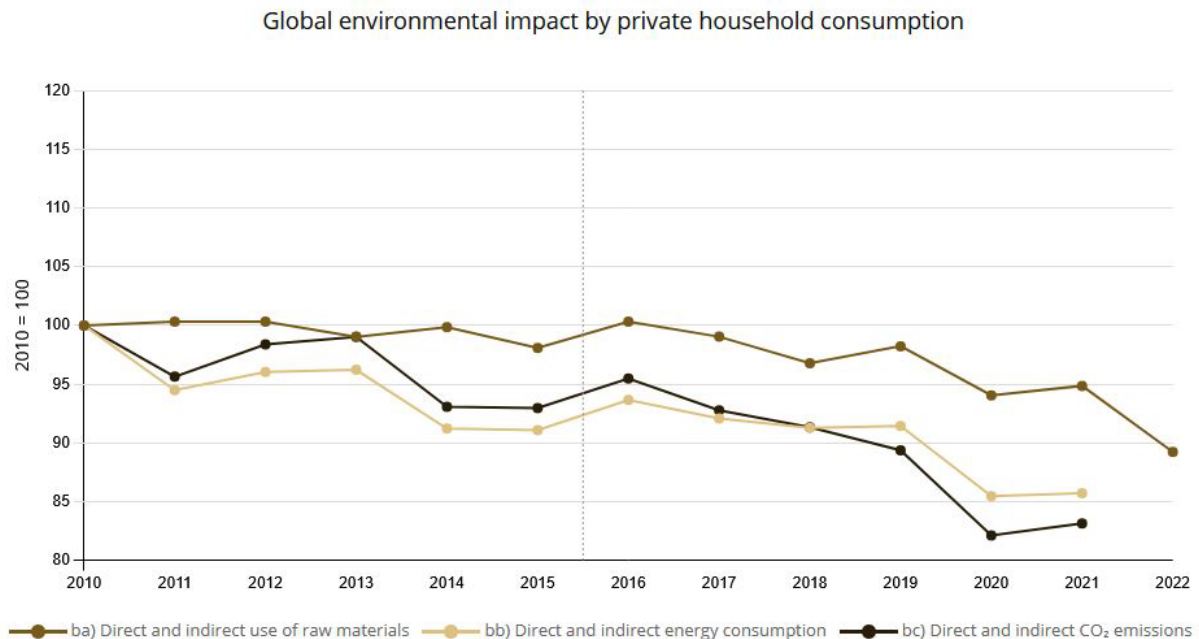




Sustainable consumption – *Making consumption environmentally and socially compatible*

12.1.b Global environmental impact by private household consumption



Note(s):

12.1.ba: Due to methodological changes, the results from 2016 are only comparable with previous years to a limited extent. – 2022 provisional data.

Data source(s):

Federal Statistical Office

Definition

The indicator shows the global environmental impact of private household consumption compared to the base year 2010. Specifically, these are the domestic and foreign use of raw materials (12.1.ba), energy consumption (12.1.bb) and carbon dioxide (CO₂) emissions (12.1.bc) in connection with the production and consumption of all goods for the consumption activities of domestic private households.

Intention

Private households account for a significant proportion of an economy's resource consumption through their consumption activities. However, this consumption is not only domestic, but also takes place indirectly abroad through the production of imported goods. The indicator therefore provides information on the global environmental impact of the consumption activities of private households. By reducing energy consumption, for example, resources are saved at home and abroad and climate-damaging carbon dioxide emissions are avoided.

Targets

12.1.ba: Steady reduction



12.1.bb: Steady reduction

12.1.bc: Steady reduction

Content and progress

The environmental impact of private household consumption cannot be fully captured by a single indicator. Therefore, the analysis is based on three key influencing factors: raw material use (indicator 12.1.ba), energy consumption (indicator 12.1.bb), and CO₂ emissions resulting from private household consumption (indicator 12.1.bc).

The underlying data is sourced from the System of Environmental-Economic Accounting (SEEA). The SEEA quantifies the environmental impacts associated with the production of goods for private household consumption using an input-output model. Private households consume resources both directly and indirectly. Accordingly, the three indicators account for both direct and indirect consumption and capture environmental impacts both within Germany and those occurring abroad due to production processes for goods consumed in Germany.

