



SDG Indicator 12.4.2: Hazardous Waste Generation

Step-by-step guide

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Indicator 12.4.2: Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment

This step-by-step guide is based on UNEP [Global Chemicals and Waste Indicator Review Document \(2021\)](#) and the [UNSD Metadata for 12.4.2](#)

The proposed approach relies on country specific data since hazardous waste generated is highly dependent on national factors. Hence, indicator 12.4.2 entails only:

- Level 2: National data collected from countries
- Level 3: Additional information (See Table 1)

Table 1: Indicators for the SDG goal 12.4.2

Level II Indicators	
Hazardous waste generated (in tonnes, per km sq. of land area and per capita)	Hazardous waste collected + Hazardous waste given by generator to treatment or disposal facilities + Estimation of Unaccounted for hazardous waste
Hazardous waste generated by type, including e-waste	A breakdown of hazardous waste generated by key type of waste, including e-waste
Proportion of hazardous waste treated	Quantity of hazardous waste treated during reporting year/ quantity of hazardous waste generated x 100
Environmentally sound treatment of own generated hazardous waste	Related to the country capacity for sound treatment of own hazardous waste within the country and the capacity for treatment of hazardous waste from other countries
Hazardous waste intensity of production	Quantity of hazardous waste generated during the reporting year / DMC in the reporting year

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.

Hazardous waste generated (in tonnes, per km sq. of land area and per capita)

Indicator: Hazardous waste generated (in tonnes, per km sq. of land area and per capita) = Hazardous waste collected + Hazardous waste given by generator to treatment or disposal facilities + Estimation of Unaccounted for hazardous waste



$$\text{Hazardous waste generated} = \text{hazardous waste collected through municipal services or private companies} + \text{hazardous waste given by generator to treatment or disposal facilities} + \text{estimation of hazardous waste unaccounted for}$$

Hazardous waste generated should include collected hazardous waste (either by specialized companies or by municipal services), hazardous waste which is given by the generator directly to the treatment or disposal facility, as well as an estimation of the hazardous waste which is unaccounted for. Generated hazardous waste includes exported hazardous waste and excludes imports of hazardous waste. Total waste generated is presented in tonnes and as rates per km sq. of land area and per capita.

Parties to the Basel Convention must provide information on the final disposal and recovery options operated within their national jurisdiction (see the Basel Convention Dashboard Tables 2 and 3), and they have the possibility to report information on the total amount of hazardous wastes and other wastes generated. See Table 6 in the Dashboard or the [Country files from the UNSD/UNEP data collection on environment statistics](#) (Table R2) for previously reported data on waste (Figure 1). These include data on hazardous waste that have been submitted previously. Check with the submitting unit for any updated information.

Figure 1: Table R2 Management of Hazardous Waste of the UNSD/UNDP Questionnaire on waste

Line	Category	Unit	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1	Stock of hazardous waste at the beginning of the year	tonnes																	1360531	1864013	
2	Hazardous waste generated during the year	tonnes						8140000		6232507			7903628	7900000		7423002	7803517	5150471	7172762	9441872	8639229
3	Hazardous waste imported during the year	tonnes																		482083	208346
4	Hazardous waste exported during the year	tonnes																		5259	20
5	Hazardous waste treated or disposed of during the year (1+2+3+4)	tonnes																4649177	7174779	6941839	8181049
6	Amounts going to Recycling	tonnes							3088387				3880639			3254904	3152023	1092050	1008535	1216547	1295738
7	Incineration	tonnes							415784				601842	92954		803549	829923	241174	279502	160346	308377
8	of which: with energy recovery	tonnes																		23066	
9	Landfilling	tonnes							2728326				3321147	1997733		3364549	3821571	1792714	2563267	1930754	3063950
10	Other: please specify in the footnote	tonnes																1523239	2677462	3634192	3512984
11	Stock of hazardous waste at the end of the year (=1+2-3+4-5)	tonnes																742829	901672	2885702	2718013

If the total amount of hazardous waste generated is available, this value can then be used to calculate the rate of waste generated by km² and per capita.

If no data have been reported to the Basel Convention or UNSD, the national authority responsible for industry or the environment may have some information. It may also be that a national waste inventory does not exist. In that case, one will need to be developed. This would assist Parties in better managing their waste and meet their obligations under the Basel Convention. *The Methodological guide for the development of inventories of hazardous wastes and other wastes under the Basel Convention* outlines a two stage-process to build a hazardous waste inventory (See figures 2 and 3). The generators and managers of waste are in the best position to provide the necessary data that can then be compiled to obtain a national overview. Refer to the *Methodological guide* for more detail.

