

Circular economy country profile 2024 – Germany



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Introduction

The European Commission requested the EEA to produce EU country profiles that offer an updated view of the following elements:

- what circular economy policies are being implemented at a national level with a particular focus on elements that go beyond EU mandatory elements, and
- what are best practices with a focus on policy innovation.

With the EU Circular Economy Action Plan (CEAP 2020) "the Commission [...] encourages Member States to adopt or update their national circular economy strategies, plans and measures in the light of its ambition".

These country profiles originate in the work leading to the EEA More from less report (2016)¹, that presented an overview of approaches to material resource efficiency and to circular economy in thirty-two European countries. The More from Less report was followed by the 2019 EEA Report 'Resource efficiency and the circular economy in Europe 2019 – even more from less: An overview of the policies, approaches and targets of 32 European countries'².

It presented an updated and extended assessment of approaches and identified trends, similarities and new directions taken by countries in the connected policy areas of resource efficiency and the circular economy.

These reports, comprising a compilation of extensive survey responses from countries, were accompanied by 32 country profiles.

In the second quarter of 2022 a new survey with questions and guidelines was launched. Based on information reported by the Eionet network, in particular, the Eionet Group on Circular Economy and Resource Use, and after review and editing by the European Topic Centre on Circular economy and resource use (ETC CE), the 30 2022 CE country profiles³ were published alongside the EEA report 'Circular Economy policy innovation and good practice in Member States'⁴ (2022).

These 2024 CE country profiles are an update of the 2022 ones and based on the responses of 29 countries to the survey questions and guidelines that were launched in March 2024. The information in the countries' responses was again reviewed and edited by the European Topic Centre on Circular economy and resource use. A selection of Eurostat data was made to further complement these country profiles.

The main objectives of these assessments and its updates are to: • stimulate exchange of information and share good practice examples among country experts; • support policymakers in Eionet countries, the European institutions and international organisations by providing an updated catalogue of circular economy actions being undertaken in European countries.

This circular economy country profile is based on information reported by the Eionet network and, in particular, the Eionet Group members on Resource Efficiency and Circular Economy in the second quarter of 2024. Proposals for the further development or amendment of policies represent the view of the reporting country. For Germany, all input was provided by the German Environment Agency. The information was reviewed and edited by the European Topic Centre on Circular economy and resource use. A selection of Eurostat data was made to further complement this country profile.

¹ [More from less – material resource efficiency in Europe – European Environment Agency \(europa.eu\)](https://europea.europa.eu/en/press-releases/2016/06/16-06-2016)

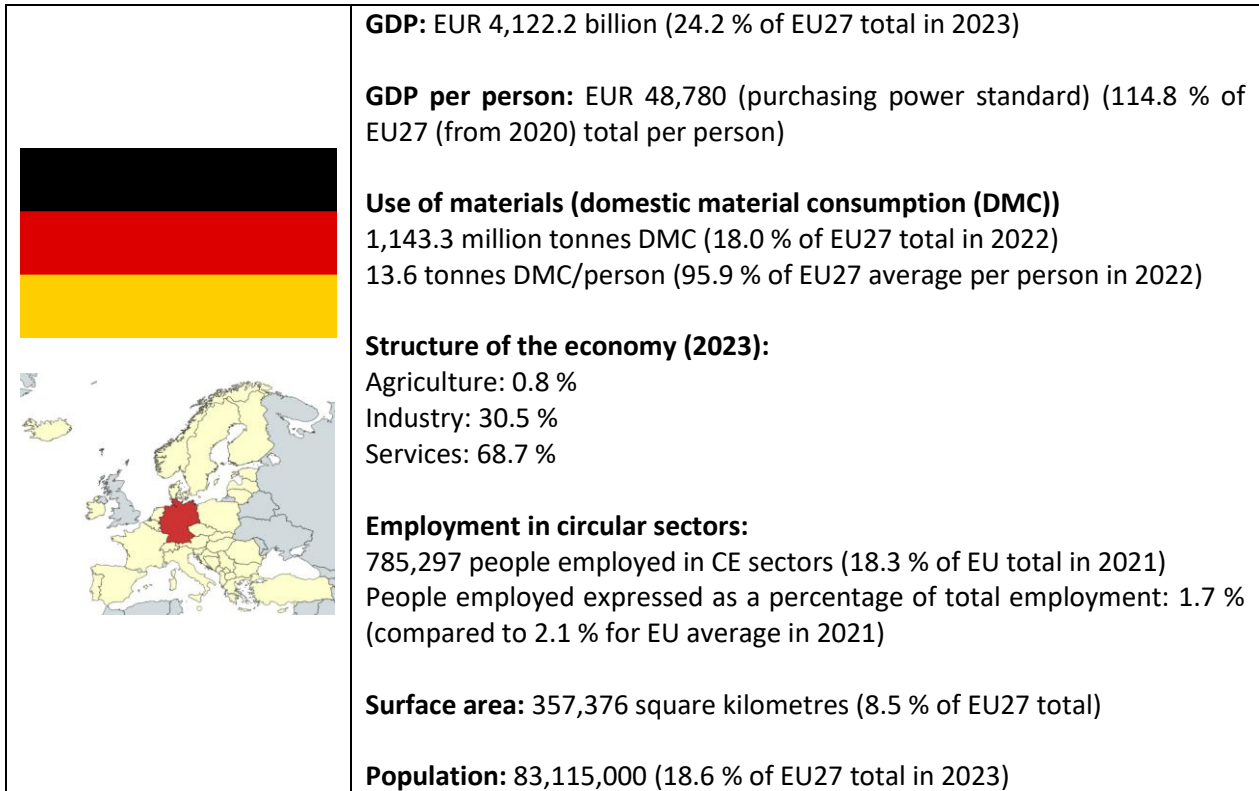
² [Resource efficiency and the circular economy in Europe 2019 – European Environment Agency \(europa.eu\)](https://europea.europa.eu/en/press-releases/2019/06/19-06-2019)

³ [Country profiles on Circular Economy in Europe – Eionet Portal \(europa.eu\)](https://europea.europa.eu/en/press-releases/2022/06/22-06-2022)

⁴ [draft-report-for-dg-env_final.pdf \(europa.eu\)](https://europea.europa.eu/en/press-releases/2022/06/22-06-2022)

The information is current as of September 2024, when members of Eionet verified the content of this profile.

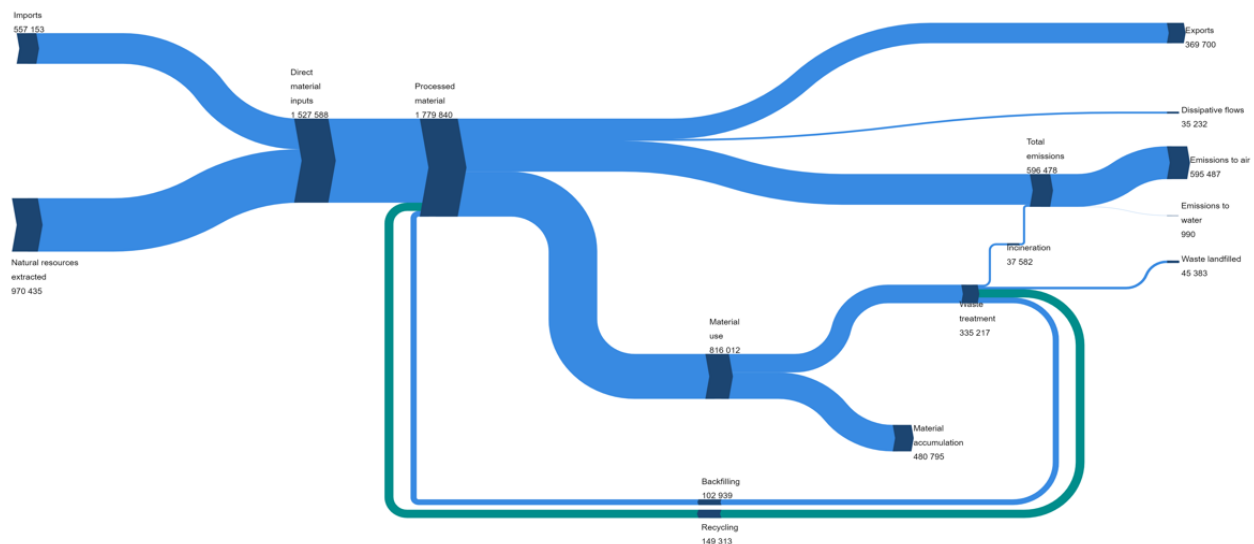
Germany – facts and figures



Note: all definitions and metadata used in this profile are taken, as shown, from Eurostat