Direct consumption includes, for instance, the use of natural gas for heating, fuel consumption in road transport, and the direct consumption of food. Indirect consumption arises along the entire production and supply chain – for example, during the manufacture, processing, and transport of consumer goods – and involves both domestic and foreign resource and energy use, as well as CO₂ emissions.

There are close interrelations between raw material use, energy consumption, and CO₂ emissions. The use of fossil fuels such as coal, crude oil, or natural gas for electricity and heat generation leads not only to resource and energy use but also to CO₂ emissions. All three indicators are presented in comparison to the reference year 2010.

12.1.ba Use of raw materials

Raw materials are categorised into abiotic and biotic resources. Abiotic resources include fossil fuels such as coal, crude oil, and natural gas, as well as non-energy raw materials like ores and other mineral resources, including sand, gravel, limestone, clay, silica sands, salt, and fertiliser minerals. Biotic raw materials encompass plant-based products from agriculture and forestry as well as wild animals obtained through hunting or fishing. By contrast, products of animal husbandry such as meat, milk, or eggs are classified as economic goods rather than raw materials. Water is not considered a separate raw material, as its quantitative dominance would overshadow the presentation of other raw material groups. However, the water content of biotic raw materials is included as part of the respective resource.

Total raw material use for private household consumption remained largely stable from 2010 but began to decline after 2016, amounting to a preliminary figure of 555 million tonnes in 2022. This corresponds to a reduction to 89.2% of the 2010 level.

A more detailed analysis reveals that the use of abiotic raw materials fell by 12.1% since 2010, while the use of biotic raw materials declined by 7.1%. In 2022, approximately 60.5% of abiotic resource consumption was attributable to fossil fuels. Their use fell by 14.1% since 2010. The consumption of ores decreased by 25.8%, while the use of other mineral resources increased by 17.2%.



12.1.bb Energy consumption

The data on energy consumption also includes transformation, storage, and transmission losses, such as those arising during electricity and district heating generation in the context of indirect consumption. The indicator is influenced by both changes in consumption behaviour and efficiency improvements in energy supply.

Since 2010, energy consumption resulting from private household consumption has been on a downward trend. By 2021, it had decreased by 14.3% to 8,509 petajoules. Approximately 45% of this energy use is attributable to direct household consumption, while 55% stems from indirect energy use incurred during the production of goods demanded by households. Compared to 2010, the decline in direct energy consumption was smaller than in indirect consumption.

Energy consumption is broken down into the categories of residential energy use (direct), mobility, energy goods, other products, food, services, and trade. The largest share is accounted for by residential energy use (direct), representing 30% of total household energy consumption – equivalent to 2,554 petajoules in 2021 – followed by mobility at 20%.

Between 2010 and 2021, energy consumption per household fell by 16.9% to 208 gigajoules. Per capita, this equates to a decline of 15.8% to 102 gigajoules.

12.1.bc CO₂ emissions

In 2021, CO₂ emissions from private household consumption amounted to 540 million tonnes, representing a 16.9% decrease compared to 2010. As with energy consumption, direct emissions – down by 9.8% – declined less sharply than indirect emissions, which are generated during the production and transport of consumer goods. These decreased by 20.8%. In 2021, consumption activities resulted in 13.2 tonnes of CO₂ emissions per household – a reduction of 19.4% compared to 2010.

Interpretation of indicators and methodological notes

The indicators on global environmental impacts relate to private household consumption across the entire economy and are normalised to the year 2010. They do not refer to the number of individuals or households.

When interpreting the results, it is important to note that, in addition to efficiency gains and changes in consumption behaviour, demographic developments – such as population growth or an increase in the number of households – can also influence CO₂ emissions as well as raw material and energy use. For instance, a growing population can result in absolute consumption and emissions not decreasing – or even increasing – despite efficiency improvements or shifts in consumer behaviour.

Type of targets

12.1.ba: Directional target

12.1.bb: Directional target

12.1.bc: Directional target


Assessment


The global environmental impact of private household consumption should be reduced across all three areas: raw material use, energy consumption, and CO₂ emissions.



According to the target formulation, all three indicators show a decline on average over the past six years, indicating development in the desired direction.

In the most recent year (2022), the value of indicator 12.1.ba also decreased; it is therefore assessed as sun for 2022. However, the values of indicators 12.1.bb and 12.1.bc increased between 2020 and 2021, so both are assessed as slightly cloudy for 2021.

12.1.ba: 

12.1.bb: 

12.1.bc: 