HUB Waste and Circular Economy

Glossary and Technical sheets metadata

UN environment programme IDB

HUB Waste and Circular Economy

Content

Glossary

A	
Anaerobic digestion	Proportion of municipal solid waste (MSW) sent to a degradation process of organic matter called methanation under conditions of absence of free oxygen, with production of biogas and a solid-liquid residue called digestate.
C	
Circular economy[1]	A systemic solutions framework that addresses global challenges such as climate change, biodiversity loss, waste, and pollution. It is based on three principles, all driven by design: eliminate waste and pollution, circulate products and materials (at their highest value), and regenerate nature. It is based on a transition towards renewable energy and materials. The transition towards a circular economy implies decoupling economic activity from the consumption of finite resources. This represents a systemic change that builds long-term resilience, generates business and economic opportunities, and provides environmental and social benefits.
Collection coverage [2]	Amount of municipal solid waste (MSW) collected by or on behalf of municipalities, as well as MSW collected by the private sector. Includes mixed waste and fractions collected separately for harvesting operations (through door-to-door collection and/or through voluntary deliveries).
Collection of municipal solid	It is the amount of municipal solid waste generated that is moved from the point of generation, such as specific addresses or designated collection points, to facilities where waste is

[1] Ellen MacArthur Foundation. 2021. Circular Economy Glossary, available at: https://emf.thirdlight.com/file/24/w2e0YaBw2YyAsdxw2JDjwygKuRN/%5BES%5D%20Circular%20Economy%20Glossary.pdf

[2] National Administrative Department of Statistics. 2022. Environmental and economic account of material flows - solid waste (CAEFM-RS) 2019 - 2020 provisional, available at: https://www.dane.gov.co/files/investigaciones/pib/ambientales/cuentas_environmentales/cuentas-residuos/Bt-Account- waste-2020p.pdf

waste[3]	recovered or disposed, regardless of the collection modality (for example, by municipal governments, non-state actors or the informal sector). The remaining part of the generated urban solid waste is considered "not collected".
Composting	Proportion of organic municipal solid waste sent to a biological degradation process in the presence of oxygen and under controlled conditions.
Controlled facilities	Controlled facilities are those where the recovery of municipal solid waste is carried out through recycling, composting, anaerobic digestion, and co-processing, or else, in sanitary landfills.
Coprocessing	Proportion of municipal solid waste used in the productive system with the purpose of recovering energy and resources and consequently reducing the use of conventional fuels and raw materials through their substitution.
Cost of integrated solid waste management	It is the accrued expense reported by those responsible for the provision of municipal solid waste management services, which "may" or "must include" costs such as collection, transportation, disposal, recovery, treatment, among others.
D	
Data editing	Process used to document the traceability, as well as to correct errors and inconsistencies, where appropriate, of the data collected or received on the municipal solid waste management from three specific processes: integrity verification, logical verification, and consistency check, always avoiding double counting.

[3] General Law for the Prevention and Comprehensive Management of Solid Waste. 2003. Last reform published in the Official Gazette of the Federation 01-18-2021. Available at: https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf

Data harmonization[4]	Iterative process of capturing, defining, analyzing, and reconciling government information requirements, and standardizing data such as mapping this simplified data to international standards.
F	
Flows to the environment	It is the sum of the proportion of municipal solid waste not collected, and the fraction that is collected whose destination is an inadequate final disposal.
G	
Generation[5]	Action of producing waste through the development of production or consumption processes.
Greenhouse Gas Emissions (GHG) of the sector	It is the estimate of carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O) emissions from the following categories: removal of solid waste, biological processing of solid waste and incineration and waste open burning.
H	
Hub of municipal solid waste and circular economy for Latin America and the Caribbean[6]	Regional information system with indicators that provide a comprehensive understanding of the flow of municipal solid waste.
I	

[4] United Nations Economic Commission for Europe. Data Harmonization, available at: https://tfig.unece.org/SP/contents/data-harmonization.htm#:~:text=La%20armonizaci%C3%B3n%20de%20datos%20%22involucra,las% 20structures%20of%20the

[5] General Law for the Prevention and Comprehensive Management of Solid Waste. 2003. Last reform published in the Official Gazette of the Federation 01-18-2021. Available at: https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf

[6] Inter-American Development Bank. 2023. Blog "Solid waste hub and circular economy for Latin America and the Caribbean: Ally for sectoral transformation", available at: https://blogs.iadb.org/agua/es/hub-de-residuos-solidos- and- circular-economy-for-latin-america-and-the-caribbean-ally-for-sectoral-transformation/