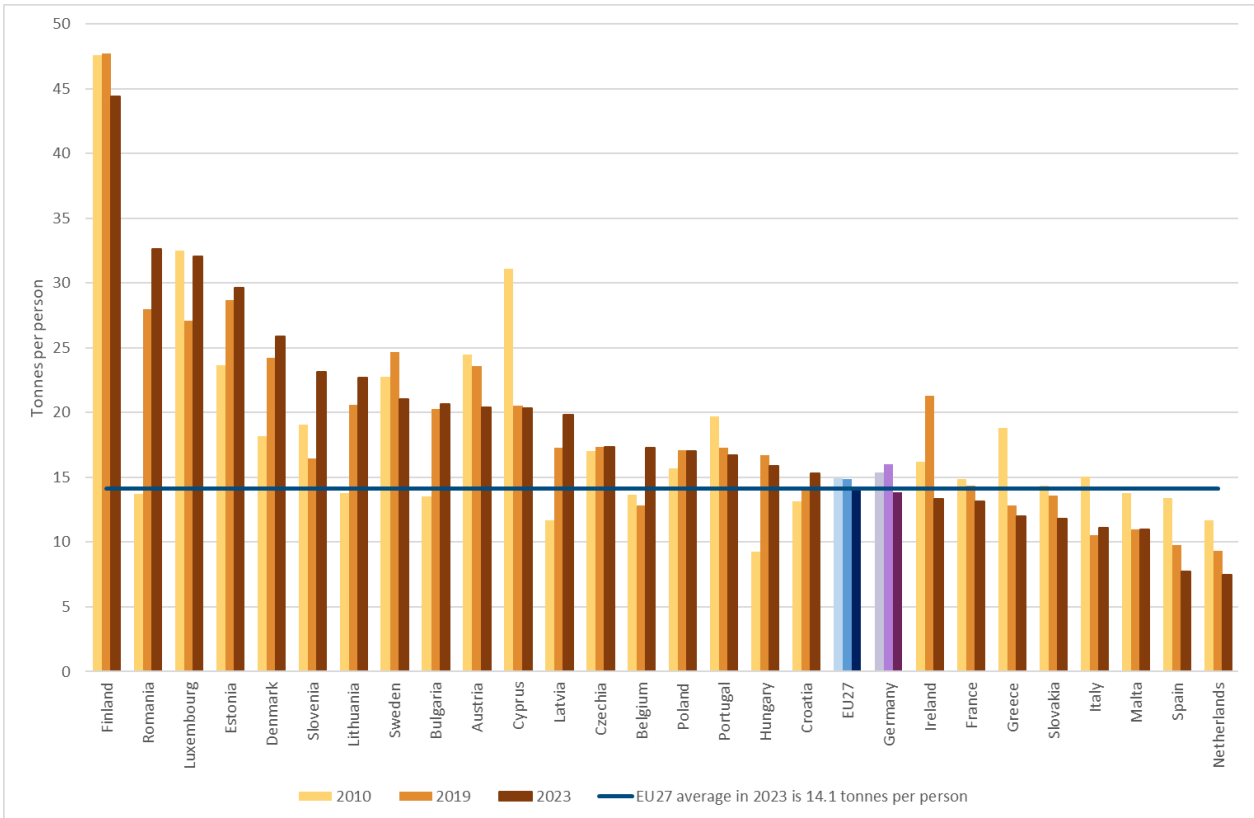
Source: Eurostat datasets, EU27 2021 EU27 2022 and EU27 2023 (accessed 21 August 2024)

Figure 1 Material flow diagram for Germany in 2022, thousand tonnes



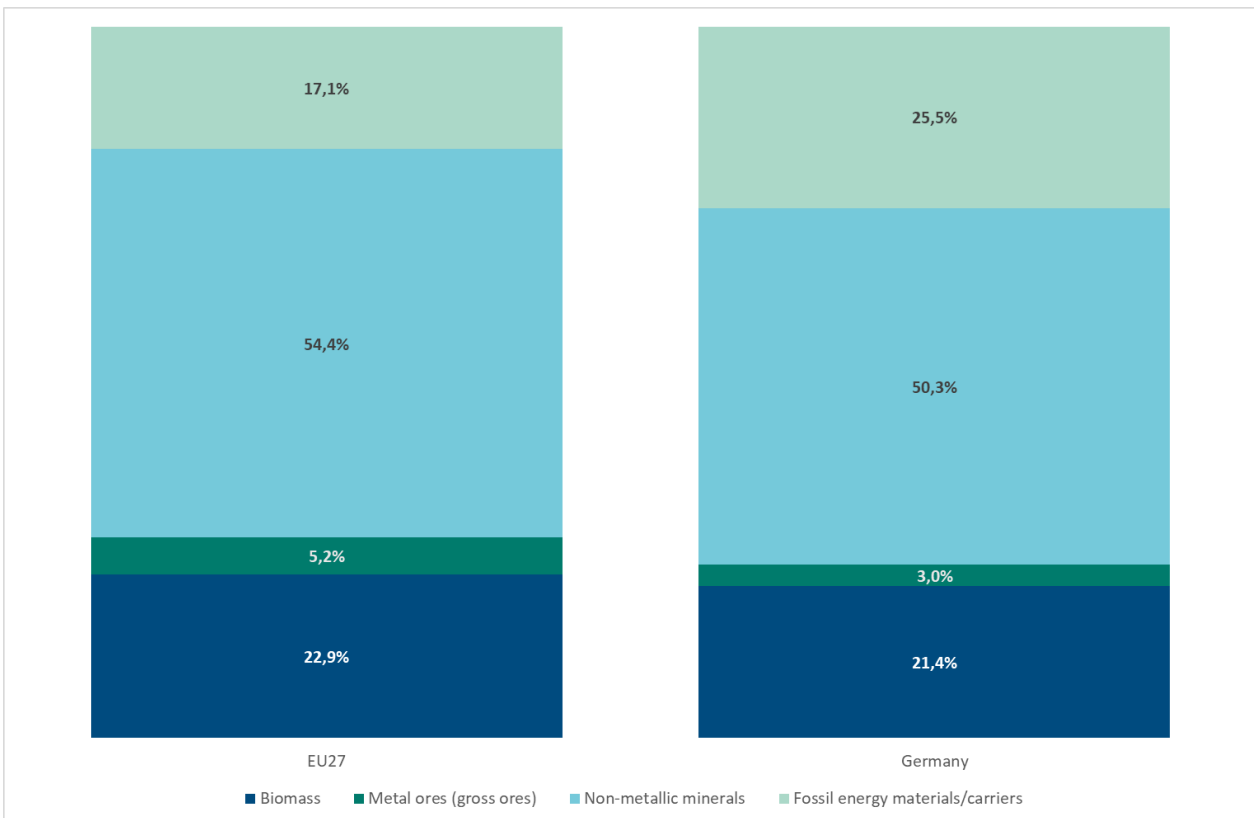
Source: Eurostat (2024) [env_ac_mfa], [en_ac_sd], [env_wassd] (accessed 21 August 2024)

Figure 2 Material footprint (raw material consumption), 2010, 2019 and 2023, tonnes per person



Source: Eurostat (2024) [env_ac_rme] (accessed 21 August 2024)

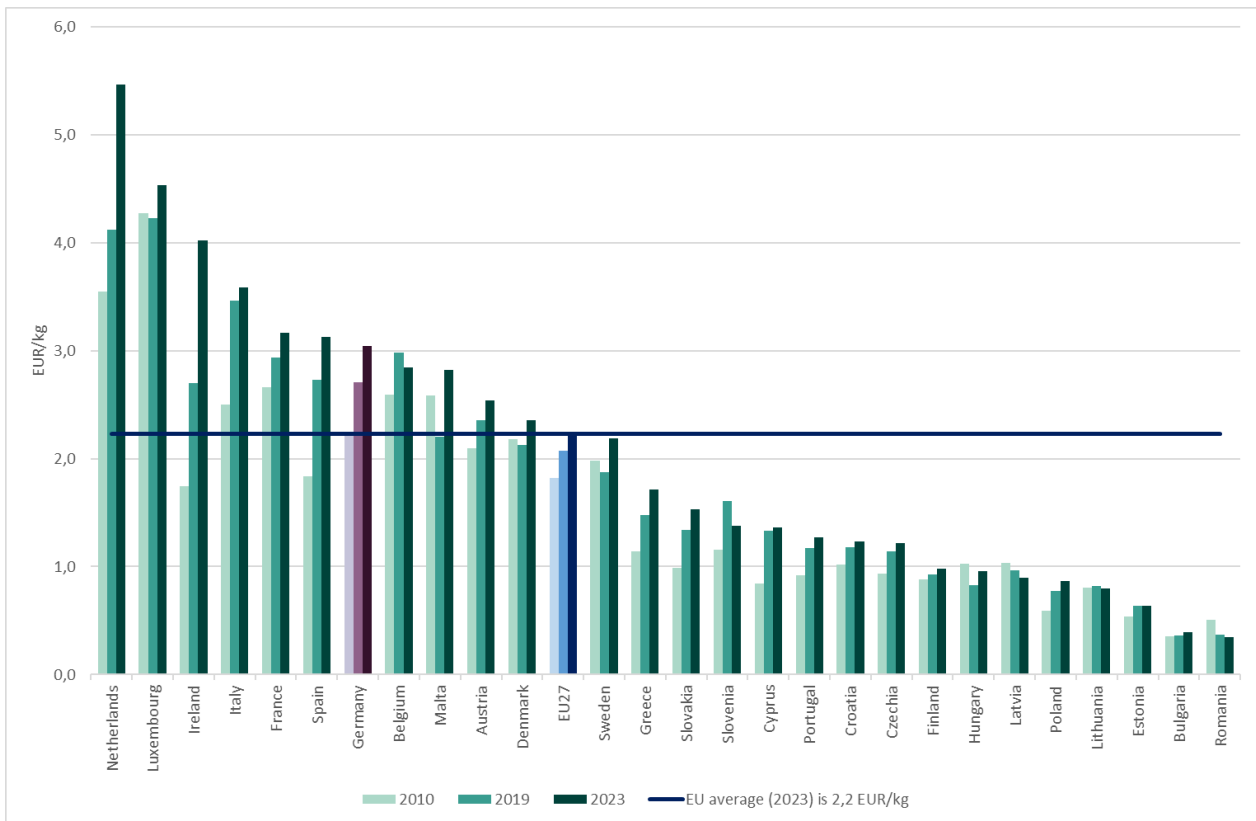
Figure 3 Domestic material consumption by selected material category, EU and Germany, 2023, per cent



