Waste management country profile

with a focus on municipal and packaging waste

Germany

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European Environment Agency

Key messages

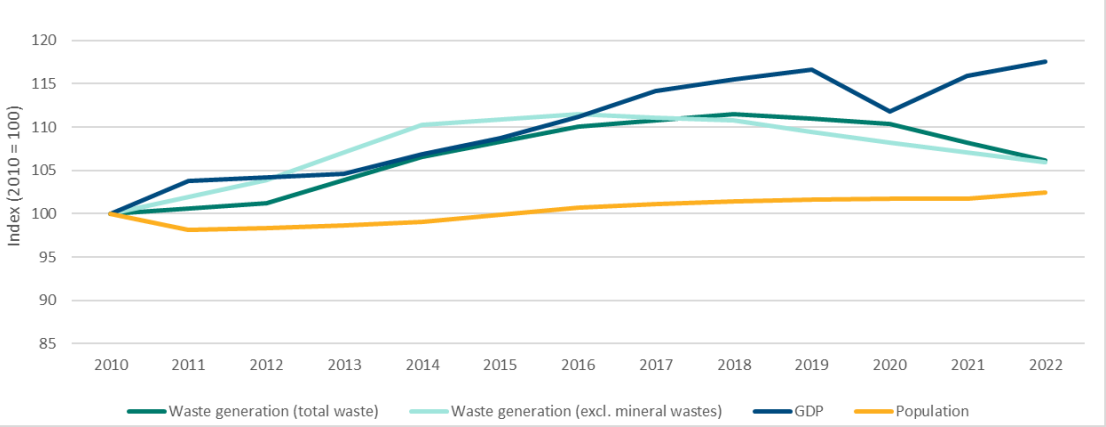
- Waste generation in Germany increased slightly during the past 12 years, largely following the trend in economic growth. There is a very small decoupling of waste generation from economic growth.
- For the reference year 2022, Germany has reported recycling rates above all 2025 targets for packaging waste recycling. The same applies for Germany's performance with respect to the 2025 target for preparing for reuse and the recycling of municipal waste, however, official data showing compliance with the target are not yet available. Only around 1% of municipal waste is landfilled. The plastic packaging recycling rate increased to above 50% in 2022 for the first time.
- Germany's municipal waste generation remains high, and no progress has been made in terms of decreasing the country's incineration rate. Furthermore, limited progress has been made in improving the municipal waste recycling rate.
- While Germany's recycling levels are already high, there is still room for improvement, especially for plastics and wooden packaging, and for reducing the rather high levels of packaging waste and municipal waste generation.

Trends in waste generation and treatment

Total waste generation

The total amount of waste generated in Germany increased slightly over the last 12 years (Figure 1). This trend is primarily driven by the largest waste categories, namely soils and mineral waste from construction and demolition. Excluding the major mineral waste categories does not affect the overall trend. This small increase is mainly driven by the largest waste categories, namely mixed waste and recyclable waste. Most recently, waste generation declined again across nearly all waste categories. Germany's GDP showed a steady growth until 2019, but dropped significantly in 2020, most likely due to the Covid-19 outbreak. Overall, there appears to be a very small decoupling of waste generation from economic growth throughout the period 2010-2022.

Figure 1 Generation of waste (total and excluding major mineral wastes), population and economic development, 2010-2022



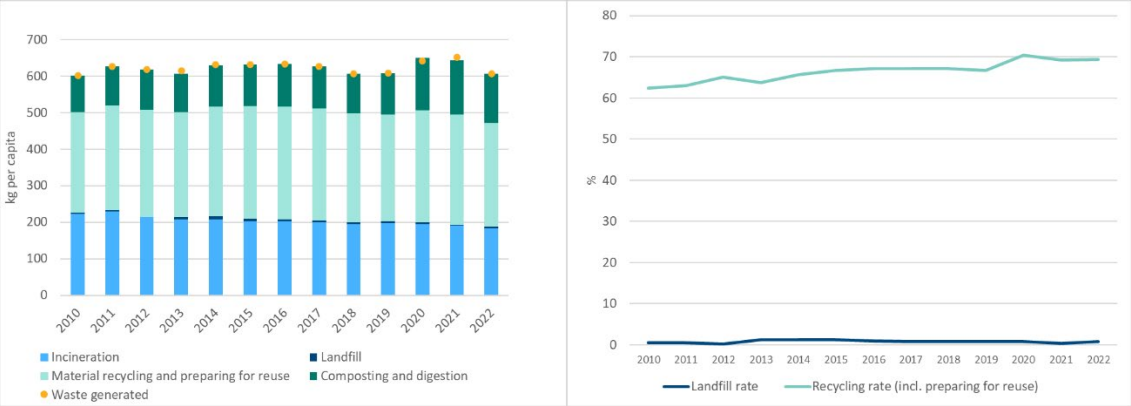
Source: Eurostat (2024a, 2024b, 2024f)

Note: Waste generation data for odd years are interpolated.

