. More specifically, the CEP updates the EU's 2030 targets (40% reduction in GHG emissions compared to 1990 levels, 32% share of renewables in the EU's energy mix and 32.5% energy efficiency target compared to a 2007 baseline).

In 2020, the European Commission (EC) presented a comprehensive EU strategy for energy system integration. The strategy encourages member states to rely on renewable energy sources to decarbonise their energy systems and to promote sector integration, i.e. the interconnection of different energy carriers (electricity, heat, cooling, gas, solid and liquid fuels). The aim is to improve the flow of energy between users and producers while reducing waste.

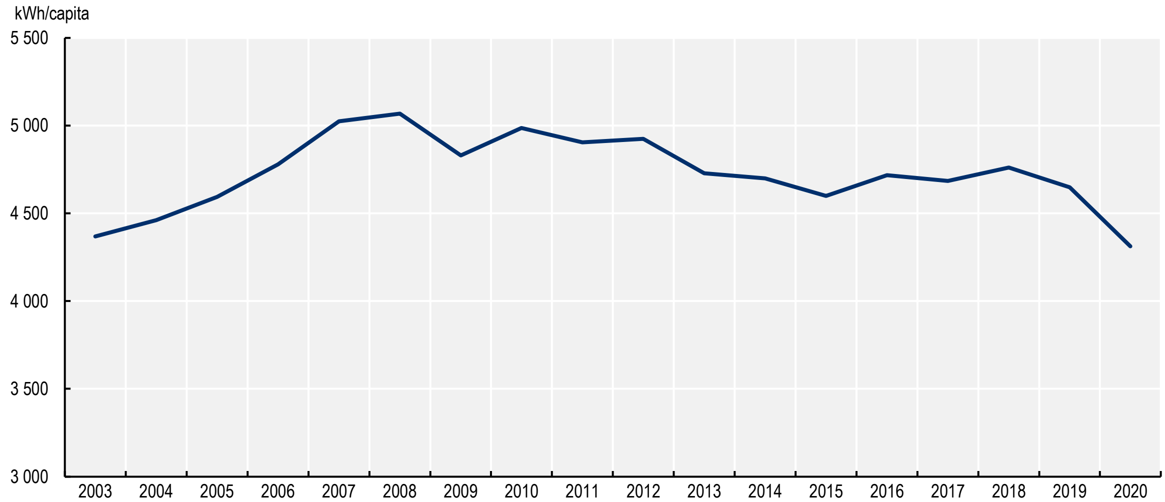
Between 2021 and 2027, the LIFE Clean Energy Transition programme supports the implementation of the EU's sustainable energy policies and aims to facilitate the transition to an energy-efficient, renewable energy-based and climate-neutral economy.

Last, in 2022, the EU launched the RePowerEU plan following the war in Ukraine to rapidly reduce dependence on Russian fossil fuels by 2027 with a target of 45% renewable energy share across the EU. The EC estimates that, by 2030, the share of renewables in electricity should increase to 69%, in transport to 32% and in heating/cooling to at least 2.3 percentage points per year. However, even taking into account the projections for an increase in renewables in all three sectors by 2027, the capacity to expand renewables at the European level still falls short of the ambitions set out in the REPowerEU plan.

Source: EC (2019[55]), *Clean Energy for All Europeans Package*, https://energy.ec.europa.eu/topics/energy-strategy/clean-energy-all-europeans-package_en; EC (2020[56]), *EU Strategy on Energy System Integration*, https://energy.ec.europa.eu/topics/energy-systems-integration/eu-strategy-energy-system-integration_en; IEA (2022[57]), *Is the European Union on track to meet its REPowerEU goals?*, www.iea.org/reports/is-the-european-union-on-track-to-meet-its-repowereu-goals.