Imputation	Process used to complete or estimate values in case of non-response, as well as gaps between data sets and output concepts, to estimate unreported values on municipal solid waste management, using the statistical regression technique.
Inadequate Final Disposal	Proportion of collected municipal solid waste whose form of final disposal takes place in facilities that do not meet the specifications of a sanitary landfill.
Indicator	Quantitative measurement that allows evaluating or measuring the different implicit processes of municipal solid waste management.
Income from rates or fees	It is the invoiced and collected value reported by those responsible for the provision of municipal solid waste management services.
Integrated solid waste management[7]	Articulated and interrelated set of regulatory, operational, financial, planning, administrative, social, educational, monitoring, supervision and evaluation actions for waste management, from its generation to its final disposal, in order to achieve environmental benefits, the economic optimization of its management and its social acceptance.
J	
Jobs/1,000 inhabitants	It is the relationship between the number of employees in municipal solid waste management activities and the number of people served as part of the provision of municipal solid waste management services.
L	

[7] General Law for the Prevention and Comprehensive Management of Solid Waste. 2003. Last reform published in the Official Gazette of the Federation 01-18-2021. Available at: https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf

Landfill[8]	It is a technique for solid waste final disposal on the ground, which does not cause discomfort or danger to public health and safety; nor does it harm the environment during its operation or after its completion. This technique uses engineering principles to confine the trash to as small as possible area, covering it with layers of soil daily and compacting it to reduce its volume. In addition, it anticipates the problems that liquids and gases produced in the landfill can cause due to the decomposition of organic matter.
M	
Municipal solid waste	Waste generated in the houses, which result from the elimination of the materials used in their domestic activities, the products consumed and their containers, packaging, or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of roads and public places. Excluded, among others, hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than MSW, such as construction waste, agricultural sector waste, process sludge from wastewater treatment plants.
Municipal solid waste supply	Generation of materials or municipal solid waste, from the productive processes of economic activities and the final consumption of households and includes those generated in production processes similar to municipal solid waste, as well as those generated in the own consumption processes of municipal solid waste.
O	

[8] ECLAC. 2016. General guide for the management of household solid waste, available at: https://www.cepal.org/es/publicaciones/40407-general-guide-for-domestic-solid-waste-management

Open data[9]	Data that can be used, reused, and redistributed freely by anyone, and that is subject, at best, to the requirement of attribution and sharing in the same way in which it appears.
P	
Per capita generation of municipal solid waste	Amount of municipal solid waste generated by each inhabitant in a given period, usually expressed in kg/person-year.
R	
Recovery[10]	Process through which, through comprehensive solid waste management, recovered materials are reincorporated into the economic and productive cycle efficiently, through reuse, recycling, incineration for power generation purposes, composting or any other modality that entails health, environmental or economic benefits.
Recovery rate [11]	It is the integral process through which recovered solid waste is used and transformed, restoring characteristics for their reincorporation as raw material, used in the manufacture of new products.
Recycling[12]	It is the integral process through which recovered solid waste is used and transformed, restoring characteristics for their reincorporation as raw material, used in the manufacture of new products.

[9] Open Data Handbook. Open data, available at: https://opendatahandbook.org/guide/es/what-is-open-data/
[10] National Administrative Department of Statistics. 2022. Environmental and economic account of material flows - solid waste (CAEFM-RS) 2019 - 2020 provisional, available at: https://www.dane.gov.co/files/investigaciones/pib/ambientales/cuentas_environmentales/cuentas-residuos/Bt-Account- waste-2020p.pdf
[11] National Administrative Department of Statistics. 2022. Environmental and economic account of material flows - solid waste (CAEFM-RS) 2019 - 2020 provisional, available at: https://www.dane.gov.co/files/investigaciones/pib/ambientales/cuentas_environmentales/cuentas-residuos/Bt-Account- waste-2020p.pdff
[12] National Administrative Department of Statistics. 2022. Environmental and economic account of material flows - solid waste (CAEFM-RS) 2019 - 2020 provisional, available at: https://www.dane.gov.co/files/investigaciones/pib/ambientales/cuentas_environmentales/cuentas-residuos/Bt-Account- waste-2020p.pdf

Recycling rate and new use	It is the ratio, expressed as a percentage, between municipal solid waste recycled, composted and/or sent for anaerobic digestion and the total supply of municipal solid waste.
T	
Thermovalorization	Proportion of municipal solid waste processed to recover energy in the form of heat, electricity, or gas through the use of incineration technologies.
Total MSW generation	It is the amount of municipal solid waste generated by the total population in a year.
U	
Uncontrolled installations	Uncontrolled facilities correspond to the flows into the environment of municipal solid waste and include inadequate final disposal and uncollected waste.
Unidentified destination	Proportion of municipal solid waste generated that has been collected without having information about its destination.
Use of municipal solid waste	It is equal to the supply of municipal solid waste and refers to the different destinations that the waste may have, either through its use (recycling and new use, which includes recycling, composting or anaerobic digestion; as well as energy cogeneration and other uses such as co-processing or thermovalorization), its accumulation in a sanitary landfill (disposed of in a sanitary landfill), having an unidentified destination (its collection is recognized, but the available information prevents knowing the final destination), or, its shipment as flow to the environment (inadequate final disposal and uncollected waste).