Note: totals may not sum to 100 % due to rounding

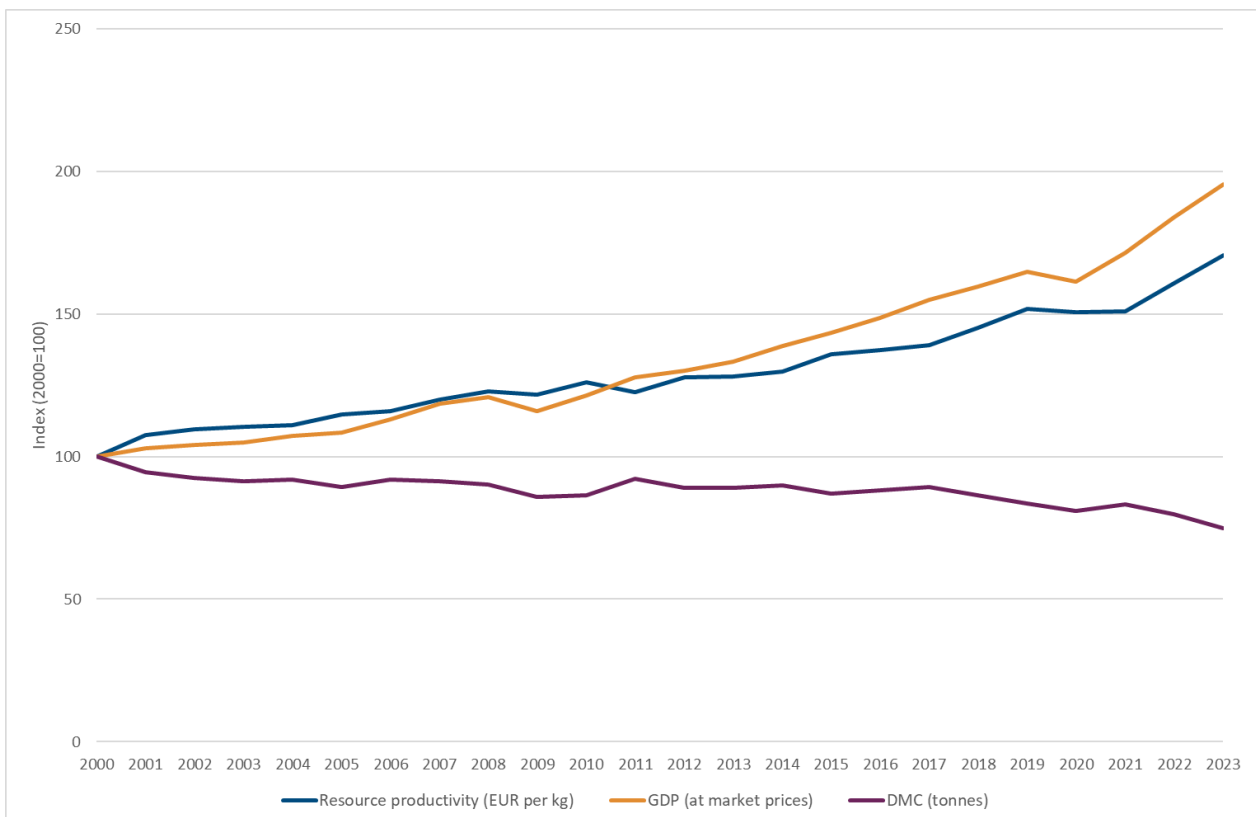
Source: Eurostat (2024) [env_ac_mfa] (accessed 21 August 2024)

Figure 4 Resource productivity (gross domestic product/domestic material consumption), EU27, 2010, 2019 and 2023, EUR per kilogramme



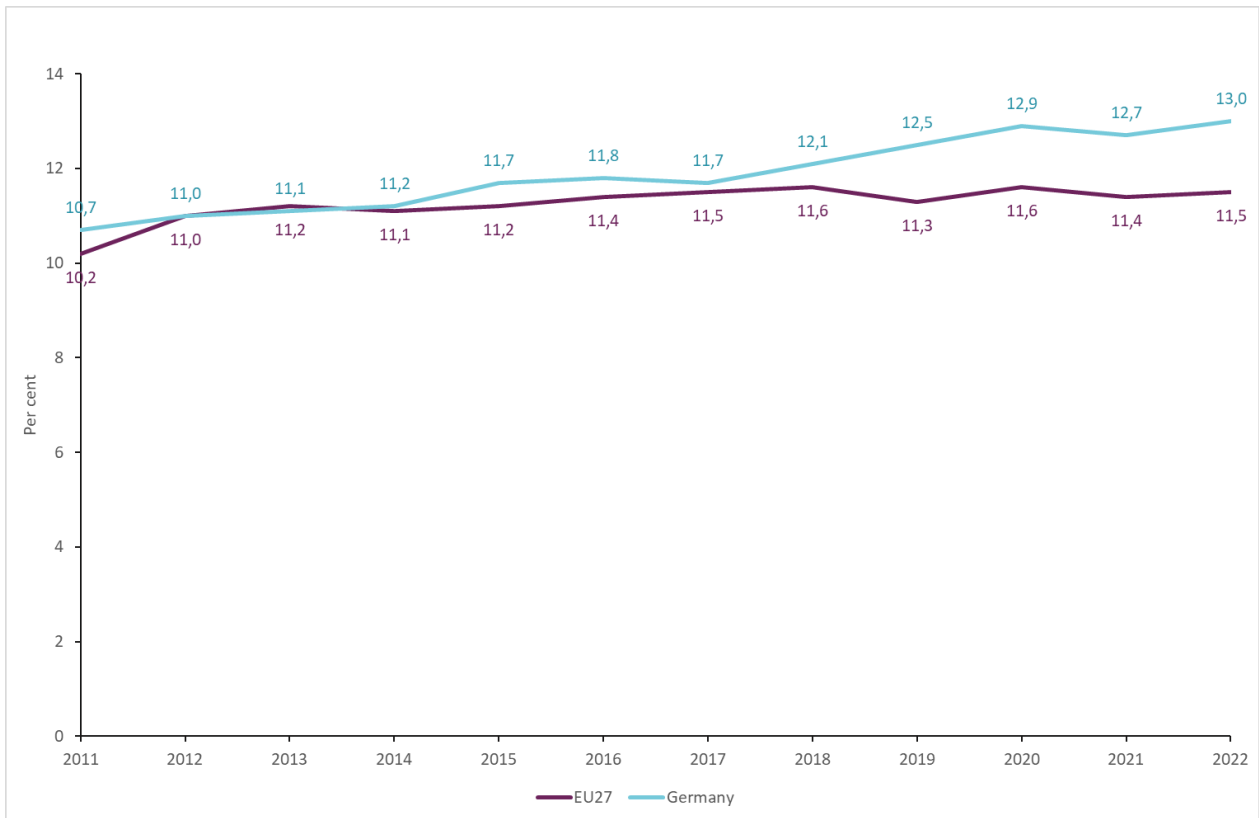
Source: Eurostat (2024) [env_ac_rp] (accessed 21 August 2024)

Figure 5 Gross domestic product, domestic material consumption and resource productivity trends, Germany, 2000–2023, index (2000=100)