If data have not been submitted previously, it may be possible to make estimates using per capita generation rates (see Annex). The generic global generation rate should be adjusted to better fit the specificities of the country. The World Bank “[What a Waste](#) Global Database” includes country-specific data on hazardous waste (see Annex). Select a comparable country to estimate a more accurate rate.

For each year, enter data on hazardous waste generated in tonnes, using Basel Convention waste streams or by economic activity, according to ISIC 4 under (see Figure 4). The total amount of waste generated will be calculated. If applicable, on the cell to the right, enter the reference to any explanatory note and enter the note at the bottom of the table.

Figure 2: Roadmap for first generation inventories (Source: Methodological guide for the development of inventories of hazardous wastes and other wastes under the Basel Convention, 2016)

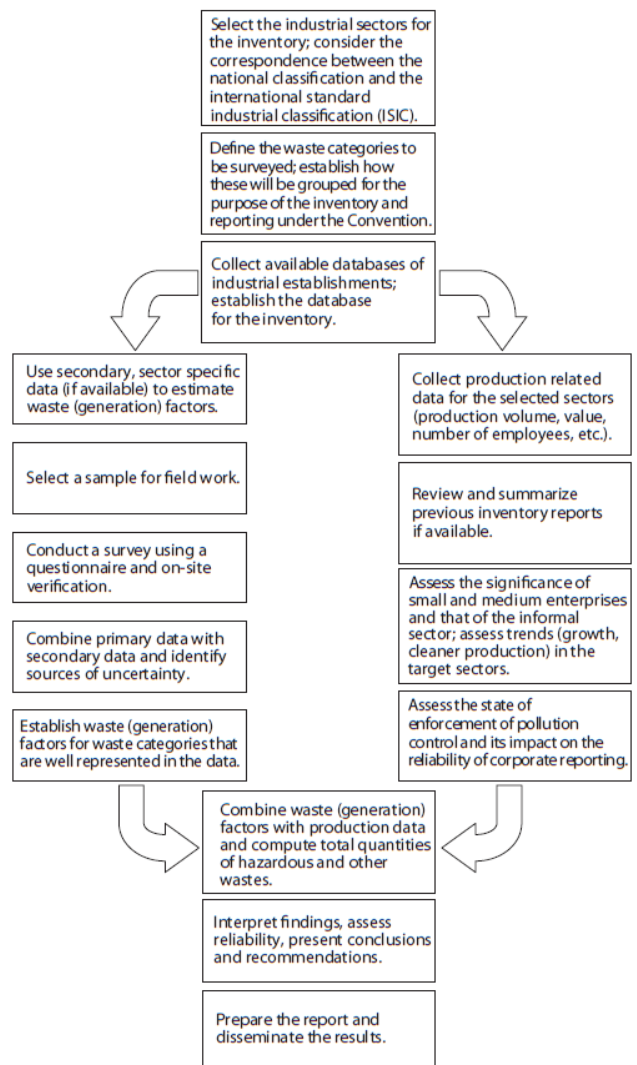


Figure 3: Roadmap for second generation inventories (Source: Methodological guide for the development of inventories of hazardous wastes and other wastes under the Basel Convention, 2016)