Municipal waste

Municipal waste generation in Germany remained relatively stable between 2010 and 2022 (Figure 2, left). In 2022, the country generated 606 kg/cap of municipal waste, which is significantly above the (estimated) EU-27 average of 513 kg/cap.

Figure 2 Municipal waste management (left) and rates of recycling (incl. preparing for reuse) and landfill (right), 2010-2022



Source: Eurostat (2024d)

Note: As of the reference year 2020, new reporting rules apply for calculating recycled municipal waste pursuant to the targets laid down in Article 11.2(c-e) of Directive 2008/98/EC. The calculation points referred to in Article 6c(1)(a) are corrected for non-target materials thus excluding rejected material from the recycling facilities. Germany applied the new calculation rules for the first time for the reference year 2020.

Germany's rate of preparing for reuse and recycling of municipal waste stagnated over the past years at a high level, reaching 69% in 2022, which is significantly above the (estimated) EU-27 average of 49% in the same year ([1]). The incineration rate slightly decreased during this period, reaching 30% in 2022. Germany has a landfill rate below 1%.

The data shown in Figure 2 do not necessarily fully correspond yet with the data to be reported to show compliance with the preparing for reuse and recycling target of 55% for 2025, as laid down in the Waste Framework Directive. Such data are not yet available for Germany (Eurostat, 2024c).

Packaging waste

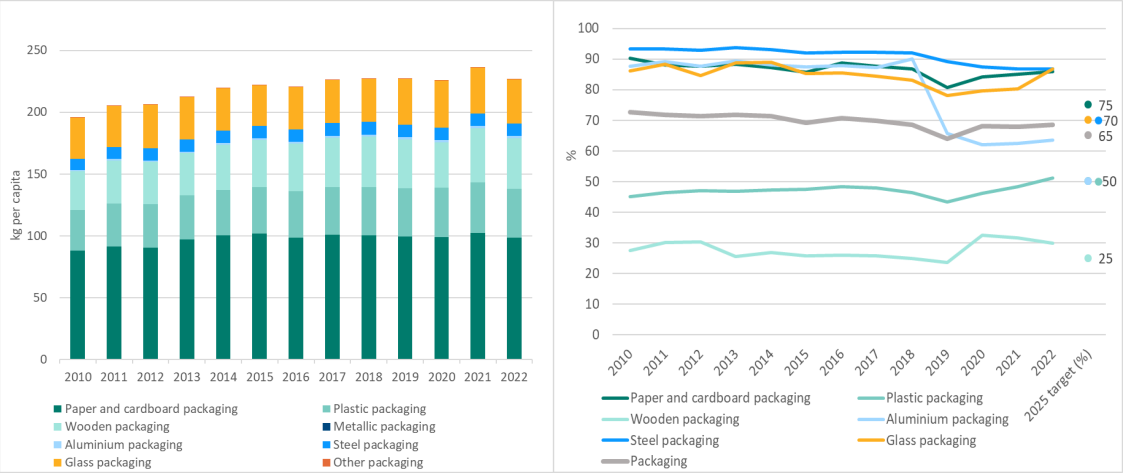
Germany's packaging waste generation significantly increased since 2010 (Figure 3, left). The country generated 227 kg/cap in 2022, which is significantly above the (estimated) EU-27 average of 186 kg/cap ([2]).

([1]) The EU-27 average might be influenced by the situation that not all Member States already fully apply the rules for reporting on municipal waste as defined in the Waste Framework Directive as amended in 2018.

([2]) The EU-27 average might be influenced by the situation that not all Member States already fully apply the reporting rules for packaging waste as defined in the Commission Implementing Decision 2019/665.

In the past decade, the overall packaging waste recycling rate was above 65%, with the exception of 2019, and stands at 69% in 2022 (Figure 3, right). The overall recycling rate is mainly influenced by paper and cardboard as this is the largest fraction with a high recycling rate. In 2019, there was a notable drop in paper and cardboard, glass, metallic and plastics packaging recycling rates, which slightly diminished the overall recycling rate for that year. This drop is attributable to the application of new calculation rules (ETC/CE, 2022). A comparison of the data under the new rules with a calculation under the old rules for 2018-2021 indicates an increase in the recycling rate from 2018-2021 if only the old rules were applied (UBA, 2024).

