

SDG Goal 8	Decent work and economic growth
SDG Target 8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead
SDG Indicator 8.4.1	Material footprint, material footprint per capita, and material footprint per GDP
Time series	Raw material consumption (RMC)

1. General information on the time series

- Date of national metadata: 02 July 2021
- National data: <http://sdg-indikatoren.de/en/8-4-1/>
- Definition: The time series measures the amount of raw material used globally for the production of goods for domestic consumption, gross fixed capital formation, changes in inventories and acquisitions less disposals of valuables. The time series is also available in relation to the domestic population and real Gross Domestic Product (GDP).
- Disaggregation:

2. Comparison with global metadata

- Date of global metadata: February 2021
- Global metadata: <https://unstats.un.org/sdgs/metadata/files/Metadata-08-04-01.pdf>
- The time series is not compliant with the global metadata, but provides additional information. The RMC calculation is based on a hybrid model using domestic input-output-tables, life cycle information and other data sources. In the global metadata, a multi-regional input-output (MRIO) framework is mentioned. Further methodological differences may exist e.g. due to deviations in the treatment of secondary raw materials.

3. Data description

- Data on raw material consumption is generated based on a hybrid estimation model combining physical and monetary information from official and other data sources. These calculations are project work run by the Environmental-Economic Accounts unit of the Federal Statistical Office.

Data on population are the results of the latest population census (currently: 2011 Census) rolled forward in a breakdown by sex, age, marital status and citizenship, using both statistics of population change (migration, births, deaths, entering into marriages or registered same-sex partnerships) and information on changes in citizenship and the dissolution of marriages or registered same-sex partnerships. For the years before 2011 the results for population were calculated backwards using the census 2011 and migration, birth and death statistics. For the calculation of RMC per capita, the average population of the respective year is used.

The data on GDP is calculated by the Federal Statistical Office's National Accounts as a secondary statistic. GDP is adjusted based on a price base changing every year (previous year's price base). After several revisions due to new data input, final results are available four years after the first preliminary release.

4. Accessibility of source data

- Raw material consumption (only available in German): „Aufkommen und Verwendung in Rohstoffäquivalenten 2010 bis 2018“, Tables Z6:
https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Umwelt/UGR/rohstoffe-materialfluesse-wasser/_inhalt.html
- Intercensal population updates as annual average – GENESIS online 12411-0040:
<https://www-genesis.destatis.de/genesis//online?operation=table&code=12411-0040&bypass=true&language=en - abreadcrumb>
- National accounts - Gross value added, gross domestic product (nominal/price-adjusted) – GENESIS online 81000-0001:
<https://www-genesis.destatis.de/genesis//online?operation=table&code=81000-0001&bypass=true&language=en>

5. Metadata on source data

- A methodological description for the calculation of raw material consumption including an English summary part is given in the project report:
<https://www.umweltbundesamt.de/publikationen/rohstoffe-fuer-deutschland>
- The metadata on average population is included in the quality report for population estimates (only available in German):
<https://www.destatis.de/DE/Methoden/Qualitaet/Qualitaetsberichte/Bevoelkerung/einfuehrung.html>
- The metadata on GDP is included in the publication mentioned above (only available in German):
https://www.destatis.de/DE/Themen/Wirtschaft/Volkswirtschaftliche-Gesamtrechnungen-Inlandsprodukt/_inhalt.html

6. Timeliness and frequency

- Timeliness: Irregular
- Frequency: Annual

7. Calculation method

- Unit of measurement: Mn t; t per capita; per real GDP (2015=100)
- Calculation method:

RMC : calculation by based on a hybrid model

$$\text{RMC}[\text{Mn t}] = \frac{\text{RMC}[\text{metric t}]}{1,000,000}$$

$$\text{RMC}[\text{t per capita}] = \frac{\text{RMC}[\text{metric t}]}{\text{Average population}[\text{number}]}$$

$$\text{RMC}[\text{per real GDP (2015 = 100)}] = \frac{\frac{\text{RMC}[\text{metric t}]_{t1} \cdot 100}{\text{Real GDP}[\text{2015 = 100}]}}{\text{Real GDP}[\text{2015 = 100}]} \cdot 100$$

t1 = current year; t0 = base year (2015)