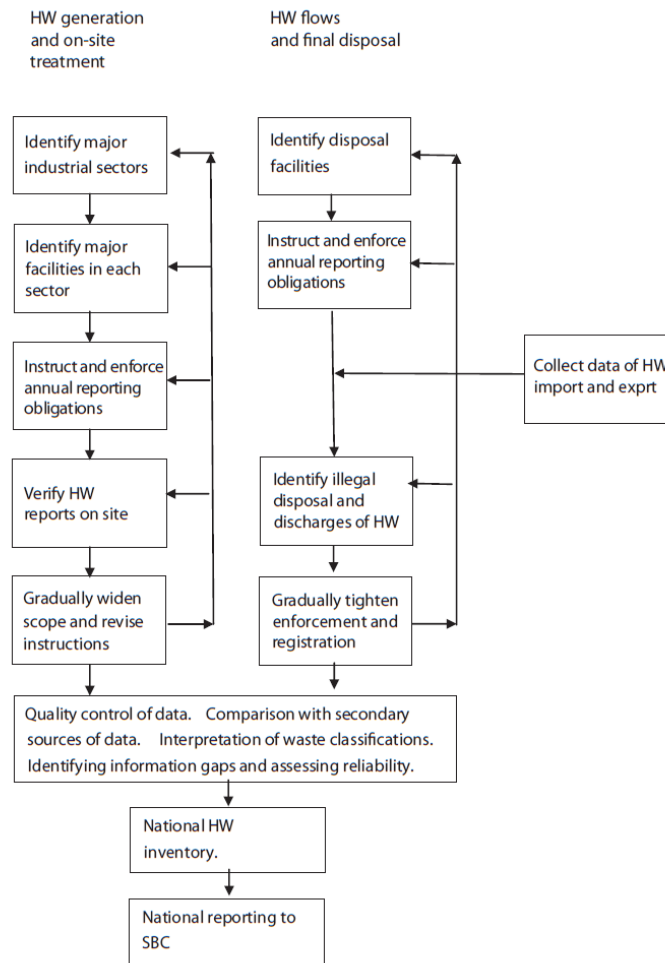


Figure 4: Worksheet to enter data on hazardous waste generated by type

	Unit	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Hazardous waste generated by Basel Convention waste streams and UNSDIUNEP Questionnaire on Environment Statistics ISIC codes															
4 Y1	Clinical wastes from medical care in hospitals, medical centres and clinics	tonnes													
5 Y2	Wastes from the production and preparation of pharmaceutical products	tonnes													
6 Y3	Waste pharmaceuticals, drugs and medicines	tonnes													
7 Y4	Wastes from the production, formulation and use of biocides and phytopharmaceuticals	tonnes													
8 Y5	Wastes from the manufacture, formulation and use of wood preserving chemicals	tonnes													
9 Y6	Wastes from the production, formulation and use of organic solvent	tonnes													
10 Y7	Wastes from heat treatment and tempering operations containing cyanides	tonnes													
11 Y8	Waste mineral oils unfit for their originally intended use	tonnes													
12 Y9	Waste oil/water, hydrocarbon/water mixtures, emulsions	tonnes													
13 Y10	Waste substances containing or contaminated with PCBs, PCTs, and/or PBBs	tonnes													
14 Y11	Waste tarry residues from refining, distillation and any pyrolytic treatment	tonnes													
15 Y12	Wastes from production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish	tonnes													
16 Y13	Wastes from production formulation and use of resins, latex, plasticizers, glues/adhesives	tonnes													
17 Y14	Waste chemical substances arising from research and development or teaching activities which	tonnes													
18 Y15	Wastes of an explosive nature not subject to other legislation	tonnes													
19 Y16	Wastes from production, formulation and use of photographic chemicals and processing materi	tonnes													
20 Y17	Wastes resulting from surface treatment of metals and plastics	tonnes													
21 Y18	Residues arising from industrial waste disposal operations	tonnes													
22 Y46	Wastes collected from households	tonnes													
23 NEC	Wastes not elsewhere classified	tonnes													
24	Total hazardous waste generated		0	0	0	0	0	0	0	0	0	0	0	0	0
Hazardous Waste by source by economic activity, according to ISIC 4															
27	Agriculture, forestry and fishing (International Standard Industrial Classification (ISIC) codes 01	tonnes													
28	2 Mining and quarrying (ISIC 05-09)	tonnes													
29	3 Manufacturing (ISIC 10-33)	tonnes													
30	4 Electricity, gas, steam and air conditioning supply (ISIC 35)	tonnes													
31	5 Construction (ISIC 41-43)	tonnes													
32	6 Other economic activities excluding ISIC 38, and	tonnes													
33	7 Households	tonnes													
34	Total hazardous waste generated		0	0	0	0	0	0	0	0	0	0	0	0	0

Hazardous waste generated by type, including e-waste

Indicator: Hazardous waste generated by type, including e-waste = A breakdown of hazardous waste generated by key type of waste, including e-waste

Use the Hazardous waste by type (above) and the E-waste worksheets to compile data for this indicator. Note that data on waste and e-waste are also used for SDG Indicator 12.5.1. Care should be taken to ensure consistency in the data used for these indicators.

Countries are encouraged to provide data on the most important national waste streams. Annex I to the Basel Convention identifies the following waste streams:

- | | | | |
|----|--|-----|--|
| Y1 | Clinical wastes from medical care in hospitals, medical centres and clinics | Y9 | Waste oils/water, hydrocarbons/water mixtures, emulsions |
| Y2 | Wastes from the production and preparation of pharmaceutical products | Y10 | Waste substances containing or contaminated with PCBs, PCTs, and/or PBBs |
| Y3 | Waste pharmaceuticals, drugs and medicines | Y11 | Waste tarry residues from refining, distillation and any pyrolytic treatment |
| Y4 | Wastes from the production, formulation and use of biocides and phytopharmaceuticals | Y12 | Wastes from production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish |
| Y5 | Wastes from the manufacture, formulation and use of wood preserving chemicals | Y13 | Wastes from production formulation and use of resins, latex, plasticizers, glues/adhesives |
| Y6 | Wastes from the production, formulation and use of organic solvent | Y14 | Waste chemical substances arising from research and development or teaching activities which are not identified and/or are new and whose effects on man and/or the environment are not known |
| Y7 | Wastes from heat treatment and tempering operations containing cyanides | Y15 | Wastes of an explosive nature not subject to other legislation |
| Y8 | Waste mineral oils unfit for their originally intended use | Y16 | Wastes from production, formulation and use of photographic chemicals and processing materials |
| | | Y17 | Wastes resulting from surface treatment of metals and plastics |
| | | Y18 | Residues arising from industrial waste disposal operations |
| | | Y46 | Wastes collected from households |

