

SDG indicator metadata

(Harmonized metadata template - format version 1.1)

0. Indicator information (SDG_INDICATOR_INFO)

0.a. Goal (SDG_GOAL)

Goal 12: Ensure sustainable consumption and production patterns

0.b. Target (SDG_TARGET)

Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

0.c. Indicator (SDG_INDICATOR)

Indicator 12.5.1: National recycling rate, tons of material recycled

0.d. Series (SDG_SERIES_DESCR)

Municipal waste recycled (Tonnes) EN_MWT_RCYV

Electronic waste recycling (Tonnes) EN_EWT_RCYV

Electronic waste recycling, rate (%) EN_EWT_RCYR

Electronic waste recycling, per capita (Kg) EN_EWT_RCYPCAP

0.e. Metadata update (META_LAST_UPDATE)

2023-01-24

0.f. Related indicators (SDG_RELATED_INDICATORS)

11.6.1, 12.4.2, 12.3.1, 14.1.1

0.g. International organisations(s) responsible for global monitoring (SDG_CUSTODIAN_AGENCIES)

United Nations Environment Programme (UNEP), United Nations Statistics Division (UNSD), United Nations Institute for Training and Research (UNITAR)

1. Data reporter (CONTACT)

1.a. Organisation (CONTACT_ORGANISATION)

United Nations Environment Programme (UNEP), United Nations Statistics Division (UNSD), United Nations Institute for Training and Research (UNITAR)

2. Definition, concepts, and classifications (IND_DEF_CON_CLASS)

2.a. Definition and concepts (STAT_CONC_DEF)

Definitions:

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. Note that recycling includes codigestion/anaerobic digestion and composting/aerobic process, but not controlled combustion (incineration) or land application.

National recycling rate can be presented by type of waste, including e-waste, plastic waste, municipal waste, and others.

Concepts:

Material recycled expressed in tons, reported at the last entity in the recycling chain, preferably when tons of material is bought as secondary resource to be used in production facilities during the course of the reporting year; Secondary mineral materials used in the construction sector are excluded; composting is considered recycling for the purposes of this indicator.

Recycling is defined under the UNSD/UNEP Questionnaire on Environment Statistics and further for the purpose of these indicators as “Any reprocessing of waste material [...] that diverts it from the waste stream, except reuse as fuel. Both reprocessing as the same type of product, and for different purposes should be included. Recycling within industrial plants i.e., at the place of generation should be excluded.”

For the purpose of consistency with the Basel Convention reporting and correspondence with EUROSTAT reporting system, Recovery operations R2 to R12 listed in Basel Convention Annex IV, are to be considered as ‘Recycling’ under the UNSD reporting for hazardous waste.

Total waste generated is the total amount of waste (both hazardous and non-hazardous) generated in the country during the year.

Municipal Solid Waste (MSW) includes waste originating from households, commerce and trade, small businesses, office buildings and institutions (schools, hospitals, government buildings). It also includes 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. Further information on MSW is defined in the SDG indicator methodology for 11.6.1.

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

2.b. Unit of measure (UNIT_MEASURE)

Tonnes, Percent (%), Kilograms (Kg)

2.c. Classifications (CLASS_SYSTEM)

- International Standard Industrial Classification of All Economic Activities (ISIC), Rev.4.
- Standard Country or Area Codes for Statistical Use (UN M49 classification of countries and regions).

3. Data source type and data collection method

(SRC_TYPE_COLL_METHOD)

3.a. Data sources (SOURCE_TYPE)

Data provided by national governments, including National Statistical Offices (NSOs), Ministries of Environment and other relevant organizations.

3.b. Data collection method (COLL_METHOD)

The custodian agencies propose to collect national data through the UNSD/UNEP Questionnaire on Environment Statistics (waste section).

