

CIRCULAR ECONOMY FACT SHEET

Key messages

- The **2020 Circular Economy Action Plan**¹, part of the **EU Green Deal**, aims to make circularity a **defining feature** of the EU's economy, focussing on the higher stages of the waste hierarchy.
- Despite EU and national efforts, the **EU-27's waste generation is not going down**. **Decoupling economic growth from waste** will require **huge efforts** across value chains and in households.
- **Total waste** generation from all economic activities is around 2.2 billion tonnes per year since 2004 (over **2.3 billion in 2018**) or **5.0-5.2 tonnes per capita** (except year 2008), with **one citizen** producing nearly **half a tonne of municipal waste** on average.
- **Total waste generation excl. major mineral waste was 6.7% higher** in 2018 over 2008 (812 million tonnes vs. 761 million), and **5.7% higher per capita** (1.82 t/capita vs. 1.72 t/capita).
- **Waste recycling** in the EU-27 is 56% overall (2016), 47.4% for municipal waste (2018), 67.5% for packaging waste and 41.7% for plastic packaging (2017) and 34.8% for e-waste (2018).
- **Circular material use rate was 11.9%** in 2019 (EU-27).
- **Circular economy, 1% in EU GDP**, attracted 15 billion euros of private capital and provided 3.5 million jobs (EU-27, 2017).

Background

World population is projected to grow to 8.5 billion people in 2030, and to 9.7 billion in 2050.² Global GDP is expected to double almost every two decades, with significant increases in per capita incomes – linked to rising global demand and consumption, also doubling material use, leading to **unsustainable environmental pressures** (climate change, pollution, land use change). Without a change, by 2050, the world's consumption level would necessitate the resources of 3 planet Earths. Annual waste generation is projected to grow by 70% by 2050. Plastics, with no action, would account for 15% of the global carbon budget and 20% of oil consumption by 2050 (up from 1 and 6% in 2014).³ The need to transcend linear economic models and shift to a **climate neutral circular economy**, is a key priority of the **European Green Deal**⁴.

Circular economy aims to maintain the value of resources in the economy as long as possible and minimise waste. It is key to sustainability, including the 2030 Agenda for Sustainable Development (SDG 12) and the EU's vision for 2050. **Building on** the 1st Circular Economy Action Plan (2015), the **revised waste**

legislation⁵ set clear targets and paths for waste management and recycling, along with an **EU-wide strategy for plastics**⁶ to transform the way plastics are used and recycled, to reduce plastic waste and littering. The circular economy **Monitoring Framework**⁷ – adding to the Resource Efficiency- and Raw Materials Scoreboard⁸ – included 10 indicators in 4 areas to enhance progress monitoring and identify positive trends and areas that need more action.

The EU's **2020 Circular Economy Action Plan** (CEAP), feeding into the EU's industrial strategy, helps fight climate change and preserve the EU's natural environment. It seeks to ensure that products placed on the EU market are designed for sustainability to last longer; are easier to reuse-, repair- and recycle; incorporate recycled material increasingly; that single-use is restricted; premature obsolescence tackled and the destruction of unsold durable goods is banned. It **presents measures** to:

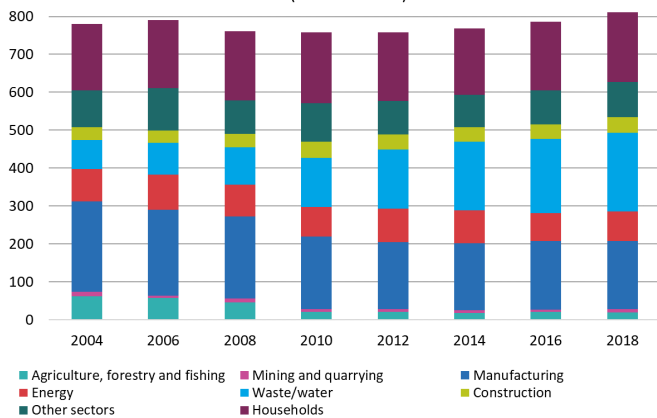
- **make sustainable products the norm**: sustainable product policy initiative, empowering buyers, 'right-to-repair', green claims, mandatory GPP criteria and targets, industrial symbiosis;
- **focus on key value-chains** with high circularity potential: electronics, plastics, textiles and construction;
- ensure **less waste and more value**: waste reduction targets for specific streams and other waste prevention, harmonised information systems and criteria, substances of concern;
- make **circular economy work for people, regions, cities**: supporting skills, just transition and urban initiatives;
- tackle **cross-cutting** (synergies with climate change, energy, state aid, sustainable finance rules etc.) and **global** issues;
- **update monitoring** of resource use and material footprints.