The compiler includes a row for wastes not elsewhere classified where the amount of hazardous wastes generated that do not fall into the categories specified above can be added. Note that there is a separate tab for data on e-waste.

Waste streams can also be grouped according to ISIC industrial sectors as found in the UNSD/UNEP questionnaire:

1. Agriculture, forestry and fishing (International Standard Industrial Classification (ISIC) codes 01-03)
2. Mining and quarrying (ISIC 05-09)
3. Manufacturing (ISIC 10-33)
4. Electricity, gas, steam and air conditioning supply (ISIC 35)
5. Construction (ISIC 41-43)
6. Other economic activities excluding ISIC 38, and
7. Households

Use the **E-waste tab** enter data on e-waste. E-waste includes waste in the following categories:

- Large equipment
- Screens, monitors, and equipment containing screens
- Temperature exchange equipment (cooling and freezing equipment)

and Small E-waste

- lamps
- small equipment
- small IT and telecommunication equipment

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

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. For instance, if e-waste collected is larger than e-waste generated, the cells will turn red to alert users to double check the data.

Data on imports and exports, combined with data on local production, allows the estimation of the sale of certain products and waste generated, after their use or lifespan. To do this:

- Identify the types of household hazardous waste, and
- Obtain sales data from retailers of those goods as well as data on their expected life-time.
- If these data are not available, data on imports and exports, combined with data on domestic production can be used to estimate the sale of certain products.

Specific methodologies for developing inventories on different types of hazardous waste are included in [The Methodological guide for the development of inventories of hazardous waste and other waste under the Basel Convention](#). Information on collection of these wastes may be available from entities that collect, recycle or treat waste.

The European Commission used this methodology to develop an E-WASTE calculation tool to calculate the quantity of E-waste generated in each EU Member State based on the quantity of electrical and electronic equipment (EEE) placed on the market. See http://ec.europa.eu/environment/waste/weee/data_en.htm. It comes with a [Manual](#) and can be used to generate better estimated E-waste quantities based on quantities put on the market, life span estimations based on the UNU key categories and estimations regarding collection rates.

The tool is based on an elaborate research study that was established for 54 homogeneous electric or electronic equipment product types and linking the over 600 products to these keys (the keys were developed by the United Nations University (UNU) and are called UNU keys) For more information on collecting data on e-waste refer to the United Nations University *E-waste statistics guidelines on classification, reporting and indicators* (Second edition) <https://collections.unu.edu/view/UNU:6477>.

Proportion of hazardous waste treated

Indicator: Proportion of hazardous waste treated = Quantity of hazardous waste treated during reporting year/quantity of hazardous waste generated x 100



$$\text{Proportion of hazardous waste treated (\%)} = \frac{\text{Quantity of hazardous waste treated during the reporting year} \times 100}{\text{Total quantity of hazardous waste generated during the reporting year}}$$

The total quantity of hazardous waste treated during the reporting year is calculated by adding quantities of hazardous waste treated, per each type of treatment (recycling, incineration with/without energy recovery, landfilling or other), including exports and excluding imports. Use the **HW generated tab** of the workbook to calculate the total quantity of waste generated and treated.

Note: The total hazardous waste generated as calculated in this worksheet should equal the amount of hazardous waste generated as found in the **Hazardous waste by type** tab plus any hazardous e-waste from the **E-waste** tab.

The proportion is calculated by dividing the quantity of hazardous waste treated by the total quantity of hazardous waste generated that year. The results of this calculation are found in the **Proportion HW treated tab** of the workbook (See Figure 5).