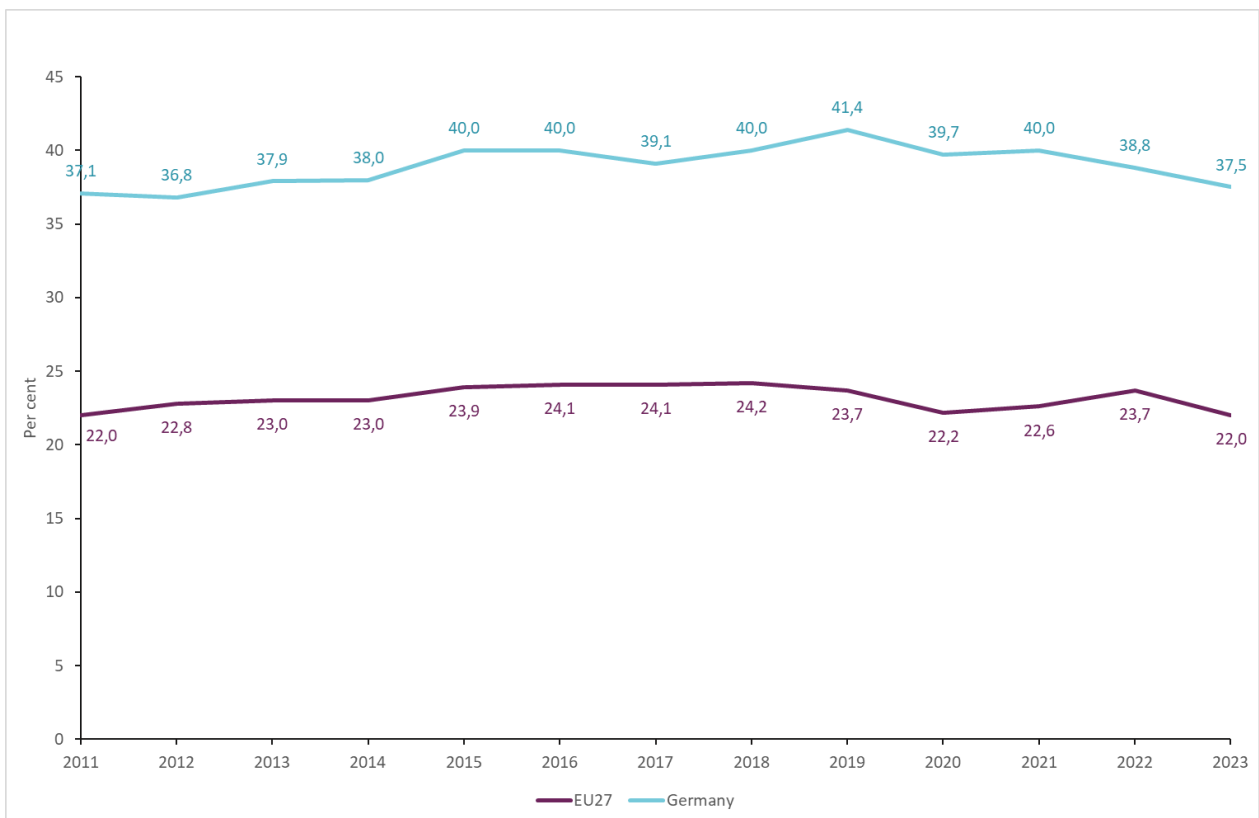
Source: Eurostat (2024) [env_ac_mfa], [env_ac_rp] & [nama_10_gdp] (accessed 21 August 2024)

Figure 6 Circular material use rate in Germany, 2011–2022, per cent



Source: Eurostat (2024) [env_ac_cur] (accessed 21 August 2024)

Figure 7 Material import dependency in Germany, 2011-2023, per cent



Source: Eurostat (2024) [cei_gsr030] (accessed 21 August 2024)

Existing policy framework

Dedicated national and/or regional strategy, roadmap or action plan for circular economy

National Level

The German National Circular Economy Strategy is expected to be adopted end of 2024. In April 2023 the German Government published a [key issue paper](#) ⁽⁵⁾ for the CE strategy under preparation describing the vision and goals for the National Circular Economy Strategy and outline ideas for the content and policy framework. The draft strategy was published in July 2024 and is currently in the consultation process with relevant stakeholders and the public⁶.

With its CE strategy the German Government wants to examine production and consumption over the entire life cycle and highlight ways to fully harness opportunities for conserving resources through resource efficiency and circularity in all phases. For this, the new CE strategy will bring together goals and measures on circular economy and resource efficiency from all relevant strategies. It will create a framework that links the raw material strategies of the German government so that the coalition agreement goal of reducing overall demand for primary raw materials is achieved. The strategy will therefore provide a framework for the government to define goals, basic principles and strategic measures that support all strategies relevant to raw material policy. It will harness synergies but also identify potentially conflicting objectives.

The **strategic aims** of the upcoming CE strategy are:

- **Environment and climate action:** the CE strategy should make a decisive contribution to reducing impacts on the environment, protecting biodiversity and mitigating climate change – nationally, in Europe and globally
- **Secure raw material supply:** the CE strategy needs to play a major role in resolving scarcity issues by ensuring a secure supply of raw materials, including critical raw materials such as rare earths. For this, the strategy should help to make Germany progressively more independent from raw material imports through circularity and conserving resources for as long as possible.
- **Securing our prosperity:** with the strategy the German government wants to create conditions that allow Germany to take advantage of the opportunities offered by a fully sustainable, resource-efficient circular economy for securing prosperity, value creation and stable jobs in Germany and Europe
- **Social justice:** with the CE strategy, the German government intends to create the necessary conditions to make the transformation fair and socially equitable and ensure that sustainable consumption is and remains affordable for all consumers
- **Avoiding and removing hazardous substances and pollutants:** the CE strategy also aims to prevent the introduction of hazardous substances or substances detrimental to circularity into the value chain and to remove pollutants from material cycles

The overall goal is to reduce primary raw material consumption. To reach this, the CE strategy will develop a roadmap with specific goals and binding measures for the necessary transformation. The measures will be specially designed to improve market conditions for secondary materials with the aim of significantly increasing their share in raw material use and advancing resource efficiency and product design with a focus on durability, reparability and circularity.

Currently ten **areas of actions** are identified:

- plastics
- metals

⁵ https://www.bmu.de/fileadmin/Daten_BMU/Download_PDF/Abfallwirtschaft/nkws_grundlagen_en_bf.pdf.pdf

⁶ https://www.bmu.de/fileadmin/Daten_BMU/Download_PDF/Abfallwirtschaft/nkws_entwurf_bf.pdf (in German)

- vehicles and batteries, mobility
- circular production processes
- buildings
- clothing and textiles
- ICT and electronics
- digitalisation
- Public procurement
- renewable energy technologies

Every ministry will contribute measures and programmes for a circular economy within its remit and areas of action, coordination is done by the German Environmental ministry. An inter-ministerial project group ensures communication regarding the ongoing process.

The **relevant stakeholders** from industry, civil society, science, the federal states and municipalities are actively involved in creating the National Circular Economy Strategy. This is done in four different ways:

- At the invitation of Federal Environment Minister Steffi Lemke, around 20 representatives of German umbrella organizations meet in the Dialogue Forum. It meets at the beginning and end of the stakeholder process and serves to exchange views on the objectives for the CE strategy and possible contributions of the groups involved to a circular economy.
- The dialog workshop invites a broad circle of stakeholders with the aim of discussing concrete proposals for the content of the strategy, identifying cross-cutting issues relevant to all fields of action and addressing potential conflicts of objectives.
- Eight round tables deal intensively with the fields of action identified. The round tables comprise a smaller group of experts from business and science.
- In addition, online dialogs offer the opportunity to submit statements and comments on the work status achieved.

Regional level

The Federal **State of Baden-Wuerttemberg** adopted in February 2024 the update of the previous state resource efficiency strategy (⁷). The update takes into account current developments and defines measures with which the state government intends to further increase resource efficiency and thus further develop the strategy towards a circular economy.

When updating the state strategy, **six priority fields of action** were identified, which are divided into a total of 42 measures:

- Innovative approaches, strategies and research
- Material and energy efficiency in companies
- Circular economy
- Transparency
- Sustainable raw material extraction and safe raw material extraction in the economy
- Resource efficiency in the construction industry

The measures range from application-oriented research projects, information and support for companies to regulatory measures in the area of waste shipment.

⁷ <https://um.baden-wuerttemberg.de/de/umwelt-natur/umwelt-und-wirtschaft/ressourceneffizienz-und-greentech/landesstrategie-ressourceneffizienz> (in German)

In November 2023, **Saxony** published the update of its **waste management plan as a circular economy plan** ⁽⁸⁾. It focuses on more waste avoidance, preparation for reuse and recycling in the sense of a circular economy and anchors the principle of localization for residual waste treatment and the reduction of waste shipments within the framework of legal requirements. The Circular Economy Plan covers the period up to 2032.

The CE sets the following **priorities**:

- Improve on waste prevention and preparing for re-use
- Promote higher quality recycling and use of recycled material (packaging, electronics, commercial municipal waste)
- Increase use of recycled materials (plastics and mineral waste)
- Reduce import and export of waste
- Increase quantity and quality of bio waste, more waste collection from households, better waste separation
- Medium- to long-term: local/regional waste treatment
- Develop and approve landfills for waste collected in Saxony
- Reduce illegal waste dumping/littering

Institutional set-up

The **institutional set-up on CE policy implementation** is reflecting the federal system of Germany and follows the subsidiary principle in terms of task sharing between federal states and state level. There are various bodies and exchange formats for mainstreaming, both within the government and for coordination between sectors and stakeholders. For example, coordination within the federal ministries takes place in an inter-ministerial working group. The exchange and coordination of activities between the federal government and the federal states takes place in an open working group on resource efficiency.

