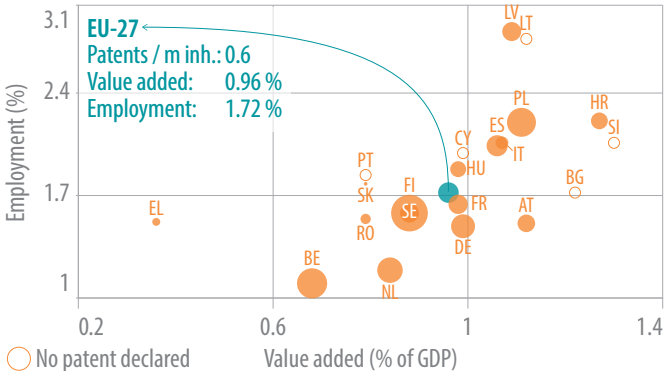
Living in the EU: Circular economy

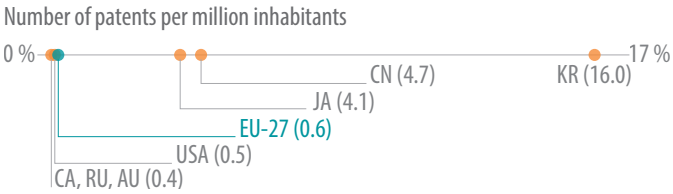
Circular economy is a production and consumption model that involves reusing, repairing, refurbishing and recycling existing materials and products to keep materials within the economy. It implies that waste becomes a resource, consequently minimising the actual amount of waste. The circular model is generally the antithesis of a traditional, linear economic model, which is based on a 'take-make-consume-throw away' pattern. This paper looks at the job creation potential and added value produced by the circular economy and illustrates the generation and treatment of waste in the EU.

Jobs, value added and patents related to circular economy sectors

(% of total employment and % of GDP, 2017; patents per million inhabitants, 2016)

The scatter-plot below presents three indicators used to monitor progress towards a circular economy on the 'competitiveness and innovation' dimension. The x axis represents the value added as % of GDP, while the y axis shows the employment as % of total employment. The size of the bubbles represents the number of technology patents related to recycling and secondary raw materials (per million inhabitants). The added value of circular economy accounts for 0.96 % of GDP (€126 billion); it employs almost 4 million people representing 1.72 % of the total employment. There are 270 patents in the EU, three quarters of which are distributed between five Member States (DE, ES, FR, NL and PL). Five countries report no patents (BG, CY, LT, PT and SI). No data are available for CZ, DK, EE, IE, LU and MT. The chart below shows the number of patents for selected economies worldwide.

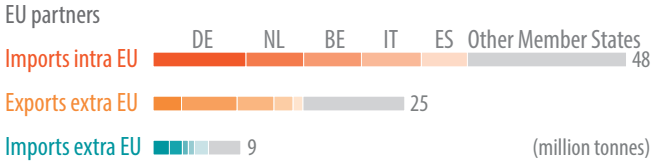


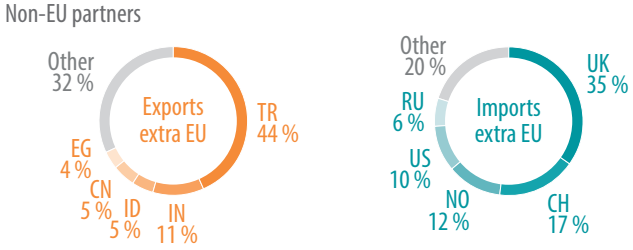


Trade in recyclable raw materials

(Million tonnes and %, 2019)

The indicator measures the trade of materials that are recycled and re-injected into the economy as secondary raw materials, including used pneumatic; scrap plastic; old or unsold newspapers and magazines; gold melted down into unworked blocks; shredded iron or aluminium scrap (categorisation according to a JRC classification of relevant products). The bar chart below shows trade of secondary raw materials within Member States (imports intra EU), and with non-EU countries (exports and imports extra EU). It is expressed in million tonnes and the top five Member States refers to the three categories. The pie charts represent the top non-EU partners. Turkey is the EU's biggest export partner (€2.6 billion; 44 % of exports). The UK is the EU's biggest import partner (€2.1 billion; 35 % of imports).