Figure 5: Proportion of hazardous waste treated tab

The screenshot shows an Excel spreadsheet with the following structure:

- Section 1: Waste intensity and proportion of hazardous waste treated**
 - Row 1: Proportion of hazardous waste treated (%) = (Quantity of hazardous waste treated during the reporting year / Total quantity of hazardous waste generated during the reporting year) x 100
 - Row 2: Total quantity of hazardous waste generated during the reporting year x 100
 - Row 3: Blank
 - Row 4: **Category** | **Unit** | **2000** | **2001** | **2002** | **2003** | **2004** | **2005** | **2006** | **2007** | **2008**
 - Row 5: Hazardous waste treated or disposed of during the year | tonnes | 1824 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0
 - Row 6: Total Hazardous Waste Generated | tonnes | 1,824 | - | - | - | - | - | - | - | -
 - Row 7: **Proportion of hazardous waste treated** | % | 100% | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0!
- Section 2: Hazardous waste intensity of production**
 - Row 10: Hazardous waste intensity of production = Quantity of hazardous waste generated during the reporting year / Domestic material consumption (DMC) in the reporting year
 - Row 11: Domestic material consumption (DMC) in the reporting year
 - Row 12: **Category** | **Unit** | **2000** | **2001** | **2002** | **2003** | **2004** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013**
 - Row 13: Domestic material consumption | tonnes | 124000 | - | - | - | - | - | - | - | - | - | - | - | -
 - Row 14: **Hazardous waste intensity** | - | 0.015 | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0!

Callout boxes in the image provide the following information:

- These cells are populated from the HW management tab (pointing to rows 5-7)
- These cells are populated from the HW generated tab (pointing to rows 5-7)
- The proportion will be calculated (pointing to row 7)
- Enter the DMC value here (pointing to row 14)
- The waste intensity will be calculated (pointing to row 14)

Environmentally sound treatment of own generated hazardous waste

Indicator: Environmentally sound treatment of own generated hazardous waste = Related to the country capacity for sound treatment of own hazardous waste within the country and the capacity for treatment of hazardous waste from other countries

The environmentally sound treatment of hazardous waste is calculated from the following sub-indicators:

- Country capacity for sound treatment of its own hazardous waste (within country capacity)

This sub-indicator takes into consideration the quantity of waste which is treated in an environmentally sound manner within a country out of the total hazardous waste which is generated within the country.

- Country capacity for treatment of hazardous waste from other countries

This sub-indicator aims at highlighting countries that have developed enough capacity for treatment of hazardous waste in an environmentally sound manner and are able to treat hazardous waste from other countries, in addition to their own waste.

- Hazardous waste exported in order to be treated in an environmentally sound manner

This sub-indicator highlights the amount of hazardous waste that needs to be treated in a country other than the generating one because of lack of in-country capacity to do so.

In the **HW management tab**, enter the national capacity for the sound management of hazardous waste. The proportion of waste generated that is treated in country will be calculated as the total waste treated divided by the capacity. The proportion of waste exported will also be calculated. The capacity to treat imported waste is calculated as the difference between the national capacity and the amount of waste treated. If negative this is reported as zero (See Figure 6).

Figure 6: Hazardous waste management worksheet

Category	Unit	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Hazardous waste generated during the year	tonnes	1,824.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Hazardous waste imported during the year	tonnes														
Hazardous waste exported during the year	tonnes	324.00													
Hazardous waste treated or disposed of during the year	tonnes	1824.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Amounts going to:	tonnes	500.00													
Recycling	tonnes														
Incineration	tonnes														
of which: with energy recovery	tonnes														
Landfilling	tonnes	1000.00													
Other, please specify in the footnote	tonnes														
Notes:															
• Please note that the unit in this table is "tonnes (metric tons)".															
• If the requested data are not available, please leave the cell blank. If the requested variable is not applicable (the phenomenon is not relevant) to the country or the value is less than 0.001, please enter 0.001.															
• Please provide in the Footnotes Section below information on the source and data collection methodology for the values provided, such as estimation methods (if any), and the types of the original data sources used (if any).															
Environmentally sound treatment of own generated hazardous waste															
Capacity to treat own generated waste	tonnes	1500													
Proportion of waste treated in country	%	82%													
Proportion of waste exported	%	18%													
Capacity to treat imported waste	tonnes	-													
Footnotes															
Footnote text															

Hazardous waste intensity of production

Indicator: Hazardous waste intensity of production

= Quantity of hazardous waste generated during the reporting year/Domestic material consumption (DMC) in the reporting year

The hazardous waste intensity of production is a measure of a country's clean production practices. The domestic material consumption (DMC) is obtained from economy-wide material flow accounts (EW-MFA). You can use the UNEP compiler to develop an MFA (Refer to SDG Indicator 12.2.2. Domestic Material Consumption). Enter the DMC value into the worksheet to calculate in intensity value (see Figure 5).



$$\text{Hazardous waste intensity of production} = \frac{\text{Quantity of hazardous waste generated in the reporting year}}{\text{DMC in the reporting year}}$$

Annex

Table 1: Global hazardous, medical, and industrial waste generation rates (Source: UNEP (2021). Global Chemicals and Waste Indicator Review Document. Nairobi)

