Goal 12: Ensure sustainable consumption and production patterns

Target 12.2: By 2030, achieve the sustainable management and efficient use of natural resources

Indicator 12.2.2: Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP

Institutional information

Organization(s):

United Nations Environment Programme (UNEP)

Concepts and definitions

Definition:

Domestic Material Consumption (DMC) is a standard material flow accounting (MFA) indicator and reports the apparent consumption of materials in a national economy.

Concepts:

Domestic Material Consumption (DMC) and MF need to be looked at in combination as they cover the two aspects of the economy, production and consumption. The DMC reports the actual amount of material in an economy, MF the virtual amount required across the whole supply chain to service final demand. A country can, for instance have a very high DMC because it has a large primary production sector for export or a very low DMC because it has outsourced most of the material intensive industrial process to other countries. The material footprint corrects for both phenomena.

Rationale:

DMC reports the amount of materials that are used in a national economy. DMC is a territorial (production side) indicator. DMC also presents the amount of material that needs to be handled within an economy, which is either added to material stocks of buildings and transport infrastructure or used to fuel the economy as material throughput. DMC describes the physical dimension of economic processes and interactions. It can also be interpreted as long-term waste equivalent. Per-capita DMC describes the average level of material use in an economy – an environmental pressure indicator – and is also referred to as metabolic profile.

Comments and limitations:

DMC cannot be disaggregated to economic sectors which limits its potential to become a satellite account to the System of National Accounts (SNA).

Methodology

Computation method:

It is calculated as direct imports (IM) of material plus domestic extraction (DE) of materials minus direct exports (EX) of materials measured in metric tonnes. DMC measure the amount of materials that are used in economic processes. It does not include materials that are mobilized the process of domestic extraction but do not enter the economic process. DMC is based on official economic statistics and it requires some modelling to adapt the source data to the methodological requirements of the MFA. The accounting standard and accounting methods are set out in the EUROSTAT guidebooks for MFA accounts in the latest edition of 2013. MFA accounting is also part of the central framework of the System of integrated Environmental-Economic Accounts (SEEA).

Treatment of missing values:

- **At country level:**

A zero is imputed when no positive real value was officially recorded, in the base data sets used, for any of the underlying components which make up this aggregated total. Thus “0.0” can represent either NA, or a genuine 0.0, or (crucially) a combination of both, which is a common situation. This allows for values to be easily aggregated into further aggregations; however, it should be thus noted that due to imputing missing values as ‘0.0’, the aggregations may represent a lower value than actual situation.

- **At regional and global levels:**

Similarly, missing values are imputed as zero in the regional and global aggregations. However, in the case where no data is available at all for a particular country then the per capita and per GDP estimates are weighted averages of the available data.

Regional aggregates:

See: http://uneplive.unep.org/media/docs/graphs/aggregation_methods.pdf

Sources of discrepancies:

Data sources

Description:

The global material flows database is based on country material flow accounts from the European Union and Japan and estimated data for the rest of the world. Estimated data is produced on the bases of data available from different national or international datasets in the domain of agriculture, forestry, fisheries, mining and energy statistics. International statistical sources for DMC and MF include the IEA, USGS, FAO and COMTRADE databases.

Collection process:

The IRP Global Material Flows and Resource Productivity working group compiles the data from countries and from other sources.

Data availability

Description:

The data covers more than 170 countries.

Time series:

The data set covers each nation individually, over a time period of 47 years (1970-2017).

Disaggregation:

The DMC indicator can be disaggregated into imports, domestic extraction and exports by a large number of material follow categories. At the highest level of aggregation biomass, fossil fuels, metal ores and non-metallic minerals are distinguished. DMC is usually reported for 11 material categories, DE for 44 material categories.

Calendar

Data collection:

Under discussion

Data release:

11 September 2017

Data providers

National Statistical Offices

Data compilers

UNEP, OECD and EUROSTAT

References

URL:

References:

EUROSTAT (2013). Economy-wide material flow accounts. Compilation guide 2013.

Wiedmann, T., H. Schandl, M. Lenzen, D. Moran, S. Suh, J. West, K. Kanemoto, (2013) The Material Footprint of Nations, Proc. Nat. Acad. Sci. Online before print.

Lenzen, M., Moran, D., Kanemoto, K., Geschke, A. (2013) Building Eora: A global Multi-regional Input-Output Database at High Country and Secotr Resolution, Economic Systems Research, 25:1, 20-49.

Related indicators

Indicator 8.4.2