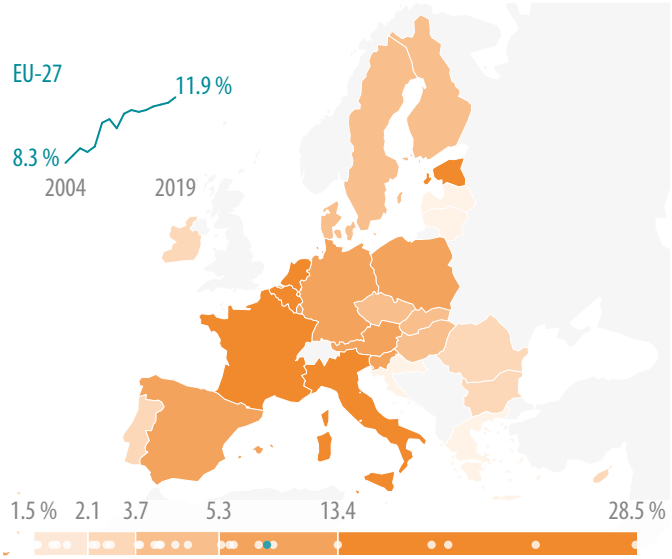




Circular material use rate

(%, 2019)

The circularity rate is an indicator developed by Eurostat to monitor the circular economy. It is the share of material recovered and fed back into the economy in overall material use. A higher circularity rate means that primary raw materials are replaced by secondary materials to a greater extent. The EU-27's circularity rate is 11.9 % and varies between Member States; in the Netherlands, 285 kilograms of secondary materials are needed for one tonne of primary materials; in Romania 15 kg for one tonne. There are six Member State above the EU average.



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Graphics: Samy Chahri, Members' Research Service
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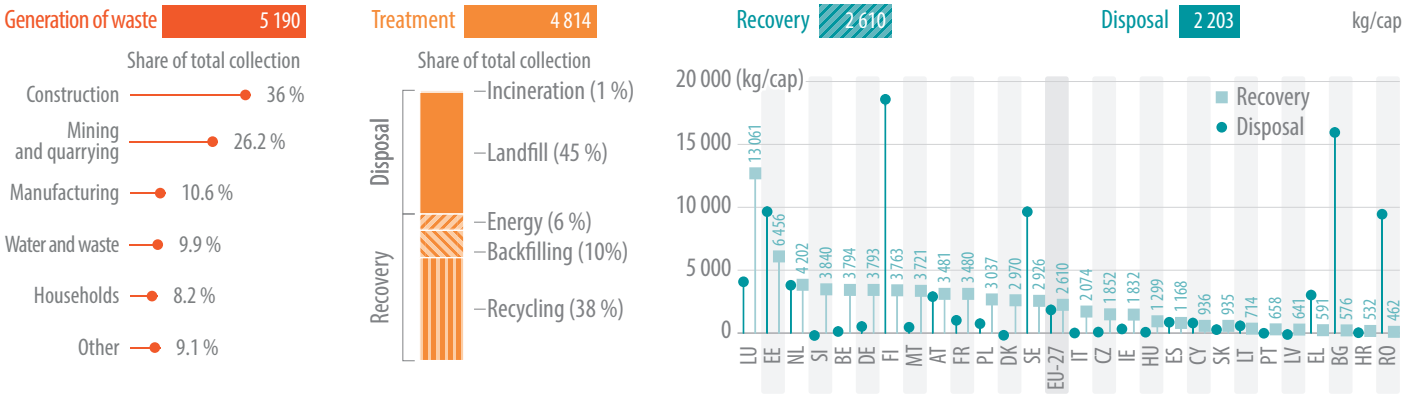
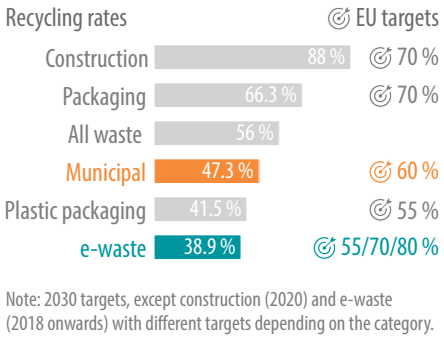
Generation and treatment of waste by economy and category
(all economic activities and households, kg per capita and %, 2018)

In 2018, the EU-27 generated 2.3 billion tonnes (5 190 kg per capita) of waste. Member States' waste generation ranges from 23 253 kg per capita in Finland to 920 kg in Latvia. Four countries (DE, FR, RO, PL) account for 50 % of total EU waste. Twelve Member States account for 91 %. In terms of economic activities, construction, for instance, represents more than one third of total waste generation, with 0.8 billion tonnes (36 %). In 2018, roughly 2.1 billion tonnes of waste were treated in the EU-27 (4 814 kg per capita). While this does not include exported waste, it does include treatment of waste imported into the EU-27. The reported amounts are therefore not directly comparable with those on waste generation. More than half of the waste was treated in recovery operations (54 %). The bar chart on the right shows recovery and disposal of waste per Member State.