Figure 3 Packaging waste generation (left) and recycling rates (right), 2010-2022



Source: Eurostat (2024e)

Note: There is a break in series for paper and cardboard, plastic, wooden, glass, and aluminium packaging in 2019. Germany applied the new calculation rules according to the Commission Implementing Decision 2019/665 for the first time in 2019.

Policies in place to encourage waste prevention measures and to increase recycling

Legislative framework and waste management plans

Germany's waste legislation comprises a number of laws and ordinances, categorised into general regulations, with the Circular Economy Act (KrWG) as the core element, complemented by waste-stream specific regulations (e.g. the Packaging Act – VerpackG) (Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit, 2021; Bundesministeriums der Justiz, 2017). The KrWG, adopted in 2012 and last amended in 2020, mandates the separate collection of bio-waste, paper, metal, plastic, and glass waste from 2015 onwards, and sets targets for the preparation for reuse and recycling of municipal waste (Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit, 2021). The German Packaging Act was amended to align with the revised EU Packaging and Packaging Waste Directive (EU/2018/852), leading to the obsolescence of the previous Packaging Ordinance (Bundesministeriums der Justiz, 2017).

While there is a National Waste Prevention Programme (NWPP)since 2013, there is no national waste management plan, as each of the 16 federal states has its own plan outlining targets, objectives, and municipal waste management policies (ETC/CE, 2022).

Waste prevention policies

Germany's current National Waste Prevention Programme (NWPP) for the period 2021-2027 is the country's second prevention programme (BMUV, 2020). The first NWPP in 2013 focused on measures by public institutions. The new programme focuses on possible measures by the industry, households, and other stakeholders (BMK, 2023). No specific budget for the implementation of the programme is included in the programme (EEA, 2023).

The NWPP includes several indicators for the reduction of specific waste streams based on SDG 12.3 and 12.5 as well as on national legislation, including food waste generation, reuse of specific product groups and municipal solid waste. The programme refers to research projects that have analysed the waste prevention potential of specific measures or for specific waste streams. Those results have been integrated into the selection and design of planned measures in the current programme (BMK, 2023). A revision of the previous programme has been a part of a project initiated by the German Environment Agency (UBA) and the German Federal Ministry for the Environment (BMUV). The revision includes proposals for further development, updates of the programme's prioritised waste streams, and corresponding prioritised waste prevention approaches. The evaluation of the revised programme is expected to be completed in 2026 (EEA, 2023).

Prioritised waste streams are food and organic waste, construction and demolition waste, hazardous waste, detergents, household and municipal waste, packaging waste, textiles, waste electrical and electronic equipment, waste batteries, manufacturing waste, bulky waste, and other miscellaneous wastes. Quantitative targets have been set for reusable beverage containers, for the reduction of food waste at the retail and consumer levels, for the reduction of food losses along production and supply chains, and for continued decrease of municipal solid waste (EEA, 2023).

The German Ministry of Environment has recently published a national strategy for circular economy (NKWS) (BMUV, 2024). The strategy aims to consolidate goals and measures on circular economy and resource efficiency, based on existing raw material policy strategies. One of the strategic targets is to reduce the generation of municipal waste per inhabitant by 10% and 20% by 2030 and 2045, respectively. Moreover, in 2019, Germany adopted the National Strategy for Food Waste Reduction. This strategy identifies potential drivers of food waste and highlights challenges and activities to reduce food waste along the entire food supply chain (EEA, 2023).

According to the 2021 data that Germany reported to the EEA according to Commission Implementing Decision (EU) 2021/19 (EEA, 2024), Germany reused:

- 204267 tonnes of textiles,
- 319900 tonnes of electrical and electronic devices, and
- 907171 tonnes of furniture.

It should be noted that these data have been reported for the first time. As the reporting process matures, it is expected that these data will strengthen but for now, caution is advised in drawing insights from the dataset. More information about the interpretation and limitations of the dataset is available (EEA, 2024).