Metadata

I. Per Capita Generation of Municipal Solid Waste.

1. Indicator:
Per Capita Generation of Municipal Solid Waste.
Abbreviated name: Generation per capita
2. Definition:
It is the average production of kilograms per inhabitant per year of municipal solid waste. [1]
3. Calculation method:

$$GENE\ (kg/Person\text{-}year) = \frac{TRG\ (kg/year)}{TP\ (population)}$$

Where:

GENE: Per Capita Generation of Municipal Solid Waste.
TRG: Total Municipal Solid Waste Generated.
TP: Total population. [1]

4. Waste included:
Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging, or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of the roads and public places. [2]
5. Waste excluded:
Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial, and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.
6. Code:
GENE
7. Periodicity:
Annual [3]

8 Variables:
Per Capita Generation of Municipal Solid Waste: it is obtained from estimates and/or data from the National Statistics Offices or other sectorial instances. Total population: this variable is obtained from the Population Censuses at the national level, and/or from statistical estimates by the National Statistics Offices or other sectoral instances. [4]
9. Units:
kg/person-year
10. Reference period:
It will indicate the year to which the information that will be presented on the per capita generation of Municipal Solid Waste indicator corresponds.
11. Reporting level:
National
Regional
Local
12. Source of information:
It is desirable that the information be based on the data provided by the local authorities responsible for the management and handling of solid waste. In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.
13. Recommendations for the generation of statistics:
1. If the country has information on Municipal Solid Waste Per Capita Generation for more than one year prior to the collection of information for the tool, indicate the period or years available and provide the corresponding information.
14. Suitability (Relevance):
It is an indicator that is often used as a design parameter for municipal solid waste management systems by local authorities. It constitutes a transversal indicator by allowing the calculation of other indicators from the determination of the total generation of municipal solid waste. [5]
15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.
Indirectly, it makes it possible to monitor compliance with the SDG 11.6.1 indicator on the Proportion of urban solid waste collected periodically and with an adequate final disposal with respect to the total urban solid waste generated, broken down by city. Although the definition of a monitoring scheme for the transition towards the circular economy is pending for the Latin American and Caribbean region, this indicator helps to identify variations in the amounts of waste generated, as is done with the Monitoring Scheme for Eurostat's Circular Economy. At the time, it also helps to identify the flow of materials and waste within a scheme of monitoring of the transition towards the circular economy to be determined for the Latin American and Caribbean region. [6]

16. References:	
[1]Methodological Guide. Initiative Cities Emerging and Sustainable. Annex Indicators, 2016, Inter-American Bank of Development (IDB). p. 86	https://publications.iadb.org/publications/spanish/document/Gu%C3%ADa-Metodol%C3%B3gica-Program-of-Emerging-and-Sustainable-Cities-Third-edici%C3%B3n-Annex-of-indicators.pdf
general guide for household solid waste management, 2016, Economic Commission for Latin America and the Caribbean (ECLAC). p. 52	https://www.cepal.org/es/publicaciones/40407-guia-general-la-gestion-residuos-solid-domiciliary
Indicators for the Management of the Public Cleaning Service, 2002, Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS), p. 52, 53	http://sial.segat.gob.pe/documentos/indicadores-gerenciamiento-servicio-limpieza-public
metadata of Indicator 11.6.1 Sustainable Development Goals (SDGs), p. 2, 13	https://unstats.un.org/sdgs/metadata/files/Metadata-11-06-01.pdf
wise cities in waste matter, 2021, UN Habitat. Waste Management, pg. 10	https://unhabitat.org/sites/default/files/2021/02/Waste%20wise%20cities%20tool%20-%20EN%203.pdf

Argentina	https://sinia.ambiente.gob.ar/images/uploaded/datasets/228/Metadata_Generaci%C 3%B3n_RSU_province_inhabitant.pdf
Peru	https://sinia.minam.gob.pe/informacion/estadisticas
[2] General Law for the Prevention and Comprehensive Management of Waste, Last reform published DOF 01-18-2021.	http://www.diputados.gob.mx/LeyesBiblio/ref/lgpgir.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf
[3] Municipal waste generation per capita from Eurostat.	https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=en
[4] Sheet Methodology of the solid waste indicator generated per capita of the Environmental Satellite Account, of DANE, Colombia.	https://www.dane.gov.co/files/investigaciones/pib/ambientales/cuentas_ambientales/indicadores/environmental-and-economic-account-of-flow-of-materials/waste-solids-percapita/hm-solid-waste-percapita.pdf
[5] Explanatory texts of the per generation indicator Eurostat capita.	https://ec.europa.eu/eurostat/cache/metadata/en/cei_pc031_esmsip2.htm#relevance1644323035836
[6] Flowchart of materials for the European Union, 2020.	https://ec.europa.eu/eurostat/cache/sankey/circular_economy/sankey.html?geos=EU27&year=2020&unit=G_T&materials=TOTAL&highlight=&nodeDisagg=0101101100&flowDisagg=true&translateX=250.84763949048056&translateY=97.1293253782014 9&scale=0.5223303379776745&language=EN&xyz=89&material=F6_2

II. Municipal Solid Waste Collection.

1. Indicator:

Municipal Solid Waste Collection.