Mainstreaming across all administrative levels, sectors and stakeholders is essentially carried out via the **National Resource Efficiency Platform (NaRes)** ⁽⁹⁾, in which various federal ministries, business, environmental and consumer protection associations, trade unions and municipal associations as well as two representatives of the federal level are represented as members.

Dedicated local strategy, roadmap or action plan for circular economy

Circular Cities

Several German cities declare themselves either as circular city or zero-waste city.

Munich is a **pilot within the “Circular Cities and Regions Initiative”** ⁽¹⁰⁾ and committed itself as Zero Waste city in 2022. In July 2020 the Munich City Council passed the resolution ‘**Circular Munich – Circular Economy for a Sustainable Munich**’. An essential point of the resolution was the development into a Zero Waste City for municipal waste, to be achieved through measures to avoid waste and extend product life (through such actions as repair, second-hand goods, and resource management).

In May 2022, two related **resolutions** passed the city council in Munich:

- The ‘Action Plan for the Promotion and Establishment of a CE in the Construction Sector – (EU Project URGE).’ The aim is to pave the way for the long-term goal of establishing a cross-project CE in future demolition and construction projects of the City of Munich.

⁸ <https://www.wertstoffe.sachsen.de/kreislaufwirtschaftsplan-9821.html> (in German)

⁹ <https://www.bmuv.de/themen/ressourcen/naress-nationale-plattform-ressourceneffizienz> (in German)

¹⁰ <https://circular-cities-and-regions.ec.europa.eu/pilots/munich>

- The resolution of the Committee for Urban Planning and Building Regulation ‘Climate-neutral Munich by 2035: Zero Waste concepts for new development areas’ presents the Munich City Council with the specific framework conditions and municipal scope for action for implementing the Zero Waste concept at the level of urban planning and in building construction and civil engineering.

In July 2022, the Munich City Council adopted the Zero-Waste-Concept which is the action plan for waste prevention in Munich and is geared towards three overarching goals up to 2035:

- Reduce household waste by 15 % per capita - from 366 kg to 310 kg
- Reduce the amount of residual waste by 35% per capita - the savings potential here is just under 70 kg per Munich resident
- Raise awareness of zero waste among Munich residents

The other goals and measures set out in the zero-waste concept for waste avoidance and resource conservation relate to the areas of waste management, public administration, waste management, public administration, educational institutions, the commercial industry, the construction sector, civil society, trade and the event industry.

Currently five German cities signed the “Circular Cities Declaration” ⁽¹¹⁾, namely **Aachen, Berlin, Frankfurt a.M., Freiburg** and **Haar**.

In addition to Munich, the city of Kiel and Leipzig are zero-waste cities.

Kiel was the first city in Germany to join the international “Zero Waste Europe” ⁽¹²⁾ network and, together with the people of Kiel, developed a zero-waste concept with over 100 waste prevention measures. Work has been underway since 2020 to implement these measures.

Leipzig committed itself in 2022 to be a Zero Waste City and is currently developing its zero-waste concept in a participatory process.

Circular economy policy elements included in other policies

Here only new policies, adopted in or after 2022 are reported. Policies described in the German Country Profile from 2022 are mostly still in place.

Circular economy policy element	Included in policy
Eco-Label criteria for strengthening the CE for products During the revision of existing Blue Angel criteria, we always consider circular aspects, see for example the Blue Angel for textiles (recycling fibres, fibre related recycled content, chemical restrictions, prohibition of flame retardants, repair information, durability criteria, etc.)	Eco-Label “Blue Angel” for various products made from recycled materials: <ul style="list-style-type: none"> • DE-UZ 5 “Sanitary paper” (2022) • DE-UZ 30a “Products made from recycled plastics” (2024) • DE-UZ 195 “Printed matters” (2022) • DE-UZ 217a “Paper made from 100% recovered paper for paper bags and boxes” (2022)
Eco-Label criteria for raising the use of compost in potting soil instead of peat	Eco-Label “Blue Angel” for Organic growing media and potting soils (2024)
CE criteria for product groups: furniture, ICT	Tender recommendations are derived from the Blue Angel criteria .

¹¹ [“Circular Cities Declaration”](#)

¹² [“Zero Waste Europe”](#)

	Therefore, CE criteria are also included in the tender recommendations (see the general comment for the Blue Angel).
Promotion of reusable packaging for take-away food/beverage containers, beverage cups	Waste Prevention Programme/ German Packaging Act (as of 2021), Section 33
Implementation of the obligation of electronic marketplaces and fulfilment service providers to check whether the producer of packaging is (correctly) registered and participates in a dual system. If the electronic marketplace or the fulfilment service provider offer their services without the producer being registered and participating in a dual system, they become subject to a regulatory offence procedure for violation of Section 36 paragraph 1 number 5 and 5a VerpackG.	Waste Prevention Programme/ German Packaging Act (as of 2021), Section 36
Incentives for producers of certain products (e.g. take-away food/beverage containers, beverage cups, lightweight plastic carrier bags, wet wipes, balloon, tobacco filters) to conceive, design and place products on the market to accomplish, within its life span, multiple cycles by being returned to a producer or distributor for refill or re-used for the same purpose for which it was produced.	Single-Use Plastics Fund Act (2023), Section 3 no. 1 Single Use Plastics Fund Act
Amendment to the German Electrical and Electronic Equipment Act (ElektroG): <ul style="list-style-type: none"> • Obligation to take back waste electrical and electronic equipment (WEEE) for food distributors with a sales area > 800m², when offering or selling new EEE. • Possibility to take back WEEE from private households for primary treatment facilities. • Extension of information obligations for distributors, municipal waste management authorities and manufacturers with regard to disposal(options) for WEEE. • Possibility of co-operation between municipal waste management authorities and primary treatment facilities to increase the preparation for reuse (repair) of WEEE. • Mandatory take-back concept for manufactures of (W)EEE for other than private households (b2b) • Electronic marketplaces and fulfilment service providers have the obligation to check whether the producer of the offered or sold electrical device is (correctly) registered (compulsory verification). If the electronic marketplace or the fulfilment service provider offers their services without the producer’s registration, they become subject to a regulatory offence procedure for violation of Section 45 paragraph 1 number 4a and 4b ElektroG. 	German Electrical and Electronic Equipment Act (ElektroG) (in German) Amendment from 1st January 2022; some new regulations latest in force since 1st July 2023 § 7a § 17 § 17a § 17b § 18 § 19a § 45 Abs. 1 a, b § 6 Abs. 2 S. 2 Nb. 2, 3 § 3 Nb. 1 a, b, c Press release: https://www.umweltbundesamt.de/presse/pressemitteilungen/25000-zusaetzliche-rueckgabestellen-fuer (in German)
Circular bioeconomy	Bioeconomy Strategy
Cascade use of biomass	Bioeconomy Strategy
High-quality treatment and processing of biogenic residual and waste material	Bioeconomy Strategy
Recycling of mineral waste	Substitute Building Materials Ordinance (last changed in 2023)

Monitoring and targets

Assessment of circular economy performance

The European Commission has set up a [monitoring framework](#) to keep track of progress towards a circular economy. This framework provides a holistic view as it:

- measures direct and indirect benefits of 'becoming circular' and
- values the contribution of a circular economy in living well within the limits of the planet
- addresses energy and material supply risks.

It consists of **5 thematic sections** with a total of **11 statistical indicators**, some of which have additional sub-indicators. In some cases policy targets exist which should be achieved in the future, and the indicators monitor progress towards these targets. The current monitoring framework is a revision of the original framework which was set up in 2018.

This section elaborates on the assessment of Germany its progress in terms of observed trends over the last 5 years and what country characteristics or policy actions may explain differences between the country its performance and the average EU performance.

No official assessment of Germany's performance within the EU CE Monitoring was done so far and we are not aware of an academic one either. On the other hand, the German Environment Agency is publishing a **report on the use of natural resources in Germany** ⁽¹³⁾, which was published for the third time in 2022. The report analyses new figures on the interrelationships of raw material extraction, raw material trade, the role of the economy and consumption. It also covers environmental impacts of raw material extraction and other natural resources.

In general, the **trend of the last five years has been strongly influenced by the effects of the COVID pandemic**. For example, the material footprint showed a significant decline between 2019 and 2020, which can be explained by the restrictions imposed as part of the Covid-19 pandemic measures, among other things. In particular, investment demand in the economy fell noticeably. In contrast, the significant increase between 2020 and 2021 can be attributed to the investment support programmes to overcome the pandemic, as the demand for raw materials for consumption by the state and private non-profit organizations increased by around 10% between 2019 and 2021. This trend can also be seen in the commodity groups: Falling demand for fossil fuels (e.g. in transportation) and metal ores (e.g. in mechanical engineering and vehicle construction) was offset by a relatively constant demand for mineral raw materials (e.g. government construction activities).

Even though the amount of **municipal waste** in Germany is still relatively high, also in comparison to other European countries, a clear downward trend could be observed. Again, the increase in 2020 and 2021 is probably due to the Corona pandemic and the significantly increased volume of packaging waste. It should be noted that the goal of decoupling the amount of waste from economic growth was achieved: While the German economy grew by around 15.9% between 2010 and 2021, the amount of municipal waste only increased by around 5.9%.