	Hazardous Waste [kg/capita/day]	Medical Waste [kg/capita/day]	Industrial Waste [kg/capita/day]
Global generation rate	0.32	0.25	
High income			42.62
Upper middle income			5.72
Lower middle income			0.36
Low income			No data

Table 2: Hazardous waste generation rate in selected countries (Source: UNEP (2021). Global Chemicals and Waste Indicator Review Document. Nairobi)

Country	Hazardous Waste Generation Rate [kg/capita/day]	Country	Hazardous Waste Generation Rate [kg/capita/day]
Albania	0.01	Malaysia	0.26
Barbados	0.09	West Bank and Gaza	0.04
Chile	0.04	Thailand	0.14
Dominica	0.02	Tunisia	0.04
Hungary	0.17	Turkey	0.12
Indonesia	0.24	Vietnam	0.09
India	0.02	South Africa	0.07
Kuwait	0.19	Zambia	0.02
Madagascar	0.01		

Table 3: Selected waste streams and waste types (Source: UNEP (2021). Global Chemicals and Waste Indicator Review Document. Nairobi)

No.	Hazardous Waste Stream/Type	Waste Generation Rate	Comments
1	E-waste generated*	20 Kg/capita/year, out of which: 3.1 kg – temperature exchange equipment 2.3 kg – screens and laptops 0.2 kg – lamps 6.5 kg – large household equipment 6.1 kg – small household equipment 1.6 kg – small IT equipment	Data valid for EU countries, year 2016.
1	E-WASTE generated from households*	15 Kg/capita/year, out of which: 7.5 kg – large household appliances 1.5 kg – small household appliances 3 kg – ICT devices 3 kg – Other consumer electronic waste	Data valid for EU countries, year 2009
1	E-waste generation rate	0.05 kg/capita/day in high income countries 0.02 kg/capita/day in upper middle-income countries 0.01 kg/capita/day in lower middle-income countries <0.01 in low income countries	What a waste 2.0, generation rates per income level
2	Waste engine oils	Data in litres/year/vehicle 4.25 for automobile 31.5 for minibus 425 for bus 92.5 for truck or pickup truck 31 for tractor	Inventory from Turkey, year 2006
3	Hazardous household waste	3 – 5 kg/capita/year	Usually estimated based on the quantities of waste collected at designated collection points.
4	Healthcare waste	10-25% of generated healthcare waste is hazardous High income countries ⁴⁰ Total waste generated 0.9 – 10.7 kg/occupied bed/day Out of which infectious waste 0.038 – 2.79 kg/occupied bed/day	Estimation of World Health Organization Depends on type of healthcare facility WHO reference includes additional estimates for low-income countries

***Note:** Although e-waste can be either hazardous or non-hazardous, depending on the content of hazardous substances within the specific EEE, based on the precautionary principle we decided to include e-waste in the 12.4.2 indicator on hazardous waste. In the case of reliable data on separately collected/treated/disposed of e-waste without hazardous substances content, these quantities can be excepted from the calculation of the indicator.

Table 4: Waste categories Commission Regulation (EU) No 849/2010 (Source: Commission Regulation (EU) No 849/2010 (2010). Official Journal of the European Union. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010R0849>)

Item No	Code	Description	Hazardous/Non-hazardous waste
1	01.1	Spent solvents	Hazardous
2	01.2	Acid, alkaline or saline wastes	Non-hazardous
3	01.2	Acid, alkaline or saline wastes	Hazardous
4	01.3	Used oils	Hazardous
5	01.4, 02, 03.1	Chemical wastes	Non-hazardous
6	01.4, 02, 03.1	Chemical wastes	Hazardous
7	03.2	Industrial effluent sludges	Non-hazardous
8	03.2	Industrial effluent sludges	Hazardous
9	03.3	Sludges and liquid wastes from waste treatment	Non-hazardous
10	03.3	Sludges and liquid wastes from waste treatment	Hazardous
11	05	Health care and biological wastes	Non-hazardous
12	05	Health care and biological wastes	Hazardous
13	06.1	Metallic wastes, ferrous	Non-hazardous
14	06.2	Metallic wastes, non-ferrous	Non-hazardous
15	06.3	Metallic wastes, mixed ferrous and non-ferrous	Non-hazardous
16	07.1	Glass wastes	Non-hazardous
17	07.1	Glass wastes	Hazardous
18	07.2	Paper and cardboard wastes	Non-hazardous
19	07.3	Rubber wastes	Non-hazardous
20	07.4	Plastic wastes	Non-hazardous
21	07.5	Wood wastes	Non-hazardous
22	07.5	Wood wastes	Hazardous
23	07.6	Textile wastes	Non-hazardous
24	07.7	Waste containing PCB	Hazardous
25	08 (excl. 08.1, 08.41)	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	Non-hazardous
26	08 (excl. 08.1, 08.41)	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	Hazardous
27	08.1	Discarded vehicles	Non-hazardous
28	08.1	Discarded vehicles	Hazardous
29	08.41	Batteries and accumulators wastes	Non-hazardous
30	08.41	Batteries and accumulators wastes	Hazardous
31	09.1	Animal and mixed food waste	Non-hazardous
32	09.2	Vegetal wastes	Non-hazardous
33	09.3	Animal faeces, urine and manure	Non-hazardous
34	10.1	Household and similar wastes	Non-hazardous
35	10.2	Mixed and undifferentiated materials	Non-hazardous
36	10.2	Mixed and undifferentiated materials	Hazardous