Waste generation data

Total waste generation in the EU-27 has been around 2.2 billion tonnes per year since 2004, growing **over 2.3 billion tonnes in 2018**. This means around **5.2 tonnes per capita** a year (except a few post-2008 years), in which **hazardous waste is increasing** – from 186 kg/capita in 2004 to 227 kg/capita in 2018. Construction produced 36% of the total waste, mining/quarrying 26.2%, manufacturing 10.6%, waste/water 9.9%, households 8.2%, services 4.2%, energy 3.5%, agriculture/forestry/fishing 0.9%, waste/scrap 0.5% in 2018.

Waste production **excluding major mineral waste** amounted to 811.7 million tonnes in 2018 (EU-27), being **6.7% higher than in 2008**. **Per capita**, it grew by **5.7% in a decade**, from 1.72 tonne/capita to 1.82 tonne per capita in the EU-27. **By Member State**, the highest increases per capita were observed in Ireland (+165%) and Belgium (+45%), while the highest decreases in Romania (-52%) Finland (-41%) between 2008 and 2018. **Per 1,000 euros of GDP**, waste generation excluding mineral waste was 68 kg in 2008 and 66 kg in 2018, in the EU-27.

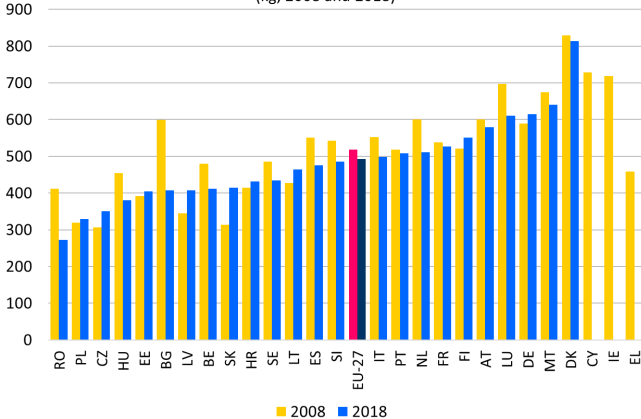
Waste generation (excl. major mineral waste) in the EU-27
(million tonnes)



In 2004-2018, agriculture, forestry and fishing reduced waste production by 69%, manufacturing by almost 25%, mining and quarrying by 22.5%, while construction increased it by almost 20%, and waste and water sector more than doubled it. Annual hazardous waste production in the EU-27 grew from 80.8 million tonnes to 101.4 million tonnes in this period.

The EU-27's total municipal waste generation, 227 million tonnes per annum before the 2008 crisis, decreased to 211 million tonnes in 2013, but resumed back to almost 220 million tonnes in 2016-2018. Per capita, it also fell post-crisis, from 518 kg/capita/year in 2008 to 478 kg/capita in 2013, rising back to 492 kg/capita by 2018 on average. Variation across Member States is huge, between 272- (Romania) and 814 kg/capita (Denmark) in 2018.

Per capita municipal waste generation in the EU-27
(kg, 2008 and 2018)



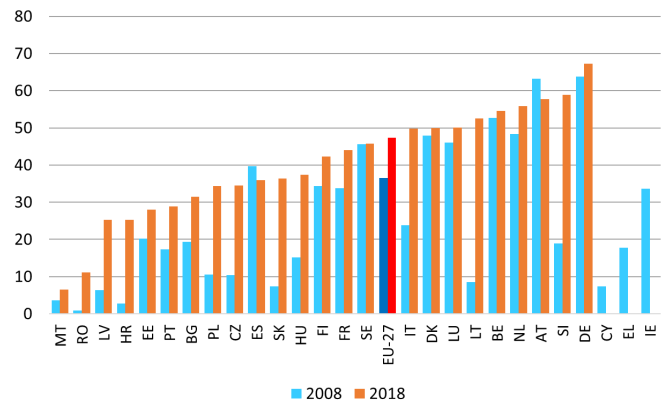
Food waste has large impacts on the environment and resources. Preliminary data showed 80 million tonnes of food waste in the EU (in 2012 and 2016) and the EU set the target to halve food waste by 2030. Data reporting obligation will start with year 2020, based on the Waste Framework Directive⁹ and its implementing decisions.