Abbreviated name:
Collection coverage – tonnes
Collection coverage - households

2. Definition:

Proportion of municipal solid waste collected. [1]
Proportion of households with access to collection service.

3. Calculation method:

$$\text{RECO TON (\%)} = \frac{\text{TRR (Tonne/year)}}{\text{TRG (Tonne/year)}} \times 100$$

Where:
RECO TON: Collection of Municipal Solid Waste.
TRR: Total Municipal Solid Waste Collected.
TRG: Total Municipal Solid Waste Generated.

$$\text{RECO VIV (\%)} = \frac{\text{THR (homes with access to the collection service)}}{\text{THE (existing homes)}} \times 100$$

Where:
RECO VIV: Collection of Municipal Solid Waste.
THR: Total Households with Access to the Collection Service
THE: Total Existing Homes [2]

4. Waste included:

Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging, or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of roads and public places. [3]

5. Waste excluded:

Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial, and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.

6. Code:
RECO TON LIVE RECO
7. Periodicity:
Annual [4]
8. Variables:
Total Municipal Solid Waste Collected: obtained from information on the amount of waste collected by local authorities directly or through third parties. Total Municipal Solid Waste Generated: it is obtained from estimates and/or data from the National Statistics Offices or other sectorial instances. Total Homes with Access to the Collection Service: obtained from the national Censuses of housing and/or its equivalent, usually generated by the National Statistics Offices. Total Existing Houses: obtained from the national housing Censuses and/or its equivalent, usually generated by the National Statistics Offices. [5]
9. Units:
RECO TON: % based on tonnes generated. RECO VIV: % based on households surveyed
10. Reference period:
It will indicate the year to which the information that will be presented on the indicator of municipal solid waste collection.
11. Reporting level:
National
Regional
Local
12. Source of information:
It is desirable that the information be based on the data provided by the local authorities responsible for the management and handling of municipal solid waste. In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.
13. Recommendations for the generation of statistics:

1. In the event that the country has information on the Collection of Municipal Solid Waste for more than one year prior to the collection of information for the tool, indicate the period or years available and provide the corresponding information.
2. Indicate whether the country compiles information on the collection of municipal solid waste in different modalities, such as: selective collection, collection in urban areas, and collection in rural areas. If so, indicate the period or years in which said information is available and provide the corresponding information.
3. Consider on the part of the ONE or OIS that in the gathering of information consult the users of the service about the reliability of the collection service based on certain criteria, such as frequency, regularity in the schedule, routes, among others.

14. Suitability (Relevance)

It is an indicator that is usually linked to a responsibility of the country, through subnational and local governments, as part of their attributions related to the management and/or handling of municipal solid waste.

In turn, it allows to identify the level of control over the solid waste that is generated, and it can be through two ways: the first based on the amount of municipal solid waste that is collected, and the second based on the estimated amount of population that has access to the collection service provided by the local authority, directly or through third parties. [6]

15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.

It allows monitoring compliance with the SDG 11.6.1 indicator on the Proportion of urban solid waste collected periodically and with an adequate final disposal with respect to the total urban solid waste generated, broken down by city.

The foregoing, specifically with the generation and reporting of information on the level of collection service: complete, improved, basic, limited or no service.

In turn, it helps to identify the flow of materials and waste within a monitoring scheme of the transition towards the circular economy to be determined for the Latin American region and the Caribbean. [7]

ID 16. References:

[1] Methodological Guide. Emerging and Sustainable Cities Initiatives. Annex Indicators, 2016, Inter-American Development Bank (IDB). p. 83 https://publications.iadb.org/publications/spanish/document/Gu%C3%ADa-Metodol%C3%B3gica-Program-of-Emerging-and-Sustainable-Cities-Third-edici%C3%B3n-Annex-of-indicators.pdf

Guide for the management of household solid waste, 2016, Economic Commission for America Latin America and the Caribbean (ECLAC). p. 54 https://www.cepal.org/es/publicaciones/40407-guia-general-la-gestion-residuos-solidos-domiciliary

Indicators for the Management of the Public Cleaning Service, 2002, Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS), p. 15, 16	http://sial.segat.gob.pe/documentos/indicadores-gerenciamiento-servicio-limpieza-publica
metadata of Indicator 11.6.1 Sustainable Development Goals (SDGs), p. 2, 11	https://unstats.un.org/sdgs/metadata/files/Metadata-11-06-01.pdf
cities wise on waste, 2021, UN Habitat. Waste Management, pg. 2, 11	https://unhabitat.org/sites/default/files/2021/02/Waste%20wise%20cities%20tool%20-%20EN%203.pdf
Brazil Chile Colombia Costa Rica Ecuador	https://biblioteca.ibge.gov.br/visualizacao/instrumentos_de_coleta/doc2671.pdf https://sinia.mma.gob.cl/index.php/datos-del-informe-del-estado-del-medio-ambiente/ https://www.dane.gov.co/files/investigaciones/pib/ambientales/Ilac/18-Recoleccion-de-waste-2017/Households-with-access-to-waste-collection.pdf http://sistemas.inec.cr:8080/bininecmm/RpWebEngine.exe/Portal?BASE=2011&lang=esp http://sinias.ambiente.gob.ec:8099/proyecto-sinias-web/informacionIndicadores.jsf?menuid=14&menu=01&faces-redirect=true