Item No	Code	Description	Hazardous/Non-hazardous waste
37	10.3	Sorting residues	Non-hazardous
38	10.3	Sorting residues	Hazardous
39	11	Common sludges	Non-hazardous
40	12.1	Mineral waste from construction and demolition	Non-hazardous
41	12.1	Mineral waste from construction and demolition	Hazardous
42	12.2, 12.3, 12.5	Other mineral wastes	Non-hazardous
43	12.2, 12.3, 12.5	Other mineral wastes	Hazardous
44	12.4	Combustion wastes	Non-hazardous
45	12.4	Combustion wastes	Hazardous
46	12.6	Soils	Non-hazardous
47	12.6	Soils	Hazardous
48	12.7	Dredging spoils	Non-hazardous
49	12.7	Dredging spoils	Hazardous
50	12.8, 13	Mineral wastes from waste treatment and stabilised wastes	Non-hazardous
51	12.8, 13	Mineral wastes from waste treatment and stabilised wastes	Hazardous

Table 5: Indication of average weight of electric and electronic equipment for EU-28 (kg/piece) (Forti V., Baldé C.P., Kuehr R. (2018) E-waste statistics guidelines on classification, reporting and indicators (Second edition). United Nations University, Bonn. <https://collections.unu.edu/view/UNU:6477>)

UNU-KEY	Description	1995	2000	2005	2010	2015	2016
0001	Central Heating (household installed)	30.85	30.85	30.85	30.85	30.85	30.85
0002	Photovoltaic Panels (incl. inverters)	17.00	17.00	17.00	17.00	17.00	17.00
0101	Professional Heating & Ventilation (excl. cooling equipment)	124.61	124.61	124.61	124.61	124.61	124.61
0102	Dish washers	49.35	47.62	45.46	43.30	43.30	43.30
0103	Kitchen equipment (e.g. large furnaces, ovens, cooking equipment)	41.86	43.52	45.59	47.66	47.66	47.66
0104	Washing Machines (incl. combined dryers)	69.36	70.27	71.40	72.54	72.54	72.54
0105	Dryers (wash dryers, centrifuges)	38.27	40.47	43.23	45.98	45.98	45.98
0106	Household Heating & Ventilation (e.g. hoods, ventilators, space heaters)	12.14	12.14	12.14	12.14	12.14	12.14
0108	Fridges (incl. combi-fridges)	33.59	35.65	38.22	40.79	40.79	40.79
0109	Freezers	43.59	43.73	43.91	44.09	44.09	44.09
0111	Air Conditioners (household installed and portable)	26.70	26.70	26.70	26.70	26.70	26.70
0112	Other Cooling equipment (e.g. dehumidifiers, heat pump dryers)	41.70	41.70	41.70	41.70	41.70	41.70
0113	Professional Cooling equipment (e.g. large air conditioners, cooling displays)	90.00	95.74	102.92	110.10	110.10	110.10
0114	Microwaves (incl. combined, excl. grills)	16.34	18.21	20.56	22.90	22.90	22.90

