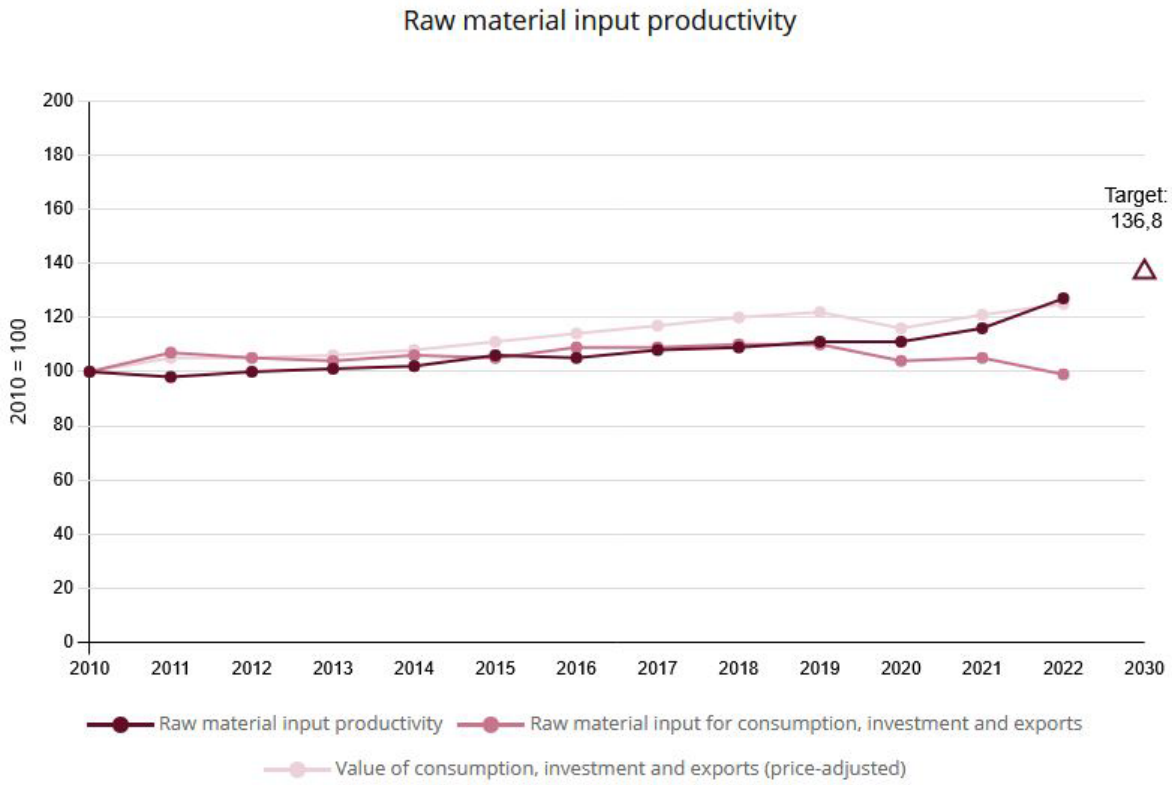
Resource conservation – *Using resources economically and efficiently*

8.1 Raw material input productivity



Note(s):
The target represents a continuation of the trend in the period from 2000 to 2010, when the average annual increase amounted to about 1.6%. – 2022 provisional data.

Data source(s):
Federal Statistical Office

Definition

The indicator shows total raw material productivity compared to the base year 2010. The indicator compares the value of all goods sold for final use (in euros, price-adjusted) with the mass of raw materials used for their production at home and abroad (in tonnes). The final use includes both domestic consumption and domestic investment as well as exports. The denominator of the indicator includes both abiotic and biotic raw materials extracted from the environment as well as plant material produced by agriculture and forestry. The graph shows the indicator itself as well as the numerator and denominator separately.

Intention

The extraction of raw materials is always associated with a negative impact on nature. Due to the growing demand for raw materials, raw material deposits are increasingly being tapped worldwide in areas that are particularly sensitive to human impact. For this reason, the German government set itself the goal of further increasing overall raw material productivity in the German Resource Efficiency Programme (ProgRess) II in 2016.

Target
Trend of the years 2000 to 2010 to be maintained until 2030

Content and progress
The production of all goods intended for final use in Germany requires raw materials. Final use may comprise – depending on the type of goods – consumption, investment in non-consumption goods, or export abroad. However, the resources of fossil fuels, metal ores, and other mineral raw materials are finite. Although biotic raw materials such as timber or agricultural products are renewable, their utilisation also has environmental impacts. It is therefore essential to accurately capture the extent of both direct and indirect raw material use.

An indicator of a country's resource use intensity is total raw material productivity. This indicator sets the inflation-adjusted monetary value of goods designated for final use and export in relation to the quantity of raw material equivalents used in their production. The concept of raw material equivalents involves converting all goods into the amount of raw materials required for their production along the entire global value chain – both domestically and abroad. The calculation of the indicator requires, among other things, determining the mass of raw materials used in the production of imported goods. This is based on a complex input-output model that combines physical and monetary data from various official and non-official sources.

The indicator includes not only non-renewable raw materials (mineral resources, fossil fuels, stones and earths) but also plant-based products from agriculture and forestry. Minor double counting may occur, for instance when both the mass of a harvested product and the mass of the mineral fertiliser used in its production are included. As the raw material use presented in the indicator relates not only to domestic final use but also to exports, it does not equate to Germany’s raw material footprint.

Between 2010 and 2022, the value of the indicator rose by 27%. This increase is primarily attributable to growth in the numerator: the inflation-adjusted value of final use (domestic consumption, domestic investment in construction, equipment, and other capital goods, as well as exports) rose by 25% over the comparison period. Domestic raw material extraction declined slightly (–6%), while the mass of imports in raw material equivalents remained nearly constant. Overall, this resulted in a 1% decrease in the denominator.

Raw materials extracted domestically or imported are often re-exported. Therefore, the denominator of the indicator does not indicate an increase in global raw material extraction for consumption and investment in Germany, but rather reflects the high level of international economic integration of the German economy. From 2010 to 2022, total raw material productivity showed a generally upward trend. In 2021, it increased by 5 percentage points compared to the previous year; preliminary calculations for 2022 indicate a further increase of 11 percentage points. Overall, this results in a 27 percentage point increase between 2010 and 2022, equivalent to an average annual growth rate of approximately 2.0% – exceeding the politically defined target.

Type of target
Target with specific target value

Assessment

The target allows for various interpretations. For the assessment of indicator 8.1, the geometric mean of the indicator's increase between 2000 and 2010 is calculated and used as the basis for the desired development up to 2030. Standardised to the 2010 value, this results in a target of 136.8 for 2030. Accordingly, total raw material input productivity should reach at least 136.8% of the 2010 value by 2030.

If the trend from 2017 to 2022 continues, this target will be achieved in 2030. Accordingly, indicator 8.1 is assessed as sun for 2022.