SDG Indicator 12.5.1: National Recycling Rate, Tons of Material Recycled

Step-by-step guide

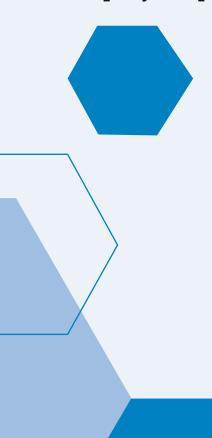


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Indicator 12.5.1: National recycling rate, tons of material recycled

This step-by-step guide is based on UNEP Global Chemicals and Waste Indicator Review Document (2021) and the UNSD Metadata for 12.5.1.

Minimizing waste generation and maximizing the recycling of waste is central to the concept of circular economy or sustainable consumption and production. SDG target 12.5 target aims to substantially reduce waste generation through prevention, reduction, recycling and reuse. Indicator 12.5.1 *National recycling rate, tons of material recycled* has four indicators in total, one Level I, three Level II indicators (see Table 1).1

National recycling rate + Waterial recycled Material exported intended for recycling - Material imported intended for recycling x 100 Total waste generated

Table 1: Indicators for 12.5.1 National recycling rate, tons of material recycled

Goal 12	Ensure sustainable consumption and production patterns		
Target 12.5	By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse		
Indicator 12.5.1	National recycling rate, tons of material recycled		
Level I Indicators			
National recycling rate	(Material recycled + material exported for recycling – material imported for recycling) / total waste generated (with gap filling for regional and global aggregates)		
Level II Indicators			
Total Waste Generated (excluding construction, mining and agriculture) by type, including e-waste	This is the denominator for recycling and useful for understanding the target 12.5 on waste reduction		
National recycling rate by type of waste, including e-waste (other possible disaggregation include, metals and packaging waste)	Based on national data sources, including disaggregation of the recycling rate		
Waste intensity	Waste generated divided by domestic material consumption (DMC) (as an indicator of waste reduction)		

Note: When data are inserted in the Excel file tabs, some cells might turn red. This is to alert users to possible inconsistencies or errors that need to be verified.

The National Recycling Rate is defined as the quantity

of material recycled in the country plus quantities exported for recycling minus material imported intended for recycling out of total waste generated in the country (Material recycled + material exported for recycling – material imported for recycling) / total waste generated). Recycling includes co-digestion/ anaerobic digestion and composting/aerobic process, but not controlled combustion (incineration) or land application. National recycling rate can be presented by type of waste, such as e-waste, plastic waste, and municipal waste. To determine the recycling rate, first calculate the total waste generated, the

¹ Level I indicators are regularly produced by countries for at least 50 per cent of countries and of the population in every region. Level II indicators are those where data are not regularly produced by countries.

amount recycled, exported and imported for recycling (see below). The **National recycling rate tab** of the workbook will then display the results base on the data input in the other worksheets.

Data availability

The data sources for this indicator are national governments, including national statistical offices and ministries responsible for the environment.

National data is collected through the UNSD/UNEP Questionnaire on Environment Statistics (waste section). After data validation procedures, data that are considered accurate or those confirmed by countries are made available in UNSD's environment statistics database. Data reported to the Basel Convention can be included as part of SDG reporting. As of May 2023, the following data sets were available:

- Municipal waste recycled (tonnes), for 2000-2019 (depending on country), national scale
- Electronic waste recycling (tonnes), for 2010-2019, global, regional and national scales
- Electronic waste recycling, rate (%), for 2010-2019, global, regional and national scales
- Electronic waste recycling, per capita (kg), for 2010-2019, global, regional and national scales

While prevention, reduction, reuse, repair are important aspects of reducing material consumption and waste, they are difficult to measure. A challenge in measuring this indicator is identifying the stage in the recovery process when waste stops being waste, and qualifies as a resource is not clear cut. In addition, data on waste are often collected at the municipal level which can lead to a rural data gap. As well, even though it plays a key role, it is difficult to obtain data on activities of the informal sector.