Policies to encourage separate collection and recycling

Residual waste and bio-waste (food and garden waste) are mainly collected via separate door-to-door collection, which is supplemented with collection at civic amenity sites for garden waste. Door-to-door collection is predominantly applied to paper and cardboard and to plastics, metals and composite packaging waste (co-mingled), complemented by collection via bring points. Collection of packaging glass occurs mainly via bring points and in some areas through door-to-door collection. In most municipalities, door-to-door collection or collection via bring points is limited to packaging waste. The non-packaging fractions are usually collected at civic amenity sites or by private companies (scrap trade). Furthermore, Germany mandates the separate collection of packaging waste from non-household sources. (ETC/CE, 2022)

While pay-as-you-throw systems are important to improve separation at source, German municipalities are not obliged to apply such systems. Consequently, the population coverage is only about 30%. The fees are mainly modulated based on the number of yearly emptied containers or the amount of disposed residual waste (ETC/CE, 2022). The European Commission suggested that German waste management could benefit from implementing a mandatory pay-as-you-throw system across the whole country (EC, 2023).

The national deposit-return system (DRS) in Germany was one of the first in Europe. Today a mandatory scheme covers nearly all single-use drink cans and bottles made of aluminium, glass, and plastic (PET). Previous exemptions (e.g. for some alcoholic beverages and dairy products) have been removed in the Packaging Act (VerpackG) amendments in 2022 and 2024. Additional voluntary deposit-return systems are in place for certain plastic crates and some wooden packaging (ETC/CE, 2022). Furthermore, the Packaging Act requires a deposit for refillable packaging, requiring sufficient logistics and incentives for take-back and reuse.

According to the German Packaging Act, producers of packaging that typically ends up as waste, must join a producer responsibility organisation (PRO) or arrange take-back and recovery of their packaging. As a result, all packaging materials, from both households and other sources, are covered by Extended Producer Responsibility (EPR) schemes organised by several competing PROs (ETC/CE, 2022). The German Packaging Act requires PROs to apply fee modulation based on recyclability and recycled/renewable material content. The government publishes a binding minimum standard for the assessment of these criteria. The PROs have to report annually about the implementation of the fee modulation. As foreseen by the Packaging Act, the government conducted a review regarding the need to improve the fee modulation rules which concluded on a need for revision of the rules in 2025 (UBA, 2022). Germany has no packaging tax in place at federal or federal state level. (ETC/CE, 2022)While Germany's recycling levels are already high, there is still room for improvement, especially for plastics and wooden packaging, and for reducing the rather high levels of packaging waste and municipal waste generation.

Policies and instruments to discourage landfilling or incineration

As mentioned before, Germany landfills less than 1% of its generated municipal waste (Figure 2, left). While there is no landfill tax in place, a landfill ban has existed since 2005 for waste with a Total Organic Carbon content (TOC) above 3%, and above 18% for mechanical-biologically treated waste (ETC/CE, 2022).

Similarly, Germany does not impose taxes on municipal waste incineration. Nevertheless, as the country's incineration rate nearly stagnated from 2015 onwards, the Environmental

Implementation Review (EIR) 2022 suggested that introducing incineration taxes could serve as an incentive to divert more waste away from incineration to recycling (EC, 2022). However, waste incineration has been subject to national emissions trading regulations for fuels according to the Fuel Emission Allowance Trading Act (BEHG) since 2023. Since 1 January 2024, CO_2 certificates must be purchased for every tonne of non-biogenic CO_2 emitted. In 2024, prices are set to EUR 45 per tonne and will increase significantly in subsequent years. This may well have a significant influence on the amount of waste incinerated in the future (UBA, 2024).

Prospects for meeting the targets on recycling and landfilling

For the reference year 2022, Germany has reported recycling rates above all 2025 targets for packaging waste recycling, above the 2025 target for preparing for reuse and recycling of municipal waste, and above the 2035 target for landfilling of municipal waste. However, official data showing compliance with the 2025 target on preparing for reuse and recycling of municipal waste are not yet available (Eurostat, 2024c). The recycling rate for plastic packaging waste was above 50% for the first time in 2022. Consequently, the European Commission did not issue any policy recommendations for Germany's waste management performance. Nevertheless, the Commission's Environmental Implementation Review (EIR) highlighted the persistently high level of municipal waste generation and the near stagnation of incineration rates since 2015. As a priority action, the review proposed shifting reusable and recyclable waste away from incineration (EC, 2022).

References

BMK, 2023, *Waste prevention programme 2023 (Abfallvermeidungsprogramm 2023)*, Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (https://www.bmk.gv.at/themen/klima_umwelt/abfall/aws/bundes_awp/bawp2023.html) accessed 9 November 2023.