The Savior	https://cidoc.marn.gob.sv/documentos/segundo-censo-nacional-de-desechos-solidos-municipal-consolidated-report/
Guatemala	https://www.ine.gob.gt/ine/estadisticas/bases-de-datos/estadisticas-ambientales/
Jamaica	https://statinja.gov.jm/Census/PopCensus/2011%20Census%20of%20Population%20and%20Housing%20k.pdf
Mexico	https://www.inegi.org.mx/contenidos/productos/prod_serv/contenidos/espanol/bvinegi/productos/nueva_estruc/702825193980.pdf
Panama	https://www.inec.gob.pa/panbin/RpWebEngine.exe/Portal?BASE=LP2010
Paraguayan	https://apps.mades.gov.py/siam/documentos/IDENTIFICACION-PROPUESTA-INDICADORES-ENVIRONMENTAL-23_08_2018.pdf
Peru	https://www.inei.gob.pe/estadisticas/indice-tematico/c-residuos-10291/#url
Guide Methodology. Emerging and Sustainable Cities Initiatives. Annex Indicators, 2016, Inter-American Development Bank (IDB). p. 83	https://publications.iadb.org/publications/spanish/document/Gu%C3%ADa-Metodol%C3%B3gica-Program-of-Emerging-and-Sustainable-Cities-Third-edici%C3%B3n-Annex-of-indicators.pdf
Indicators for the Management of the Public Cleaning Service, 2002, panameric center year of Sanitary Engineering and Environmental Sciences	http://sial.segat.gob.pe/documentos/indicadores-gerenciamiento-servicio-limpieza-publica

(CEPIS), p. 15, 16	
metadata of Indicator 11.6.1 Sustainable Development Goals (SDGs), p. 2, 11	https://unstats.un.org/sdgs/metadata/files/Metadata-11-06-01.pdf
cities wise on waste, 2021, UN Habitat. Management Waste, p. 2, 11	https://unhabitat.org/sites/default/files/2021/02/Waste%20wise%20cities%20tool%20-%20EN%203.pdf
Brazil	https://biblioteca.ibge.gov.br/visualizacao/instrumentos_de_coleta/doc2671.pdf
Chile	https://sinia.mma.gob.cl/index.php/datos-del-informe-del-estado-del-medio-ambiente/
Colombia	https://www.dane.gov.co/files/investigaciones/pib/ambientales/Ilac/18-Recoleccion-de-waste-2017/Households-with-access-to-waste-collection.pdf
The Savior	https://cidoc.marn.gob.sv/documentos/segundo-censo-nacional-de-desechos-solidos-municipal-consolidated-report/
Mexico	https://www.inegi.org.mx/contenidos/productos/prod_serv/contenidos/espanol/bvinegi/productos/nueva_estruc/702825193980.pdf
Peru	https://www.inei.gob.pe/estadisticas/indice-tematico/c-residuos-10291/#url
Law General for the Prevention and Comprehensive Management of	http://www.diputados.gob.mx/LeyesBiblio/ref/lgpgir.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf

Waste, Last reform published DOF 18-01-2021.	
Information on Eurostat residuals.	https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=en
Sheet Methodological of the Indicator waste solid generated per capita of the Account satelite Environmental, of the DANE, Colombia.	https://www.dane.gov.co/files/investigaciones/pib/ambientales/cuentas_ambientales/indicadores/environmental-and-economic-account-of-material-flow/solid-waste-percapita/hm-solid-waste-percapita.pdf
Texts explanatorys of the indicatorss of generation per capita,	https://ec.europa.eu/eurostat/cache/metadata/en/cei_pc031_esmsip2.htm#relevance1644323035836 https://ec.europa.eu/eurostat/cache/metadata/en/sdg_11_60_esmsip2.htm#relevance1644323358286 https://ec.europa.eu/eurostat/cache/metadata/en/cei_wm030_esmsip2.htm#relevance1644

recycling and recycling of biowaste you of Eurostat.	323069597
metadata of the SDG 11.6.1 indicator according to Unstats	https://unstats.un.org/sdgs/metadata/files/Metadata-11-06-01.pdf

III. Inadequate Final Disposal

1. Indicator:

Inadequate final disposal

Abbreviated name: Inadequate final disposal

2. Definition:

It is the percentage of municipal solid waste disposed of inadequately.