The **recycling rate** of municipal waste in Germany increased from 56 % in 2002 to 68 % in 2021. This means that the target set by the federal government to increase the recycling rate of municipal waste to 65 % by 2021 has been achieved. However, there is still a need for action in individual subgroups of municipal waste. With respect to packaging waste, Germany has a relatively high recycling rate, which is in line with the EU average, despite the increasing amount of packaging waste. However, due to technical

¹³ [The Use of Natural Resources. Resources Report for Germany 2022 | Umweltbundesamt](#)

development and progressive waste management in Germany, the possibilities are far from exhausted. With regard to the development of the CMU rate in Germany, a study was published in 2021 ⁽¹⁴⁾. It shows, that that the **development of the CMUR** is relatively constant and near to the EU average. But the values for the individual material groups differ greatly. For fossil raw materials, which are predominantly combusted, the CMUR is lowest at a good 2 %. For metals that can be recycled very well, the CMUR is highest at just under one third. The study also compared the development of CMUR in Germany with that in other EU countries. It concludes that different developments can be explained on the one hand by differences in raw material consumption and waste management, on the other hand, by differences in the collection and allocation of waste. For example, the Netherlands would allocate backfilling to material recycling (whereas Germany would not), which leads to a significant increase in CMUR in the Netherlands. In addition to this, it is stated that the trade in recycled waste accounts for a fairly small share overall. For the non-metallic minerals, the share of traded wastes in the volume generated in Germany is lowest at 1-2 %, while for metal scrap, which is imported and exported to a greater extent, it is highest at around 40 % and 73 % respectively.

Concerning the **information/data on employment in CE related sectors**, there are two recent studies published showing the economic potential of circular economy in Germany. Both ⁽¹⁵⁾ ⁽¹⁶⁾ are looking on employment and gross added value. The study from Deloitte ⁽¹⁷⁾ shows that gross value added in the German economy would increase by around 12 billion euros per year. The increased value added in Germany also has an effect on domestic employment. The changeover would lead to around 180,000 additional jobs in Germany. Both, gross value added and employment, are net effects for Germany. Any loss of value added and employment resulting from the shift from imports to reprocessing has been considered.

Circular economy monitoring frameworks and their indicators beyond the ones from Eurostat

Currently there is **no official CE monitoring in Germany**. However, the development of a corresponding monitoring system is also planned as part of the preparation of the new circular economy strategy.

The **most prominent indicators used for reporting on circular economy** issues are set in the **Sustainable Development Strategy** ⁽¹⁸⁾ and the **Resource Efficiency Programme** ⁽¹⁹⁾:

- **Total raw material productivity:** Value of all goods delivered to the last use (in Euros, price-adjusted) in relation to the mass of raw materials used for raw materials used for production at home and abroad (in tonnes)
- **Raw material consumption per capita (or material footprint):** represents the mass of raw materials used for domestic use, i.e. for consumption and investment, for example for the construction of infrastructure, per capita
- **Global environmental impact by private household consumption:** The impact caused to the environment around the world by private household consumption is shown here by three indicators. They are domestic and foreign energy consumption, emissions of carbon dioxide (CO₂) and the use of raw materials in connection with the production and use of all goods destined for the consumption of private households in Germany.

¹⁴ Dittrich et. al (2021): Sekundärrohstoffe in Deutschland.

https://www.nabu.de/imperia/md/content/nabude/konsumressourcenmuell/2104-22-ifeu-studie-sekundaerrohstoffe_in_deutschland.pdf (in German)

¹⁵ [Zirkuläre Wirtschaft Studie Deloitte und BDI.pdf](#) (in German)

¹⁶ [WWF-Modell-Deutschland-Circular-Economy-Broschuere.pdf](#) (in German)

¹⁷ [Zirkuläre Wirtschaft Studie Deloitte und BDI.pdf](#) (in German)

¹⁸ [Indicators of the German Sustainable Development Strategy \(dns-indikatoren.de\)](#)

¹⁹ <https://www.bmuv.de/en/topics/water-management/overview-resource-efficiency/overview-of-german-resource-efficiency-programme-progress> (in German)

Waste related and recycling indicators are reported mainly with regard to the respective legal acts like the German Packing Act or strategies like the waste prevention programme. For example, general statistics on waste management like waste arisings, waste intensity, decoupling of waste generation from economic development or transboundary shipment of waste are reported on annual basis, in general online on different websites.

The German Environment Agency is publishing a **data-based report on the use of natural resources in Germany** ⁽²⁰⁾, which was published for the third time in 2022. The report analyses new figures on the interrelationships of raw material extraction, raw material trade, the role of the economy and consumption. It also covers environmental impacts of raw material extraction and other natural resources.

Most indicators are calculated and published by the Federal Statistical Office ⁽²¹⁾. In addition, the Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection ⁽²²⁾ and the German Environment Agency ⁽²³⁾ is publishing an indicator set including an assessment of selected indicators.

Circular economy targets

The current **main target related to the total raw material productivity**. The federal government's goal for this indicator is to continue the trend of the years 2000 to 2010 (annual increase of 1.5 percent on average) until the year 2030. The total raw material productivity grew by 15 % between 2010 and 2021, but with annual growth averaging around 1.3 %, the current development is below the target.

The **German Resource Efficiency Program III (ProgRes III)** ⁽²⁴⁾ sets out a large number of measures to increase raw material productivity for the years from 2020 (BMU 2020). As new topics, resource-efficient mobility and the potentials and risks of digitalization for resource efficiency are now being considered in ProgRes III.

The German government is also **currently developing a National Circular Economy Strategy (NKWS)** ⁽²⁵⁾, which will bring together targets and measures for circular economy and resource conservation from all relevant strategies. In the context of the development of this strategy new targets are under discussion, e.g. on CMU rate and material footprint but not decided yet.

Innovative approaches and good practices

Examples of public policy initiatives (national, regional or local)

➔ *Good practice example: Taxation and economic instruments to encourage investment in the CE*

New Repair Bonus in Saxonia ⁽²⁶⁾

On 6 November 2023, the Saechsische Aufbaubank (SAB) has launched the application programme for the repair bonus. With the repair bonus, the Saxon State Ministry for Energy, Climate Protection, Environment and Agriculture is promoting the repair of privately used electrical and electronic equipment. The

²⁰ [The Use of Natural Resources. Resources Report for Germany 2022 | Umweltbundesamt](#)

²¹ https://www.destatis.de/EN/Themes/Society-Environment/Environment/Waste-Management/_node.html

²² <https://www.bmuv.de/en/topics/water-management/circular-economy-overview/waste-management-statistics>

²³ <https://www.umweltbundesamt.de/daten/ressourcen-abfall> (in German) and

<https://www.umweltbundesamt.de/en/data/environmental-indicators>

²⁴ <https://www.bmuv.de/en/publication/deutsches-ressourceneffizienzprogramm-iii-2020-bis-2023> (in German)

²⁵ <https://www.bmuv.de/themen/kreislaufwirtschaft/kreislaufwirtschaftsstrategie> (in German)

²⁶ <https://www.sab.sachsen.de/reparaturbonus> (in German)

programme, for which up to €1.25 million has been earmarked this year and next, is intended to contribute to a more sustainable use of electrical and electronic equipment and reduce e-waste.

The bonus applies to repairs with an invoice amount of at least 75 euros. It subsidises 50 percent of the repair costs, with the maximum subsidy per repair being 200 euros. Citizens whose main place of residence is in Saxony are eligible to apply. The repairs must be carried out after 3 November 2023 and by a company that is on the list of repair companies on the SAB website. Each applicant can receive support for up to two repairs per year.

In the long term, the ministry plans to extend the scope of the repair bonus to other consumer goods in order to promote sustainability and environmental protection in Saxony.

Other federal states or cities in Germany have announced similar repair bonus programmes.

➔ *Good practice example: Financial support programmes targeting CE*

Initiative "Circular Rural Regions" ⁽²⁷⁾

The "Circular Rural Regions" initiative, funded by the Federal Ministry of Housing, Urban Development and Building, supports rural regions and regional development stakeholders in the development and implementation of circular economy concepts.

A competitive process will be used to select German model regions that will receive funding, support and research between 2024 and 2027. The project is aimed at regions that have already initiated initial steps and measures relating to the circular economy. During the duration of the pilot action, the selected regions will be supported in developing and implementing their concepts and measures for the circular economy and in adapting their approach. The parallel involvement of European model regions that have been working on the topic for some time is intended to identify good approaches that can be transferred to the German model regions. In addition, the regional processes in the model regions will be analysed and abstracted in order to answer various research questions. Central elements are the networking and exchange between the model regions as well as the knowledge transfer of the results of the pilot action at regional, national and European level.

