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: 12 January 2022
- 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: Not available.

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

- The 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.

  The population data comes from the intercensal population updates, the basis of which is the last census conducted in 2011. The population data is rolled forward using statistical results on natural population change (births, deaths) and migrations. For 2010, the population was calculated backwards using the 2011 census and migration, birth and death statistics.

  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 materials, material flows, water -supply and use in raw material equivalents (RMC) (only available in German):
  https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Umwelt/UGR/rohstoffe-materialfluesse-wasser/_inhalt.html

- 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

- Average population – GENESIS online 12411-0041:
  https://www-genesis.destatis.de/genesis//online?operation=table&code=12411-0041&bypass=true&levelindex=1&levelid=1639396599054#abreadcrumb

- Population data based on Census 2011 – 1991 to 2011 (only available in German):
  https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Bevoelkerungsstand/_inhalt.html#sprg233540

5. Metadata on source data

- Raw materials for Germany - analysis of consumption, investment and export at the macro and meso levels (only available in German):
  https://www.umweltbundesamt.de/publikationen/rohstoffe-fuer-deutschland

- Quality Report - Microcensus 2020 (only available in German):
  https://www.destatis.de/DE/Methoden/Qualitaet/Qualitaetsberichte/Bevoelkerung/mikrozensus-2020.pdf

6. Timeliness and frequency

- Timeliness: Irregular

- Frequency: Annual

7. Calculation method

- Unit of measurement: 2015 = 100; Million tonnes; Tonnes per capita

- Calculation method:

RMC : calculation by based on a hybrid model

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

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

$$\text{RMC [per real GDP (2015} = 100)] = \frac{\dfrac{\text{RMC [metric t]}_{t1} \cdot 100}{\text{RMC [metric t]}_{t0}}}{\text{Real GDP [2015} = 100]} \cdot 100$$

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