BMUV, 2020, *Wertschätzen statt wegwerfen - Abfallvermeidungsprogramm des Bundes und der Länder. Fortschreibung*, BMUV (https://www.bmu.de/fileadmin/Daten_BMU/Download_PDF/Abfallwirtschaft/fortschreibung_abfallvermeidungsprogramm_bund_laender_bf.pdf) accessed 15 December 2023.

BMUV, 2024, *Nationale Kreislaufwirtschaftsstrategie* (https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Abfallwirtschaft/nationale_kreislaufwirtschaftsstrategie_bf.pdf) accessed 3 February 2025.

Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit, 2021, 'Gesetz zur Förderung der Kreislaufwirtschaft und Sicherung der umweltverträglichen Bewirtschaftung von Abfällen (KrWG)' (https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Abfallwirtschaft/kreislaufwirtschaftsgesetz_en_bf.pdf) accessed 13 July 2021.

Bundesministeriums der Justiz, 2017, *Gesetz über das Inverkehrbringen, die Rücknahme und die hochwertige Verwertung von Verpackungen (Verpackungsgesetz - VerpackG)* (https://www.gesetze-im-internet.de/verpackg/VerpackG.pdf) accessed 2 December 2025.

EC, 2022, *Environmental Implementation Review 2022 Country Report - GERMANY*, COMMISSION STAFF WORKING DOCUMENT No SWD(2022) 265 final, Directorate-General for

Environment (https://environment.ec.europa.eu/law-and-governance/environmental-implementation-review_en) accessed 2 December 2025.

EC, 2023, *2025 EU waste recycling targets STATE OF PLAY - Germany*, European Commission (https://environment.ec.europa.eu/publications/waste-early-warning-reports-2023-country-specific-factsheets_en) accessed 10 December 2025.

EEA, 2023, *Waste Prevention Country Profile - Germany*, EEA (https://www.eea.europa.eu/themes/waste/waste-prevention/countries/2023-waste-prevention-country-fact-sheets/germany_waste_prevention_2023) accessed 15 December 2024.

EEA, 2024, *Reuse flows according to the implementing decision (EU) 2021/19 Information on the database structure and use*, No Database version 1, European Environment Agency (EEA) (https://sdi.eea.europa.eu/catalogue/srv/api/records/50b2430b-8218-471c-86ea-65236a870a28/attachments/Reuse%20metadata%20annex%20Version%201.pdf) accessed 5 March 2024.

ETC/CE, 2022, *Germany - Early Warning Assessment Related to the 2025 Targets for Municipal and Packaging Waste*, European Environment Agency (EEA) (https://www.eea.europa.eu/publications/many-eu-member-states/early-warning-assessment-related-to).

Eurostat, 2024a, 'GDP and main components (output, expenditure and income) [nama_10_gdp]' (https://ec.europa.eu/eurostat/databrowser/view/nama_10_gdp__custom_9301905/default/table) accessed 15 October 2024.

Eurostat, 2024b, 'Generation of waste by waste category, hazardousness and NACE Rev. 2 activity (env_wasgen)' (https://ec.europa.eu/eurostat/databrowser/view/env_wasgen/default/table?lang=en) accessed 22 October 2024.

Eurostat, 2024c, Information provided by Eurostat on provisional data in response to the reporting obligation in Art. 37(1) Waste Framework Directive related to the target on the preparing for reuse and recycling for municipal waste (Art. 11(2c)).

Eurostat, 2024d, 'Municipal waste by waste operations [env_wasmun]' (https://ec.europa.eu/eurostat/databrowser/view/ENV_WASMUN/default/table) accessed 22 October 2024.

Eurostat, 2024e, 'Packaging waste by waste management operations (env_waspac)' (https://ec.europa.eu/eurostat/databrowser/view/ENV_WASPAC__custom_842634/default/table?lang=en) accessed 28 October 2024.

Eurostat, 2024f, 'Population change - Demographic balance and crude rates at national level [demo_grind]' (https://ec.europa.eu/eurostat/databrowser/view/demo_gind__custom_9301558/default/table) accessed 15 October 2024.

UBA, 2022, *Überprüfung der Wirksamkeit des § 21 VerpackG und Entwicklung von Vorschlägen zur rechtlichen Weiterentwicklung*, Umweltbundesamt (German Federal Environment Agency)

(https://www.umweltbundesamt.de/publikationen/ueberpruefung-der-wirksamkeit-des-ss-21-verpackg) accessed 18 October 2024.

UBA, 2024, Information provided during the Eionet review of the draft EEA country profile on waste management for Germany, Federal Environment Agency of Germany.