Controlled Dump: It is the deposit of waste in or on the land. Includes specially designed landfills and temporary storage of more than one year at permanent sites. The definition covers both landfills at internal sites, that is, where a waste generator is carrying out its own final disposal of waste at the place of generation, and at external sites. [8]

Open Dumps: are those where waste is systematically and indiscriminately thrown into streams or abandoned spaces or without control or protection, intentionally burned to reduce its volume or by self-combustion and left for vectors to distribute their polluting load. [9]

3. Calculation method:

$$\text{SDF INA (\%)} = \frac{\text{RDVC (Tonnes/year)} + \text{RDBV (Tonnes/year)}}{\text{TRG (Tonnes/year)}} \times 100$$

Where:

SDF INA: Inadequate Final Disposal.

RDVC: Municipal Solid Waste Disposed in Controlled Landfills.

RDBV: Municipal Solid Waste that is Disposed in Dumps or Open Landfills.

TRG: Total Municipal Solid Waste Generated. [2]

4. Waste included:

Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of the roads and public places. [3]

5. Waste excluded:

Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.

6. Code:

SDF INA

7. Periodicity:

Annual [4]

8. Variables:

Municipal Solid Waste Disposed of in Controlled Landfills: obtained from information on the amount of waste that local authorities, directly or through third parties, send to final disposal sites where some measures are implemented to control on waste management.
Municipal Solid Waste Disposed in Dumps or Open-air Dumps: obtained from information on the amount of waste that local authorities, directly or through third parties, send to final disposal sites classified as dumps or open-air dumps.
Total Municipal Solid Waste Generation: obtained from estimates and/or data from the National Statistical Offices or other sectoral instances.

9. Units:

% based on generated tonnes

10. Reference period:

It will indicate the year to which the information that will be presented on the inadequate final disposal indicator corresponds.

11. Reporting level:

National

Regional

Local

12. Source of information:

It is desirable that the information be based on the data provided by the local authorities responsible for the management and handling of solid waste.
In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.

13. Recommendations for the generation of statistics:

1. Use the "basic control" and "limited control" level criteria included in the Metadata of the SDG 11.6.1 indicator to classify final disposal sites as controlled landfills. [5]
2. Categorize the final disposal sites based on the level of control proposed in the Metadata of the SDG 11.6.1 indicator, consisting of "without control", to determine the amount of waste that is disposed of in dumps or open-air dumps, corresponding to this last category. [5]
3. Normally the dumpers do not have scales and, therefore, the quantification of the weights responds to an exercise in calculating the number of trucks/vehicles that you enter and a weight-volume conversion; thus, it is important that standard methodologies and procedures are developed that allow a professional task to carry out this approach.

14. Suitability (Relevance)

It is an indicator that would measure the potential for optimization in the final disposal stage of the cleaning systems and/or management of municipal solid waste.
The foregoing implies that the indicator allows cataloging all those final disposal sites, which through a series of improvements and complements in their infrastructure and operation schemes, contribute to achieving greater control at this stage of waste management. [6]
It makes it possible to identify the cases in which infrastructure could be developed for the adequate municipal solid waste management in areas already impacted.

Furthermore, it allows the undertaking of actions to clean up the impacted areas and reverse the affectations on vulnerable population sectors, derived from the final disposal of waste. [6]

15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.

It allows monitoring compliance with the SDG 11.6.1 indicator on the Proportion of urban solid waste collected periodically and with an adequate final discharge with respect to the total urban solid waste generated, broken down by city; This is based on the identification of the final disposal of municipal solid waste sent to sites with "basic control", "limited control", and/or "without control", according to the Metadata of this indicator.
In addition, it helps to identify the flow of materials and waste within a monitoring scheme of the transition towards the circular economy to be determined for the Latin American region and the Caribbean. [7]

Id 16. References:

Methodological Guide. Emerging and Sustainable Cities Initiative. Annex Indicators, 2016, Inter-American Development Bank (IDB). p. 86	https://publications.iadb.org/publications/spanish/document/Gu%C3%ADa-Metodol%C3%B3gica-Emerging-and-Sustainable-Cities-Program-Third-edition%C3%B3n-Annex-of-indicators.pdf
Mexico	https://www.inegi.org.mx/temas/residuos/#Tabulados