Waste management & recycling

Towards the circular economy, waste management should focus on the higher stages of the waste hierarchy with priority on waste prevention, followed by preparation for re-use, recycling, recovery and disposal. Since 2012, around 2.1 billion tonnes of waste is being treated in the EU-27 annually. The recycling rate of all waste excluding major mineral waste was 56% in 2016, with the highest rates in Slovenia (80%), Belgium (78%) and the Netherlands (72%).

For total municipal waste, the recycling rate (incl. composting) increased from 36.5% to 47.4%, and the share of energy recovery from 16.1% to 26.2%, leading to significant decreases in annual landfilling – from 83.5 million tonnes to 52.1 million tonnes – between 2008 and 2018. By Member State, Germany (67.3%) surpassed the 2030 municipal waste recycling target, some other countries were approaching it (e.g. Slovenia, Austria, Belgium), whilst six Member States were still below or close to 25% in 2018.

Municipal waste recycling rates in EU-27 Member States (%)



The recycling rate of packaging waste was 60.4% in 2008 and 66.3% in 2018 in the EU-27. For plastic packaging, it grew from 30.9% to 41.5% in the period. Recycling of wooden packaging was 34.5% in 2018. Municipal biowaste recycling was 69 kg/capita in 2008, rising to 83 kg/capita by 2018. For waste electrical and electronic equipment (e-waste), the recycling rate was 34.5% in 2018. For construction/demolition waste, 24 Member States surpassed the 70% recovery target for 2020 – the average rate was 88% (2018).

Secondary raw materials

In a circular economy waste becomes resource and recovered materials are reinjected into the economy. The circular material use rate grew slowly in the EU-27: from 9.2% in 2008 to 11.9% in 2018, ranging between 1.5% (Romania) and 28.5% (the Netherlands). As the Circular Economy Action Plan reveals, the EU needs to accelerate the transition towards a regenerative growth model, keeping its resource consumption within boundaries, reducing its consumption footprint and doubling its circular material use rate. For some materials (e.g. copper and nickel), the contribution of recycled materials to material demand is over 30%, while for a large number of materials still small, due to profitability issues. The self-sufficiency for raw materials indicator shows the EU is largely self-sufficient for non-metallic minerals (for construction and industry). For critical raw materials the EU relies on imports to a large extent (e.g. cobalt, silicon). To boost the use of secondary materials, markets need to develop, quality ensured by EU-wide standards and end-of-waste rules. Cross-border information systems, green public procurement (GPP) and market-based instruments (MBIs) can also help.

Externally, the EU-27 is a net exporter of several major recyclable waste streams (plastics, paper/cardboard, iron etc.), exporting 3 times more than its imports (25.5- and 8.9 million tonnes respectively, in 2019). The biggest exporter is the Netherlands (5.6 million tonnes), and the biggest importers (from outside the EU) are

Germany, Spain and the Netherlands (1.3-1.6 million tonnes each). Internal trade (intra-EU27) amounted to 47.9 million tonnes in 2019.

Competitiveness, innovation and potential

The **revised waste rules** set the **fundamental path** to 2030/2035 with clear targets, including 65% of municipal waste to be recycled by 2035 (and reduce landfilling to 10%), 70% of packaging waste by 2030 (with other targets on specific packaging materials), reinforcing separate collection (e.g. bio-waste and textiles) and EPR requirements. To meet targets for municipal and packaging waste, the EU-27 will **need to additionally invest** EUR 14.7 billion in 2021-2027, or 23.9 billion during 2021-2035, with further needs for key waste streams (plastics, electronics, textiles, furniture) of around EUR 4.7 billion euros, indicating a total additional investment need of EUR 28.5 billion during 2021-2035 (of this, 18.2 billion up to 2027) for waste in the EU-27 – equal to EUR 1.9-2.6 billion per annum.¹⁰

The **2020 CEAP** raises **ambition**, focussing on sustainable products; key sectors with high resources use and circularity potential (textiles, construction, electronics and plastics, batteries, packaging); and on higher stages of the waste hierarchy (waste prevention) – promoting the higher uptake of circular economy to **reduce environmental pressures** and to unlock considerable **socio-economic benefits**. Benefits include resource- and financial savings; reduced supply risks and waste; innovation, competitiveness (first-mover advantage, corporate image etc.) gains and GDP growth; sustainable products for customers; local jobs (social integration), many in SMEs. The

CEAP aims at a fair and just circular economy transition, supporting the uptake of the right skills and job quality improvements.