UNU-KEY	Description	1995	2000	2005	2010	2015	2016
0201	Other small household equipment (e.g. small ventilators, irons, clocks, adapters)	1.30	1.21	1.10	0.99	0.99	0.99
0202	Equipment for food preparation (e.g. toaster, grills, food processing, frying pans)	3.27	3.27	3.27	3.27	3.27	3.27
0203	Small household equipment for hot water preparation (e.g. coffee, tea, water cookers)	1.89	1.89	1.89	1.89	1.89	1.89
0204	Vacuum Cleaners (excl. professional)	4.88	5.17	5.52	5.88	5.88	5.88
0205	Personal Care equipment (e.g. tooth brushes, hair dryers, razors)	0.55	0.55	0.55	0.55	0.55	0.55
0301	Small IT equipment (e.g. routers, mice, keyboards, external drives & accessories)	0.65	0.58	0.49	0.40	0.40	0.40
0302	Desktop PCs (excl. monitors, accessories)	10.31	9.87	9.32	8.77	8.77	8.77
0303	Laptops (incl. tablets)	4.50	4.14	3.68	2.13	1.26	1.26
0304	Printers (e.g. scanners, multi functionals, faxes)	7.00	7.95	9.13	10.32	10.32	10.32
0305	Telecommunication equipment (e.g. (cordless) phones, answering machines)	0.82	0.71	0.58	0.45	0.45	0.45
0306	Mobile Phones (incl. smartphones, pagers)	0.12	0.11	0.10	0.09	0.09	0.09
0307	Professional IT equipment (e.g. servers, routers, data storage, copiers)	40.00	40.00	40.00	40.00	40.00	40.00
0308	Cathode Ray Tube Monitors	14.60	16.71	19.36	22.00	22.00	22.00
0309	Flat Display Panel Monitors (LCD, LED)	5.00	5.14	5.32	5.50	5.50	5.50
0401	Small Consumer Electronics (e.g. headphones, remote controls)	0.39	0.39	0.39	0.39	0.39	0.39
0402	Portable Audio & Video (e.g. MP3, e-readers, car navigation)	0.40	0.35	0.29	0.23	0.23	0.23
0403	Music Instruments, Radio, Hi-Fi (incl. audio sets)	4.15	4.03	3.88	3.73	3.73	3.73
0404	Video (e.g. Video recorders, DVD, Blue Ray, set-top boxes) and projectors	3.51	3.51	3.51	3.51	3.51	3.51
0405	Speakers	3.00	2.75	2.45	2.14	2.14	2.14
0406	Cameras (e.g. camcorders, photo & digital still cameras)	1.00	0.80	0.54	0.29	0.29	0.29
0407	Cathode Ray Tube TVs	25.00	27.34	30.27	33.20	33.20	33.20
0408	Flat Display Panel TVs (LCD, LED, Plasma)	7.00	9.20	11.95	14.70	10.20	10.20
0501	Small lighting equipment (excl. LED & incandescent)	0.09	0.09	0.09	0.09	0.09	0.09
0502	Compact Fluorescent Lamps (incl. retrofit and non-retrofit)	0.08	0.08	0.08	0.08	0.08	0.08
0503	Straight Tube Fluorescent Lamps	0.11	0.11	0.11	0.11	0.11	0.11
0504	Special Lamps (e.g. professional mercury, high & low pressure sodium)	0.08	0.08	0.08	0.08	0.08	0.08
0505	Household Luminaires (incl. household incandescent fittings & household LED luminaires)	0.08	0.08	0.08	0.08	0.08	0.08
0506	Household Luminaires (incl. household incandescent fittings & household LED luminaires)	0.45	0.45	0.45	0.45	0.45	0.45

UNU-KEY	Description	1995	2000	2005	2010	2015	2016
0507	Professional Luminaires (offices, public space, industry)	2.67	2.67	2.67	2.67	2.67	2.67
0601	Household Tools (e.g. drills, saws, high pressure cleaners, lawn mowers)	2.60	2.57	2.53	2.49	2.49	2.49
0602	Professional Tools (e.g. for welding, soldering, milling)	23.17	23.17	23.17	23.17	23.17	23.17
0701	Toys (e.g. car racing sets, electric trains, music toys, biking computers, drones)	0.45	0.45	0.45	0.45	0.45	0.45
0702	Game Consoles	0.48	0.48	0.48	0.48	0.48	0.48
0703	Leisure equipment (e.g. sports equipment, electric bikes, juke boxes)	7.37	7.37	7.37	7.37	7.37	7.37
0801	Household Medical equipment (e.g. thermometers, blood pressure meters)	0.18	0.18	0.18	0.18	0.18	0.18
0802	Professional Medical equipment (e.g. hospital, dentist, diagnostics)	67.04	67.04	67.04	67.04	67.04	67.04
0901	Household Monitoring & Control equipment (alarm, heat, smoke, excl. screens)	0.24	0.24	0.24	0.24	0.24	0.24
0902	Professional Monitoring & Control equipment (e.g. laboratory, control panels)	5.51	5.51	5.51	5.51	5.51	5.51
1001	Non- cooled Dispensers (e.g. for vending, hot drinks, tickets, money)	44.00	44.00	44.00	44.00	44.00	44.00
1002	Cooled Dispensers (e.g. for vending, cold drinks)	92.22	92.22	92.22	92.22	92.22	92.22