PREVENT Waste Alliance ⁽²⁸⁾

The PREVENT Waste Alliance of the Federal Ministry for Economic Cooperation and Development, is an international cooperation platform with over 450 member organizations from business, science, civil society and government institutions. PREVENT promotes cross-sectoral cooperation for a global circular economy and has developed into a globally recognized international network in the field of circular economy through a strong growth in membership, broad expertise of the members as well as their project development and implementation experience. PREVENT's thematic working groups focus on three groups of materials: Plastic waste, e-waste and batteries, and organic waste. The members also work on cross-cutting topics such as digitalization, behavioural change and financing mechanisms for the circular economy. Success stories and recommendations for action are published and 8 pilot projects have been implemented in 15 countries to date in order to demonstrate pioneering solutions.

➔ *Good practice example: Research & innovation*

Initiative "Green-AI Hub Mittelstand" ⁽²⁹⁾

With its Initiative "Green-AI Hub Mittelstand", the Federal Environment Ministry sets up a pioneer for the use of AI for resource efficiency and material savings. It is aimed specifically at SMEs: practical, solution-

²⁷ <https://www.bbsr.bund.de/BBSR/EN/research/programs/region-gestalten/projects/2023/circular-rural-regions/01-start.html>

²⁸ <https://prevent-waste.net/>

²⁹ <https://www.green-ai-hub.de/en/>

oriented and directly on site. It identifies the potential of AI for efficient processes & develops prototype solutions together with SMEs. The applied AI itself will also be resource-efficient, in the spirit of Green AI.

By offering mobile consulting and demonstration services enabling networking and direct exchange with AI developers the hub helps to save resources & costs for energy, raw materials, waste & repairs with AI.

CircEcon research campus for a greenhouse gas-neutral circular economy ⁽³⁰⁾

Chemnitz, Dresden and Freiberg Universities of Technology as well as Zittau/Görlitz University of Applied Sciences are pooling their expertise to establish a joint, interdisciplinary research campus for a climate-neutral circular economy (CircEcon). The CircEcon research campus is part of the structural change process in Lusatia as part of the decision to phase out coal by 2038. Against the backdrop of increasingly scarce raw material resources, research and development projects such as CircEcon are specifically funded in order to close the cycle from the use of raw materials in the manufacture of products to the complete recycling and reuse of raw materials in new products. CircEcon covers the entire spectrum from basic to application-oriented research. Close networking with regional and national companies ensures the rapid transfer of new findings to industry. CircEcon will first focus on recycling and reuse of fiber composites and the use of biogenic materials.

Programme “Research for Sustainability (FONA)” ⁽³¹⁾

As part of its "Research for Sustainability (FONA)" strategy, the BMBF is funding the development of new technologies for the recycling of plastics, building materials, minerals, metals or phosphorus in various funding measures, including for construction and mineral material cycles (ReMin), resource-efficient plastics recycling technologies (KuRT) and an AI application hub for plastic packaging. In addition, regionally oriented approaches to closing material cycles are also being pursued.²³ In order to be able to cover the future demand for carbon from non-fossil sources, the CO₂-WIN funding measure is researching technologies for the industrial use of carbon dioxide as a sustainable source of carbon.

→ *Good practice example: CE criteria in ecolabels*

Label “Green Button” ⁽³²⁾

The Green Button (GK) is a state seal for sustainable textiles and distinguishes products that are sold by companies that act responsibly and whose production processes have been verified by recognized seals. For the first time, GK 2.0 sets requirements for the fibers that may be used in GK products. The approved fibers were selected according to whether they are recycled or can in principle be recycled as new fibers. In this way, the GK also contributes to the recyclability of textiles.

→ *Good practice example: Change in consumption patterns and consumer behaviour*

Data on changes in consumer behaviour: to support the National Programme on Sustainable Consumption, recently (in April 2024) an indicator set was adopted that will soon be published online to report on relevant developments in sustainable consumption. The 20 indicators cover the consumption fields housing (incl. sustainable products), transport, food, clothing, travel, and general indicators on consumption. Some indicators are more closely related to circularity issues than others, such as the new car sharing indicator (availability of organised carsharing in municipalities > 10.000 inhabitants, measured as share of the total of municipalities), which is increasing. Another interesting indicator is meat consumption per capita/year, which has been decreasing constantly for 5 years in Germany.

³⁰ https://tu-dresden.de/forschung-transfer/strukturwandel/interaktive-karte/green-circular-economy-circecon?set_language=en

³¹ <https://www.fona.de/en/measures/funding-measures/>

³² <https://gruener-knopf.de/en/production-processes>

→ *Good practice example: Education and awareness-raising*

Round table “Pack mer's - economical and sensible use of packaging”⁽³³⁾

In order to sensitize manufacturers and consumers with regard to the avoidance of plastic waste, the Federal State of Bavaria has set up a round table "Pack mer's - economical and sensible use of packaging" to create a professional exchange and proposed solutions with representatives from industry, municipalities and associations. Together, initiatives on the use of resources for coffee-to-go cups and the reduction of packaging waste are being implemented. For example, a leaflet was created to support consumers, restaurants and retailers in packaging-free shopping. Interactive maps of the Bavarian waste guide on the Ministry of the Environment's website also reveal the providers who support the filling of their own cups or reusable systems for packaging-free out-of-home consumption and packaging-free shopping and where citizens can hand in items in good condition for a good cause or purchase them themselves

→ *Good practice example: Public-private partnerships*

Recycling Materials Dialogue Platform⁽³⁴⁾

Since September 2021, options for action have been developed in dialog with industry, science and administration as part of the Recycling Raw Materials Dialogue Platform with the aim of improving the secure and sustainable supply of metals and industrial minerals from secondary raw material sources to German industry. The two-year process with representatives from industry, science and administration as well as civil society is nearing completion and will result in around 100 options for action from a total of eight sub-working groups. The content of the sub-working groups was based on specific material flows that are of particular relevance, for example due to their volume relevance, criticality or their contribution to greenhouse gas emissions, and which place specific requirements on recycling in terms of material flows.

Strategy game “Make it circular! Getting to know circular business models in companies in a playful way”⁽³⁵⁾

The strategy game "Make it circular! Getting to know circular business models in companies in a playful way" was developed as part of the Circular Economy Card Deck for Business Model Workshops (CE-CA-WO) project, carried out by acatech (German Academy of Science and Engineering), WWF Germany and the Johannes Kepler University Linz and funded by the German Federal Environmental Foundation (DBU). The game is aimed at SMEs from all sectors and helps them to playfully tap into the potential of the circular economy for their own business practice. The game consists of a card deck with innovative business model cards and an accompanying workshop concept and offers understandable and inspiring information about circular business models and their implementation in SMEs.

Examples of private policy initiatives (sectoral)

→ *Good practice example: standardization*

³³ https://www.abfallratgeber.bayern.de/haushalte/abfallvermeidung/verpackungsfreier_einkauf/index.htm (in German)

³⁴ https://www.recyclingrohstoffe-dialog.de/Recyclingrohstoffe/DE/Home/recyclingrohstoffe_node.html (in German)

³⁵ <https://en.acatech.de/publication/make-it-circular-a-gamified-introduction-to-circular-business-models-in-a-corporate-setting/>

Standardization Roadmap Circular Economy ⁽³⁶⁾

The aim of the Standardization Roadmap is to provide an overview of the status quo of standardization in the field of the Circular Economy, to describe the requirements and challenges for seven key topics, and to identify possible concrete needs for action for future standards and specifications. The Roadmap was developed in a broad participation process with interdisciplinary actors, and outlines the work and discussion results of the key topics:

- Digitalization/Business Models/Management
- Electrotechnology & ICT
- Batteries
- Packaging
- Plastics
- Textiles and
- Construction & municipalities

In the course of the work, five topics were identified that were introduced and discussed cross-sectionally in all key topics- These are sustainability assessment, life extension, end-of-waste, digital product passport (DPP), and recyclability.

→ *Good practice example: New business models & networks*

Network of organic farming and compost in Hesse ⁽³⁷⁾

The network NÖK (network of organic farming and compost in Hesse) introduces contacts between organic farmers and the producers of compost from organic waste.

In the way of composting the organic matter and the nutrients from organic garden and kitchen waste can be recycled. In the past organic farmers didn't trust the compost from waste. The network connects the compost producers with the farmers and shows the quality and the good properties of the compost.

Circular Hubs ⁽³⁸⁾

With the Circular Hubs, the German Sustainable Economy Association (BNW) offers learning locations and showcases for circular economy. To this end, regional networks act as contact points for knowledge exchange and cooperation by, with and for SMEs. Specific support services are designed to facilitate the development and implementation of sustainable circular business models, products and processes

Network „Circular Rhein.Ruhr“ ⁽³⁹⁾

"Circular Rhein.Ruhr" networks companies and institutions in Duisburg and the Rhine-Ruhr region, promotes the exchange of knowledge at all levels, develops new strategies and approaches to the circular economy in working groups and offers a high-profile platform for stakeholders to join through events, workshops and excursions. The network focuses on the metal, construction and logistics/packaging sectors, which are particularly well represented in the region. In joint interdisciplinary working groups, the potential and challenges of material flows in the focus sectors are identified and various fields of application are discussed.