In Tallinn, per capita electricity consumption has remained stable in recent years, peaking before the outbreak of the economic crisis in 2008 and declining since then (Figure 1.4). In terms of fuel consumption, energy from wood waste increased 15-fold between 2003 and 2019 (the latest year for which data are available), while other sources such as coal (-93%) and natural gas (-49%) decreased significantly over the same period (City of Tallinn, 2022[22]).

Figure 1.4. Consumption of electricity per capita in Tallinn, Estonia, 2003-20



Source: City of Tallinn (2022[22]), *Statistics and Yearbooks*, https://www.tallinn.ee/et/node/19981.

Material consumption and waste management

In 2020, Estonia's domestic material consumption (DMC) per capita amounts to 29 tonnes and remains above the OECD average (OECD, 2023[58]). The material consumption consists mostly of non-metallic materials representing 57%, followed by fossil energy materials and biomass with 23% and 20% respectively (Eurostat, 2023[59]). In terms of resource productivity, Estonia remained the fourth lowest at the OECD level in 2019.

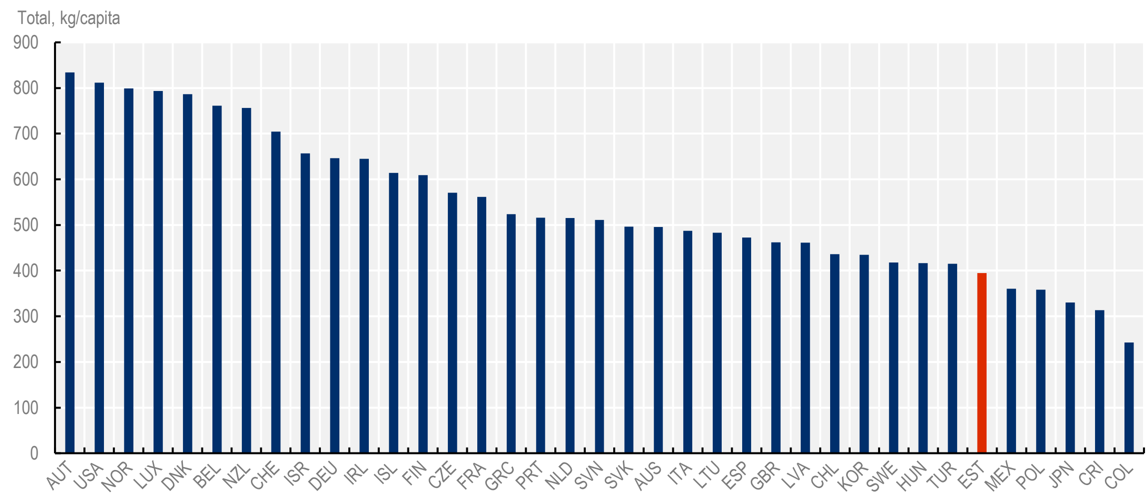
Municipal waste generation per capita in Estonia has remained below OECD levels since 2000. Between 2000 and 2020, Estonia generated an average of 376 kilograms (kg) of municipal waste per capita. Since 2012, the amount of municipal waste generation is on constant growth in the country (from 280.5 kg/capita in 2012 to 383.2 kg/capita in 2020) with a decreasing curve between 2018 and 2019 (from 405.1 kg/capita to 369.1 kg/capita). The municipal waste per capita generated by OECD countries has remained stable over time (around 550 and 500 kg/capita in 2000-20) and it follows a similar trend over the period 2012-20: from 511.6 kg/capita to 533.7 kg/capita (OECD, 2023[60]) (Figure 1.5).

Over the period 2016-20, Tallinn generated an average of 4.2 tonnes of waste per capita (Estonian Ministry of the Environment, 2023[61]). Regarding the origin of the waste, construction and demolition accounted for more than half of the waste generated in the city (58.2%), followed by waste from waste and wastewater treatment plants (14.1%), municipal waste (9.5%), unspecified waste (5.5%), packaging waste (4.5%), waste from exploration, extraction and physical and chemical treatment of minerals and earth materials (4.2%) and other (4%) (City of Tallinn, 2022[34]).