Total Waste Generated (excluding construction, mining and agriculture) by type, including e-waste

Total waste generated

Waste from manufacturing (ISIC 10-33) + Waste from electricity, gas, steam and air conditioning supply (ISIC 35) + Waste from other economic activities (excluding ISIC38) + Municipal waste (excluding construction and demolition)

For the purpose of this indicator, the total waste generated is the total amount of waste (both hazardous and non-hazardous) generated in the country during the year. It excludes non-metallic minerals (including construction and mining waste from the municipal waste stream), and agriculture waste. It also excludes waste from waste management activities (ISIC 38) as counting these would lead to double counting.

Municipal waste is defined differently in different countries, but it generally includes all waste handled by a municipal waste management system.

Municipal solid waste includes:

- Waste originating from households,
- · Commerce and trade,
- Small businesses,
- Office buildings and
- Institutions (schools, hospitals, government buildings).
- Bulky waste (e.g., old furniture, mattresses) and
- Waste from selected municipal services (e.g., waste from park and garden maintenance, waste from street cleaning services (street sweepings, the content of litter containers, market cleansing waste, if managed as waste).

More information is available in the metadata of SDG indicator 11.6.1.

Electronic waste, or e-waste, refers to all items of electrical and electronic equipment (EEE) and the parts that have been discarded by the owner as waste without the intent of re-use.

Data availability

Data on amounts of waste generated can be obtained in the following ways:

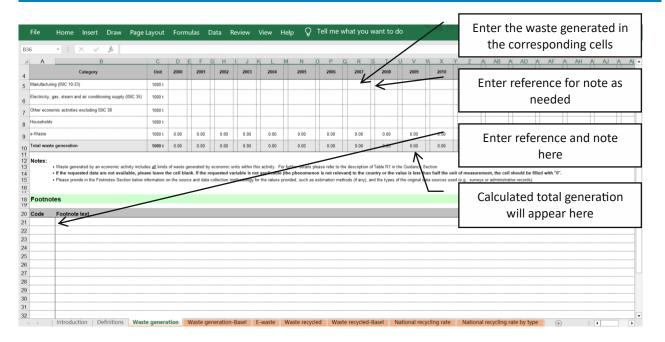
- Collecting data from waste generators themselves either through regular reporting or special surveys
- Collecting data from waste management facilities (for example, municipal waste authorities)

 By type of material especially for high value recyclables, such as non-ferrous metals, ferrous metals, various packaging wastes, as these wastes tend to be treated by material

At a national level quantity of materials recycled and materials exported for recycling is relatively easy to collect from large facilities and customs authorities.

There are two tabs that can be used to calculate the total waste generated. The **Waste generation tab** compiles information using the categories found in the UNSD/UNEP questionnaire on Environment Statistics (see Figure 1). The **Waste generation-Basel tab** compiles information using waste streams as defined by the Basel Convention. Use the **E-waste tab** to compile information on e-waste generated, collected and recycled.

Figure 1: Entering data on waste generated using the UNSD/UNEP ISIC categories



National recycling rate by type of waste, including e-waste

Material recycled (in tonnes) is the amount reported at the last entity in the recycling chain, preferably when the material is bought as secondary resource to be used in production facilities.

Note 1: Composting is considered recycling for the purposes of this indicator.

Note 2: It excludes secondary mineral materials used in the construction sector.

Recycling is defined as any reprocessing of waste material that diverts it from the waste stream, except reuse as fuel. Reprocessing as the same type of product and for different purposes are included. Recycling within industrial plants, such as at the place of generation, is excluded.

For hazardous waste, to be consistent with Basel Convention reporting and maintain correspondence with the EUROSTAT reporting system, recovery operations R2 to R12 listed in Basel Convention Annex IV, are considered as 'Recycling'.

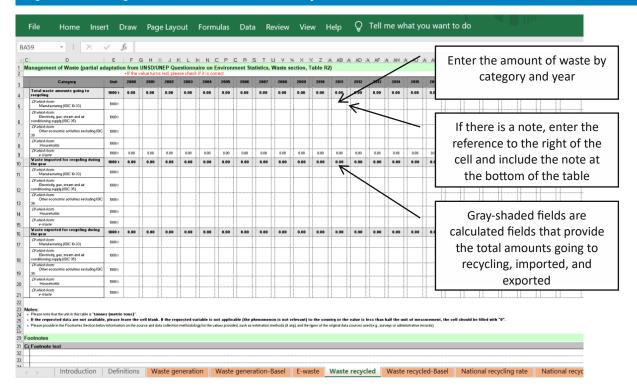
Data availability

A common way to improve waste data is to carry out surveys or measurements for a sample of waste generators belonging to a specific category. Data can be obtained from a sample of waste generators if insufficient resources are available to allow for data collection from all waste generators. Several tools that provide information on ways to estimate waste generation and recycling rates are available. For example:

- Eurostat: Manual on Waste Statistics, A handbook for data collection on waste generation and treatment (refer to Chapter 3.1. on data collection on waste generation)
- UNEP, Basel Convention, Methodological Guide for the Development of Inventories of Hazardous Waste and Other Wastes under the Basel Convention (Refer to Chapter 6 on methods for estimating waste generation) and is available in Arabic, Chinese, French, Russian and Spanish.
- Waste Wise Cities Tool Step by Step Guide to Assess a City's MSMW Performance through SDG indicator 11.6.1 (Refer to Monitoring Step 4 which provides a questionnaire for recyclers to compile data and calculate total amount of waste recycled).

Use the **Waste recycled tab** to provide information on amounts of waste going to recycling, and imported or exported for recycling each year in groupings used in the UNSD/UNEP questionnaire (Figure 2). For Basel Convention groupings, use the **Waste recycled-Basel tab**. The national recycling rates will appear in the **National recycling rate by type tab**.

Figure 2: Entering data on amounts of waste recycled



Total e-waste recycled

As e-waste recycled is reported separately, use the **E-waste tab** to fill in the available data on e-waste (Figure 3). The sheet is divided into categories:

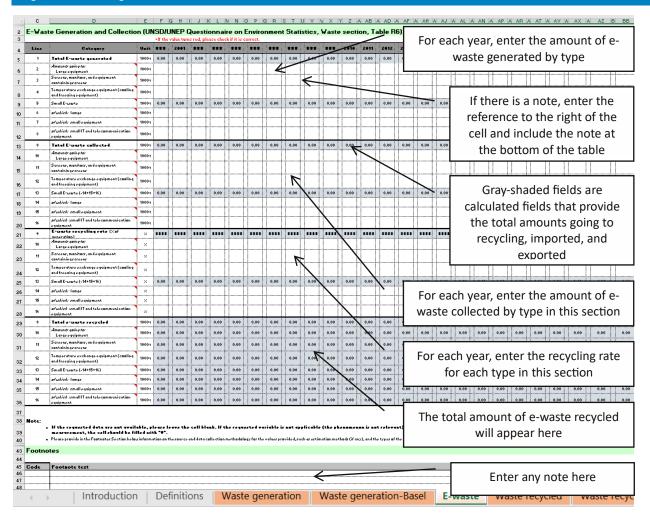
- E-waste generated
- · E-waste collected
- · E-waste recycling rate, and
- Total e-waste recycled

Users will insert data in the e-waste generated and e-waste collected categories. The tab is embedded with formulae that will automatically calculate the e-waste recycling rate and the total e-waste recycled.

Note: when data is inserted, some cells might turn red. When cells turn red, it is because some inserted data is not correct. For instance, if e-waste collected is larger than e-waste generated, the cells will turn red to alert users to double check the error.

Once users fill in the waste generation tab, waste generation-Basel tab, E-waste tab, Waste recycled tab and Waste recycled-Basel tab, the national recycling rate tab will be populated with the calculated rate. This is done automatically to facilitate the calculations of the indicator.

Figure 3: Entering data on e-waste



Waste intensity: Waste generated divided by DMC (as an indicator of waste reduction)



Waste intensity of production = $\frac{Total\ waste\ generated}{DMC}$

Waste intensity of production is the total waste generated divided by domestic material consumption (DMC) for a particular year. Waste intensity is a relative measure of waste generated to DMC – the lower the intensity of waste generated, the less waste created for each unit of material consumption. The DMC is an output of economy-wide material flow accounts (EW-MFA). You can use the UNEP compiler to develop an MFA and an estimate of the DMC (Refer to SDG Indicator 12.2.2. Domestic Material Consumption).

To calculate waste intensity, enter the amount of DMC in the National recycling rate tab under the appropriate table (Figure 4).

Figure 4: Results table for national reporting rates and waste intensity of production