Reman-Lab ⁽⁴⁰⁾

The Fraunhofer Institute for Manufacturing Engineering and Automation IPA, a research institution partly financed by the industry, operates the Reman-Lab in Bayreuth, a training factory for the remanufacturing of e-bike motors. Here, companies can familiarize themselves with the remanufacturing process on various

³⁶ <https://www.din.de/resource/blob/906910/0d691bed63405ae85f281336ed71162c/standardization-roadmap-circular-economy-data.pdf>

³⁷ <https://noek-hessen.de/> (in German)

³⁸ <https://circularhubs.de/> (in German)

³⁹ <https://www.zirkulaere-wertschoepfung-nrw.de/circular-rhein-ruhr/> (in German)

⁴⁰ <https://www.prozessinnovation.fraunhofer.de/en/effiziente-wertschoepfungssysteme/remanlab1.html>

test benches. Using various demonstrators, all stages of the remanufacturing process, from incoming inspection to disassembly, cleaning, reconditioning and reassembly through to final inspection, can be reconstructed in a realistic learning environment.

→ *Good practice example for batteries and vehicles*

CE:Bat Circular economy: Li-ion batteries and rechargeable batteries ⁽⁴¹⁾

Within a cross-cluster collaboration between the [Bavarian Environmental Cluster](#), the [New Materials Cluster](#) and the [Energy Technology Cluster](#), the aim is to make transparent which materials are currently used in Li battery technology and how they could be incorporated into a circular economy. The template for the creation of an initial trend radar for Li battery technologies (consumer and electromobility) and their recycling will be evaluated in order to be able to support stakeholders (especially cluster member companies) in this area.

→ *Good practice example for textiles*

Partnership for Sustainable Textiles ⁽⁴²⁾

As a multi-stakeholder initiative, the Textiles Partnership brings together companies, associations, non-governmental organisations, standard setting organisations, trade unions and the German Federal Government to support a social, ecological, and corruption-free textile and garment industry. Its vision is an industry that respects the rights of all workers, that protects the climate and the environment, and operates with integrity and within planetary boundaries. In 2020, the Textile Partnership sets up an Expert Group (EG) on Circular Economy, in which almost 40 Partnership members participate. They primarily focus on sustainable design and its impact on the recyclability of textile products. In addition, the EG is dedicated to the durability and recyclability of textiles as well as the question of varietal purity and the use of recycled fibres.

→ *Good practice example for construction*

DGNB building resource passport ⁽⁴³⁾

The overall aim of the German Sustainable Building Council - Deutsche Gesellschaft für Nachhaltiges Bauen - DGNB e.V.- is to actively shape the transformation of the construction and real estate industry, to promote understanding of the need for sustainable building and to anchor it in the consciousness of the general public. One important area to reach this aim is the issue of circular buildings. Following the DGNB a sound information base is needed to assess whether buildings are already contributing to a circular economy, how long they can be used and adapted, and whether they can be dismantled, separated and reused in the future, i.e. whether they are recyclable. This is where the DGNBs Building Resource Passport comes in. As a documentation format, it creates an information base for all phases of a building's life cycle and thus makes an important contribution to transparency about the materials used, the greenhouse gas emissions of buildings and their circularity. The DGNB Building Resource Passport is to be understood as a documentation template that is not universally recognised.

The way forward

Identifying and addressing barriers and challenges

One **obstacle** to the successful implementation of the Circular Economy in Germany is the still **unclear understanding of the term**. In Germany, the term “Kreislaufwirtschaft - circular economy” is understood as looking at the economy from the point of view of waste and thus more in the direction of close-the-loop. Material cycles should be closed as far as possible by making waste available to the economy again

⁴¹ <https://www.umweltcluster.net/de/projekte/ce-bat.html> (in German)

⁴² <https://www.textilbuendnis.com/en/>

⁴³ <https://www.dgnb.de/en/nachhaltiges-bauen/zirkulaeres-bauen/building-resource-passport>

as secondary raw materials. Waste is thus a valuable raw material that can be used effectively to conserve natural resources. This also led in the past to different strategies, programmes and legal regulations considering and addressing the different aspects of the Circular Economy. With the **National Circular Economy Strategy under development** the Federal Government is addressing this issue, but on the level of the Federal States this may still be an obstacle.

In addition, the necessary business models geared towards the circular economy and stronger product design for the circular economy are still lacking. Currently, circular business models are often not economically viable for companies, even though they are promising from a business perspective. Particularly in light of today's market prices for raw materials, transportation and disposal, linear production processes are often cheaper than circular processes. In this respect non-internalized external costs have been a major obstacle to spread of circularity. The products placed on the market are often designed for a single use and are neither suitable for high-quality recycling or repair. Increased efforts are therefore required to spark a far-reaching innovation dynamic. On a positive note, is the growing public awareness of the attention to the topic as well as new optimized processes within individual stages of the value chain.

In the recently published **“Transformation report Circular Economy”** ⁽⁴⁴⁾, the German government highlights the importance of the circular economy in the context of the sustainability strategy. It summarizes the following starting points for overcoming the identified and potential obstacles to a successful transformation towards CE as follows:

- The development of a strategic framework that integrates the various existing raw materials policy programs, action plans and strategies into a clear context in terms of content.
- Strengthening the involvement of civil society actors in the development process of the circular economy in order to prepare for the foreseeable comprehensive processes of change to ensure broad social participation and acceptance for the foreseeable comprehensive change processes.
- the dismantling of market-distorting subsidies and regulatory barriers that hinder economically viable, circular business models or promote environmentally harmful business models and thus prevent the scaling of the circular economy, including through more difficult financing conditions Strengthening price mechanisms for a more comprehensive pricing of environmentally harmful and linear business models along the entire value chain right through to disposal.
- The development of real laboratories for the circular economy, which significantly contribute to the acceleration of the transformation process.
- Circular economy must always be organized globally. This can involve, for example, the development of suitable capacities and secondary raw materials markets.
- Another aspect is the further development of existing regimes of producer responsibility, which also due diligence obligations in the supply chain and make manufacturers responsible responsibility for the raw materials used.

Future policy plans

The **German Recovery and Resilience Plan** ⁽⁴⁵⁾ was published in April 2021 by the German government and was approved in June 2021 by the European Commission. The available money amounts to €25.6 billion in grants under the Recovery and Resilience Facility for the German Recovery and Resilience Plan. The Recovery and Resilience Plan is supporting flagship investments and reform projects, and it focuses on tackling the two great challenges of our time, climate change and the digital transition. Germany's plan allocates at least 42% of its measures to support climate objective and at least 52% to digital transition. Overall, the investments and reforms are to be made in six key policy areas: 1. Climate change and energy

⁴⁴ [Transformation report Circular Economy](#) (in German)

⁴⁵ [Germany's recovery and resilience plan](#)

transition 2. Digital transition of the economy and infrastructure 3. Digital transition of education 4. Social inclusion 5. A health system resilient to pandemics 6. Modern public administration and reduction of barriers to investment. The measures focused on climate policy and energy transition is decarbonisation through renewable hydrogen, climate-friendly mobility, and climate-friendly construction.

The German Recovery and Resilience Plan does not strategically address circular economy. Therefore, it does not include information on the budget for circular economy actions or a timeline for implementation of those.

However, **negative impacts on circular economy are evaluated in the Recovery and Resilience Plan**. The only measure with expected negative implication identified by the Recovery and Resilience Plan is the measure on “grants to promote alternative propulsion systems in rail transport”. Measures for waste management both in the use phase (maintenance) and at the end of the train’s life are in place, including through reuse and recycling of batteries and electronics in accordance with the waste hierarchy. The impact on production is considered. As the electrification of the energy system increases, a market for second-life batteries may become established. Recycling technologies are available. The circular economy will only be established once the market reaches a certain size.

The **measure “CO₂ building renovation: federal funding for efficient buildings”** obliges economic operators carrying out building renovation to ensure that at least 70% (by weight) of the non-hazardous construction and demolition waste generated on the construction site is prepared for re-use, recycling, and other material recovery in accordance with the waste hierarchy and the EU Protocol on Construction and Demolition Waste Management, including backfilling operations using waste as a substitute for other materials. The measure includes technical specifications for the durability, repairability and recyclability of renewable energy equipment.

In particular, economic operators will limit waste generation in construction and demolition processes in accordance with the EU Protocol on Construction and Demolition Waste Management. The design of buildings and construction techniques will support the circular economy, assess the dismantling or adaptability of buildings, and demonstrate that the design increases resource efficiency, adaptability, flexibility and dismantling capacity, thus enabling reuse and recycling.

The **measure “further development of climate-friendly construction with wood”** will contribute in the medium and long term to increasing the timber construction quota in the various building categories and thus indirectly bring about positive effects for GHG mitigation and the integration of biogenic carbon, provided that the sustainably available potentials of the raw material wood are adhered to. Effects on the preservation and expansion of jobs in the timber construction industry as well as the value-added and logistics chains are expected, which, however, cannot be directly attributed to the measure and are therefore not measurable in the sense of an indicator. The suitability of wood as a renewable and recyclable raw material, building material, and material for cascade use also supports the goals of the circular economy.

European Topic Centre on
Circular economy and resource use
<https://www.eionet.europa.eu/etcs/etc-ce>

The European Topic Centre on Circular economy and
resource use (ETC-CE) is a consortium of European
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