An estimated 44 500 tonnes (t) of food waste are generated in Tallinn every year. More than half of it is generated by households, while the rest is produced predominantly by the commercial and catering sectors (City of Tallinn, 2022[34]). At the national level, approximately 167 000 t of food waste is generated annually in Estonia. Almost half of it is generated by households, 19% by the food industry, 14% in primary production, 12% in trade and 6% in the catering sector. The total value of food wasted in the entire food supply chain is estimated at EUR 164 million per year.

Over the last 10 years, Tallinn has achieved higher levels of separate collection (biowaste collection has almost tripled [+243%] in the period 2012-19, partly due to awareness initiatives and regulation, while landfilling has decreased by 80% [from 229 700 to 46 200 t] over the same period). This is particularly important as landfill methane is the largest contributor to GHG emissions from waste management activities (IPCC, 2007[62]). In this context, CO_2 emissions have been reduced by 67% to 37% over the period 2016-20, depending on the air monitoring station. However, the incineration of municipal waste has increased significantly over the last decade (+17% for the period 2012-20 but +30% for the period 2012-19) (City of Tallinn, 2022[22]). It should be noted that the waste management and treatment indicators for 2020, the latest year for which data are available, reflect lower results than in the years before the pandemic. Therefore, the upward trend is likely to increase with a return to a business-as-usual scenario.

Figure 1.5. Municipal waste generation in OECD countries in 2012-21



Note: Municipal waste is defined as waste collected and treated by or for municipalities. It covers waste from households, including bulky waste, similar waste from commerce and trade, office buildings, institutions and small businesses, as well as yard and garden waste, street sweepings, the contents of litter containers and market cleansing waste if managed as household waste. The definition excludes waste from municipal sewage networks and treatment, as well as waste from construction and demolition activities. Data refer to the most recent available year, which ranges from 2012 to 2021: 2012 for Mexico; 2018 for Chile, Colombia, New Zealand and the United States; 2019 for Australia and Greece; 2020 for Austria, Iceland, Ireland, Italy, Japan, Korea, Türkiye, and the UK; 2021 for Belgium, Costa Rica, Czech Republic, Denmark, Estonia, Finland, France, Germany, Norway, Hungary, Israel, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, and Switzerland.
Source: OECD (2023[60]), "Municipal waste (indicator)", https://doi.org/10.1787/89d5679a-en (accessed on 25 March 2023).

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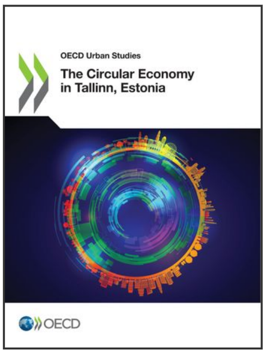
Notes

[1] As of 6 April 2023, 44 588 refugees from Ukraine registered for Temporary Protection or similar national protection schemes (https://data.unhcr.org/en/situations/ukraine).

[2] The GDS Index is a destination-level programme that measures, benchmarks and improves the sustainability strategy and performance of tourism and events destinations. The index is the result of a collaborative partnership between the International Congress and Convention Association (ICCA), IMEX Exhibitions, City Destinations Alliance (CityDNA), MCI Group and GUBI consulting.

[3] Specifically, the dashboard includes a statistics portal that provides information on general data (demographic trends, administration, entrepreneurship and finance), education (ratio of pupils to population), public health (family doctors), social services, housing statistics (housing completions by type of building), culture and sports (sports centres and facilities), tourism (number and cost of beds in accommodation facilities in Tallinn), transport (cycle routes, public transport routes) and the economy (GDP per capita, average gross monthly wage, unemployment rate, municipal budget for operating expenditure, entrepreneurial activity in the city). It also provides an overview of the total number of coronavirus cases in the world per country (total number of cases, total number of deaths, total number of doses administered).



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