The United Nations Statistics Division (UNSD) carries out extensive data validation procedures that include built-in automated procedures, manual checks and cross-references to national sources of data. Communication is carried out with countries for clarification and validation of data. Only data that are considered accurate or those confirmed by countries during the validation process are included in UNSD's environment statistics database and disseminated on its website (<https://unstats.un.org/unsd/envstats/qindicators> and https://unstats.un.org/unsd/envstats/country_files).

Additionally, data from the Basel Convention reporting may also be sent to countries for their consideration for SDG reporting.

Data for the Organization for Economic Co-operation and Development (OECD) and European Union countries are collected through the biennial OECD/Eurostat Joint Questionnaire on the State of the Environment that is consistent with the UNSD/UNEP Questionnaire, so data are comparable.

3.c. Data collection calendar (FREQ_COLL)

The UNSD/UNEP Questionnaire on Environment Statistics is sent every 2 years.

The biennial OECD/Eurostat Joint Questionnaire on the State of the Environment is also sent every 2 years.

3.d. Data release calendar (REL_CAL_POLICY)

Every two years after the validation of national statistics from the UNSD/UNEP Questionnaire on Environment Statistics and the OECD/Eurostat Joint Questionnaire on the State of the Environment.

3.e. Data providers (DATA_SOURCE)

National Statistical Systems and relevant ministries.

3.f. Data compilers (COMPILING_ORG)

The United Nations Statistics Division (UNSD), the United Nations Environment Programme (UNEP), the Organization for Economic Co-operation and Development (OECD) and Eurostat for all waste indicators excepted global e-waste estimates.

The United Nations Institute for Training and Research (UNITAR) for global e-waste estimates.

3.g. Institutional mandate (INST_MANDATE)

The United Nations Environment Programme (UNEP) and the United Nations Statistics Division (UNSD) were mandated as Custodian Agencies for indicator 12.5.1 by the Inter-agency and Expert Group on SDG Indicators.

4. Other methodological considerations (OTHER_METHOD)

4.a. Rationale (RATIONALE)

Minimizing waste generation and maximizing the recycling of waste is central to the concept of circular economy. However, currently, the total amount of produced materials that are recycled are estimated to be low (based on academic literature). If countries better understand how waste are generated, collected and recycled, this will enable countries and other stakeholders to better determine how to deal with major waste streams, for example e-waste or plastic.

4.b. Comment and limitations (REC_USE_LIM)

Most countries control large end-of-chain recycling facilities and export of recyclable materials, so data from these entities are feasible to collect. There may be recycling carried out in the informal sector that never enters the formal channels, in this case, countries can estimate the size of the informal recycling sector to properly account for all the recycling in the country.

National recycling rate is part of measuring progress towards sustainable consumption and production, but it does not capture prevention, reduction, reuse and repair. Calculating additional intensity indicators against the Domestic Material Consumption and the Material Flow gives proxies and helps connect this indicator to resource efficiency in consumption and production.

Additional research is needed to understand typical losses (due to transformation of materials, loss of humidity, percent of rejects) along the recycling chain for various recyclable materials. The losses would need to be known as percentages from the point of entry in the recycling value chain (i.e., Collection of source segregated material, or input to sorting facility) to the point of exit (i.e., when the material leaves the last recyclable processing unit to enter a facility as secondary raw material). This would allow connecting indicator 11.6.1. which will measure among other things the municipal recycling rate, to the national recycling rate. Municipal recycling rate is likely going to be measured at the beginning of the chain, while indicator 12.5.1 will likely be measured at the point of exit from the chain. Such studies may be done using the process flow and material mass balance approach. Another approach could be to follow transactions in the waste management process and introducing so called “system of boundaries” defining points of reporting of waste quantities.

4.c. Method of computation (DATA_COMP)

A full methodology for this indicator is available in the document entitled, “[Global Chemicals and Waste Indicator Review Document](#)” (UNEP, 2021).