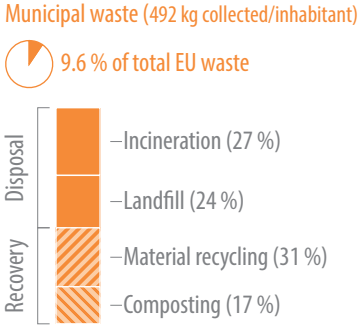


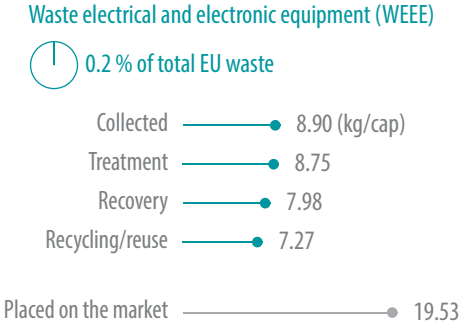
Waste streams (2018)

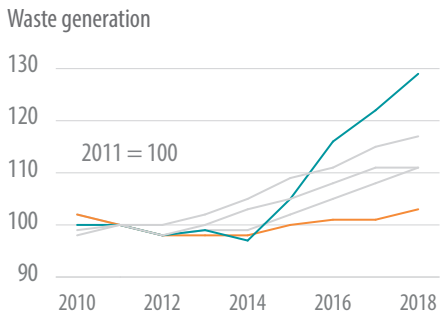
The recycling rate measures the share of recycled waste in total waste generation. Recycled waste consists of waste treated in recovery operation in domestic plants, plus the waste exported for recycling, minus the imported waste. It therefore reflects the treatment of national waste and excludes the waste that is imported from non-EU countries. The recycling rate for construction refers to material recovery, while the index of e-waste is weighted with the number of products put on the market – the higher the value, the higher the quantity of recycled material. Product and process design are improved; investment in tangible goods for the recycling, repair and reuse sector is increasing, as well as administrative capacity and infrastructure. The recycling rates targeted generally increase. Following this target, the recycling rate for e-waste increased by 40 % in the 2010-2018 period. The line chart shows the historical evolution of the waste streams with 2011 as reference, which is the first year when all data are available. Two waste streams are of particular interest: e-waste (one of the fastest growing streams in the EU) and municipal waste (mainly includes waste from households).

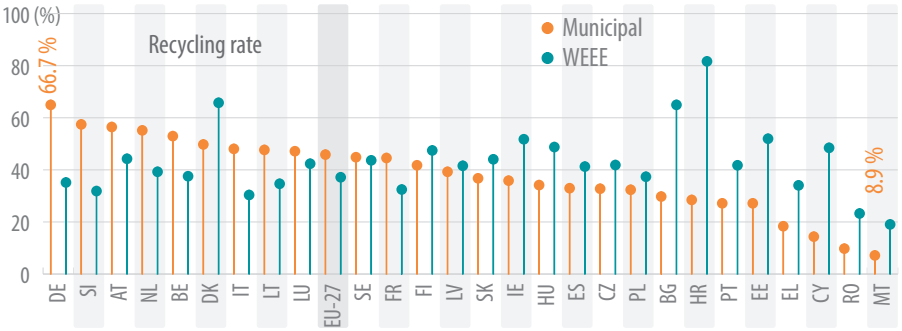


Note: 2030 targets, except construction (2020) and e-waste (2018 onwards) with different targets depending on the category.









Notes

GlobalStat is a project developed by the European University Institute's Global Governance Programme (Italy).

Data sources: Eurostat. Online data code**:** Jobs and value added (CEI_CIE010); Patents (CEI_CIE020); Trade in recyclable raw materials (CEI_SRM020); Circular material use rate (CEI_SRM030); Generation of waste by economy and category (ENV_WASGEN); Waste streams (CEI_WM010, ENV_WASPACR, CEI_WM011, CEI_WM050, CEI_WM040, ENV_WASPAC, ENV_WASELEE, ENV_WASMUN). **Extraction date:** January and February 2021. **Country codes EU**: Belgium (BE), Bulgaria (BG), Czechia (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE). **Non-EU**: China (CN), Egypt (EG), India (IN), Indonesia (ID), Norway (NO), Russia (RU), South Korea (KR), Switzerland (CH), Turkey (TR), United Kingdom (UK), United States (USA). Kg per capita (kg/cap). Per million inhabitants (m inh.).

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