	Dominican Republic	https://anda.one.gob.do/index.php/catalog/95/datafile/F1#page=F2&tab=data-dictionary
[1]	Methodological Guide. Initiative Emerging and Sustainable Cities. Annex Indicators, 2016, Inter-American Development Bank (IDB). p. 86	https://publications.iadb.org/publications/spanish/document/Gu%C3%ADa-Metodol%C3%B3gica-Emerging-and-Sustainable-Cities-Program- Third-edition%C3%B3n-Annex-of-indicators.pdf
	General Law for Prevention and Comprehensive Waste Management, Last reform published DOF 01-18-2021.	http://www.diputados.gob.mx/LeyesBiblio/ref/lgpgir.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf
	Information on residues of Eurostat.	https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=en
	Methodological sheet of the indicator on flow of waste to the environment of DANE of Colombia.	https://www.dane.gov.co/files/investigaciones/pib/ambientales/cuentas_environmental/indicators/environmental-and-economic-account-of-flow-of- materials/RS-flow-to-room/hm-RS-flow-to-room.pdf
[5]	SDG indicator metadata 11.6.1 according to Unstats	https://unstats.un.org/sdgs/metadata/files/Metadata-11-06-01.pdf
[6]	Explanatory texts of Eurostat's per capita generation, recycling and bio-waste recycling indicators.	https://ec.europa.eu/eurostat/cache/metadata/en/cei_pc031_esmsip2.htm#relevance1644323035836 https://ec.europa.eu/eurostat/cache/metadata/en/sdg_11_60_esmsip2.htm#relevance1644323358286
[7]	Material flow diagram for the European Union, 2020.	https://ec.europa.eu/eurostat/cache/metadata/en/cei_wm030_esmsip2.htm#relevance1644323069597 https://ec.europa.eu/eurostat/cache/sankey/circular_economy/sankey.html?geos=EU27&year=2020&unit=G_T&materials=TOTAL&highlight=&nodeDisagg=0101101100&flowDisagg=true&translateX=250.84763949048056&translateY=97.12932537820149&scale=0.5223303379776745&language=EN&xyz=89&material=F6_2
[8]	UN-HABITAT. 2021. Waste Wise Cities Tool. p.14	https://unhabitat.org/sites/default/files/2022-03/Waste%20wise%20cities%20tool%20-%20EN.pdf

[9] UN Environment (2018). Perspective of waste management in America Latin and the Caribbean. p. 26 https://www.unep.org/es/resources/informe/perspectiva-de-la-gestion-of-waste-in-latin-america-and-the-caribbean

IV. Final Disposal of Waste in Sanitary Landfill

1. Indicator:
Final Disposal - Accumulation of Waste in Sanitary Landfill
Abbreviated name: Landfill (full control) must include an * pointing to a Note: adds basic, enhanced and full control
2. Definition:
It is the percentage of municipal solid waste disposed of in landfills. [1]
3. Calculation method:

$$\text{RELL SA (\%)} = \frac{\text{RDRS (Tonnes/year)}}{\text{TRG (Tonnes/year)}} \times 100$$

Where:
RELL SA: Final Disposal of Waste in Sanitary Landfill.
RDRS: Municipal Solid Waste Disposed in Sanitary Landfills.
TRG: Total Municipal Solid Waste Generated. [2]

4. Waste included:
Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging, or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of the roads and public places. [3]
5. Waste excluded:
Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial, and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.
6. Code:
RELL SA
7. Periodicity:
Annual [4]
8. Variables:

Municipal Solid Waste Disposed in Sanitary Landfills: obtained from information on the amount of waste that local authorities, directly or through third parties, send to sanitary landfills.

Total Municipal Solid Waste Generation: obtained from estimates and/or data from the National Statistical Offices or other sectoral instances.

9. Units:

% based on tonnes generated

10. Reference period:

It will indicate the year to which the information that will be presented on the final disposal of waste in sanitary landfill corresponds.

11. Reporting level:

National

Regional

Local

12. Source of information:

It is desirable that the information be based on the data provided by the local authorities responsible for the management and handling of solid waste.

In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.

13. Recommendations for the generation of statistics:

1. Use the "improved level of control" and "complete control" criteria included in the Metadata of the SDG 11.6.1 indicator to classify final disposal sites as sanitary landfills.

2. If the country has laws, regulations, norms or technical provisions for the construction and operation of a final disposal site as a sanitary landfill, indicate and provide the information that allows consultation of said instruments. [5]

14. Suitability (Relevance)

It is an indicator that allows evaluating the installed and response capacity of the country with respect to the trend in the region on the management of municipal solid waste in the final disposal stage.

In addition, it makes it possible to identify those sites that could be complemented with another type of infrastructure and equipment for the recovery and treatment of specific waste streams. [6]

15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.

It allows monitoring compliance with the SDG 11.6.1 indicator on the Proportion of urban solid waste collected periodically and with an adequate final discharge with respect to the total urban solid waste generated, broken down by city.