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. Note that recycling includes codigestion/anaerobic digestion and composting/aerobic process, but not controlled combustion (incineration) or land application.

$$\text{Recycling rate} = \frac{(\text{Material recycled} + \text{Material exported intended for recycling} - \text{Material imported intended for recycling}) \times 100}{\text{Total waste generated}}$$

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 ISIC 38)
- + Municipal waste (excluding construction and mining)

It is proposed that recycling rate is disaggregated by type of waste, including e-waste and other waste types (such as packaging waste and metals). For the disaggregation by waste stream, the formula will be the same but particular waste types will be evaluated. (Existing data on e-waste and the importance of e-waste means that this disaggregation will be collected at the global level.)

4.d. Validation (DATA_VALIDATION)

The United Nations Statistics Division (UNSD) carries out extensive data validation procedures that include built-in automated procedures, manual checks and cross-references to national sources of data. Communication is carried out with countries for clarification and validation of data. Only data that are considered accurate or those confirmed by countries during the validation process are included in UNSD's environment statistics database and disseminated on its website.

The Organization for Economic Co-operation and Development (OECD) and Eurostat carry out extensive data validation procedures on the biennial OECD/Eurostat Joint Questionnaire on the State of the Environment.

4.e. Adjustments (ADJUSTMENT)

Not applicable

4.f. Treatment of missing values (i) at country level and (ii) at regional level (IMPUTATION)

The United Nations Statistics Division (UNSD), which conducts the data collection, validation and dissemination process via the UNSD/UNEP Questionnaire on Environment Statistics, does not make any estimation or imputation for missing values so the number of data points provided are actual country data.

However, UNEP is considering the possibility of global modelling towards at country, regional and global levels.

4.g. Regional aggregations (REG_AGG)

The data will be aggregated at the sub-regional, regional and global levels. For the aggregation methods, please see [here](#).

4.h. Methods and guidance available to countries for the compilation of the data at the national level (DOC_METHOD)

[Global Chemicals and Waste Indicator Review Document](#) (UNEP, 2021)

4.i. Quality management (QUALITY_MGMNT)

Quality management is provided:

- by the United Nations Statistics Division (UNSD) for non-OECD and non-European Union country data;
- by the Organization for Economic Co-operation and Development (OECD) and Eurostat for OECD and European Union country data.

4.j Quality assurance (QUALITY_ASSURE)

Quality assurance is provided:

- by the United Nations Statistics Division (UNSD) for non-OECD and non-European Union country data;
- by the Organization for Economic Co-operation and Development (OECD) and Eurostat for OECD and European Union country data;

in cooperation with the countries that provide these data.

4.k Quality assessment (QUALITY_ASSMNT)

Quality assessment is provided:

- by the United Nations Statistics Division (UNSD) for non-OECD and non-European Union country data;
- by the Organization for Economic Co-operation and Development (OECD) and Eurostat for OECD and European Union country data.

5. Data availability and disaggregation (COVERAGE)

Data availability:

For national data: All countries that reply to the questionnaire.

For global estimates: Regional and global level.

Time series:

For national data: The data sets presented in the SDG database cover a period since 2000 if countries report them.

For global estimates: The data sets presented in the SDG database cover a period since 2010.

Disaggregation:

- By where recycling occurs (in-country and materials exported destined for recycling).
- By material type (e-waste, plastics, metals, etc.) and for key groups of materials (e.g. e-waste and packaging waste).

6. Comparability / deviation from international standards (COMPARABILITY)

Sources of discrepancies:

As mentioned, waste statistics involve a large number of national and sub-national stakeholders which may create discrepancies. To address these possible discrepancies, inter-institutional stakeholder collaboration is always encouraged.

7. References and Documentation (OTHER_DOC)

[Global Chemicals and Waste Indicator Review Document](#) (UNEP, 2021)

[UNSD/UNEP Questionnaire on Environment Statistics \(waste section\)](#).

[E-WASTE STATISTICS GUIDELINES ON CLASSIFICATION, REPORTING AND INDICATORS](#)

[Global and Regional E-waste Monitors](#)