Circular economy, enabled by technology revolution in key sectors (mobility, food and built environment, with 60% of EU household budgets and 80% of resource use) was estimated¹¹ to **allow to** grow resource productivity by up to 3% annually in the EU, increasing GDP by 7% over baselines with positive impacts on employment, while reducing raw material consumption by an additional 10%, and GHG emissions by additional 17%, bringing annual total benefits of EUR 1.8 trillion (0.6 billion in primary resource cost-saving and 1.2 trillion in non-resource and externality benefits), also raising the disposable income of EU households by 11% by 2030. Focussing public circular economy investment, public procurement and subsidies in key sectors can leverage private capital of EUR 320 billion up to 2025 (30-35 billion p.a.): 135 billion in mobility, 70 billion in food, and 115 billion in built environment. Employment effects, at least +700,000 FTEs by 2030 (conservative/historical technology assumptions)¹², range up to 2 million additional jobs with faster technology change and productivity, moving higher in the ‘circularity hierarchy’.

EU funding was increased to over EUR 10 billion in 2016-2020, while circular economy investment is still under its potential: **private investment** fell between 2011 and 2013 to EUR 11.8 billion, reaching 15 billion by 2017, providing 3.5 million **jobs** (1.7% of total employment) and EUR 125.8 billion of **value added**, 1% of the EU-27 GDP. During 2011-2015, the number of recycling and secondary raw material **patents** was above 300 per year, down to 269 in 2016 (0.6 per million inhabitants). The EU Green Deal, backed by the revamped 2021-2017 MFF and the NGEU recovery fund provides a historic opportunity to step up circular economy across the EU.

- 1 http://ec.europa.eu/environment/circular-economy/index_en.htm
- 2 World population prospects, 2019. UN. https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf
- 3 The New Plastics Economy. Ellen Macarthur Foundation, 2016., Plastic & Climate. CIEL, 2019.
- 4 COM(2019)640 – European Green Deal.
- 5 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2018:150:TOC>
- 6 <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1516265440535&uri=COM:2018:28:FIN>
- 7 <http://ec.europa.eu/eurostat/web/circular-economy/indicators/monitoring-framework>
- 8 http://ec.europa.eu/environment/resource_efficiency/targets_indicators/scoreboard/index_en.htm, <https://bookshop.europa.eu/en/raw-materials-scoreboard-pbET0416759/>
- 9 Directive 2008/98/EC, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098>
- 10 <https://op.europa.eu/en/publication-detail/-/publication/4d5f8355-bcad-11e9-9d01-01aa75ed71a1>
- 11 Growth within: A circular economy vision for a competitive Europe. EMF and McKinsey, 2015. and Achieving ‘Growth Within’, SystemIQ, SUN Institute, Ellen Macarthur Foundation, 2017.
- 12 Impacts of circular economy policies on the labour market. Cambridge Econometrics, Trinomics and ICF, 2018.

PDF

ISBN 978-92-76-32146-0
doi:10.2779/347805
KH-09-21-054-EN-N

The European Commission is not liable for any consequence stemming from the reuse of this publication.
Luxembourg: Publications Office of the European Union, 2021
© European Union, 2021



The reuse policy of European Commission documents is implemented based on Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 350, 14.12.2011, p. 39).
Except otherwise noted, the reuse of this document is authorised under a Creative Commons Attribution 4.0 International (CC-BY 4.0) licence (<https://creativecommons.org/licenses/by/4.0/>). This means that reuse is allowed provided appropriate credit is given and any changes are indicated.
For any use or reproduction of elements that are not owned by the European Union, permission may need to be sought directly from the respective rightholders.
[or]
For any use or reproduction of elements that are not owned by the European Union, permission may need to be sought directly from the respective rightholders.

Disclaimer

This factsheet should not be considered as a fully-fledged policy document. The main focus of it is to provide facts and figures related to the topic and to suggest further reading. For more on environmental economics (including studies), please visit: <https://ec.europa.eu/environment/enveco/index.htm>, or <http://ec.europa.eu/environment> for a comprehensive overview on EU environmental policies.



Publications Office
of the European Union