It also helps to identify the flow of materials and waste within a monitoring scheme of the transition towards the circular economy to be determined for the Latin American region and the Caribbean. [7]

Id	16. References:	
[1]	Methodological Guide. Emerging and Sustainable Cities Initiative. Annex Indicators, 2016, Inter-American Development Bank (IDB). p. 84	https://publications.iadb.org/publications/spanish/document/Gu%C3%ADa-Metodol%C3%B3gica-Emerging-Cities-Program-and-Sustainable-Third-edition-Annex-of-indicators.pdf
	Indicators for Management of the Public Cleaning Service, 2002, Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS). Page 22	http://sial.segat.gob.pe/documentos/indicadores-gerenciamiento-public-cleaning-service
	https://unhabitat.org/sites/default/files/2021/02/Waste%20wise%20cities%20tool%20-%20EN%203.pdf	https://unstats.un.org/sdgs/metadata/files/Metadata-11-06-01.pdf
	Wise cities in terms of waste, 2021, UN Habitat. Waste management. Page 6, 22.	https://unhabitat.org/sites/default/files/2021/02/Waste%20wise%20cities%20tool%20-%20EN%203.pdf
	Argentina	https://sinia.ambiente.gob.ar/images/uploaded/datasets/236/Metadata_disposicion.pdf
	Chili	https://sinia.mma.gob.cl/index.php/datos-del-informe-del-estado-enviroment/
	Colombia	http://www.sui.gov.co/web/aseo/reportes/tecnico-operations/tons-of-solid-waste-entering-the-site-of- final-provision-resolution-sspd-n-20174000237705-of-2017
	Ecuador	http://sinias.ambiente.gob.ec:8099/proyecto-sinias-web/informacionIndicadores.jsf?menuid=14&menu=01&faces-redirect=true
	Mexico	http://dgeiawf.semarnat.gob.mx:8080/ibi_apps/WFServlet?IBIF_ex=D3_RSM01_11&IBIC_user=dgeia_mce&IBIC_pass=dgeia_mce&NOMBREENTITY=*&YEARNAME=*
	Paraguayan	https://apps.mades.gov.py/siam/documentos/IDENTIFICACION-PROPOSAL-ENVIRONMENTAL-INDICATORS-23_08_2018.pdf
	Peru	https://www.inei.gob.pe/estadisticas/indice-tematico/c-residuos-10291/

	Methodological Guide. Initiative Emerging and Sustainable Cities. Annex Indicators, 2016, Inter-American Development Bank (IDB). p. 84	https://publications.iadb.org/publications/spanish/document/Gu%C3%ADa-Metodol%C3%B3gica-Emerging-Cities-Program-and-Sustainable-Third-edition-Annex-of-indicators.pdf
[2]	General guide for the management of household solid waste, 2016, Economic Commission for the Americas Latin America and the Caribbean (ECLAC). Page 134 - 135	https://www.cepal.org/es/publicaciones/40407-guia-general-la-household-solid-waste-management
	Indicators for Management of the Public Cleaning Service, 2002, Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS). Page 22	http://sial.segat.gob.pe/documentos/indicadores-gerenciamiento-public-cleaning-service
	Metadata for Indicator 11.6.1 Sustainable Development Goals (SDGs). Page 11 and 12	https://unstats.un.org/sdgs/metadata/files/Metadata-11-06-01.pdf
	Waste-wise cities, 2021, UN Habitat. Waste management. Page 6, 22.	https://unhabitat.org/sites/default/files/2021/02/Waste%20wise%20cities%20tool%20-%20EN%203.pdf
	Argentina	https://sinia.ambiente.gob.ar/images/uploaded/datasets/236/Metadata_disposicion.pdf
	Paraguayan	https://apps.mades.gov.py/siam/documentos/IDENTIFICACION-PROPOSAL-ENVIRONMENTAL-INDICATORS-23_08_2018.pdf
[3]	General Law for the Prevention and Comprehensive Waste Management, Last reform published DOF 01-18-2021.	http://www.diputados.gob.mx/LeyesBiblio/ref/lgpgir.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf
[4]	Information on waste from Eurostat.	https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=en
[5]	Metadata of the SDG 11.6.1 indicator according to Unstats	https://unstats.un.org/sdgs/metadata/files/Metadata-11-06-01.pdf

		https://ec.europa.eu/eurostat/cache/metadata/en/cei_pc031_esmsip2.htm#relevance1644323035836
[6]	Explanatory texts of the indicators of per capita generation, recycling and recycling of bio-waste and municipal waste by Eurostat waste management operations.	https://ec.europa.eu/eurostat/cache/metadata/en/sdg_11_60_esmsip2.htm#relevance1644323358286 https://ec.europa.eu/eurostat/cache/metadata/en/cei_wm030_esmsip2.htm#relevance1644323069597 https://ec.europa.eu/eurostat/cache/metadata/en/env_wasmun_esms.htm
[7]	Material flow diagram for the European Union, 2020.	https://ec.europa.eu/eurostat/cache/sankey/circular_economy/sankey.html?geos=EU27&year=2020&unit=G_T&materials=TOTAL&highlight=&nodeDisagg=0101101100&flowDisagg=true&translateX=250.84763949048056&translateY=97.12932537820149&scale=0.5223303379776745&language=EN&xyz=89&material=F6_2

V. Solid Waste Recycling.

1. Indicator:
Solid waste recycling
Short name: Recycling of materials
2. Definition:
Proportion of municipal solid waste that is recovered, and transformed through physical, chemical, or mechanical processes into secondary raw materials, which allow its reincorporation into the productive system, avoiding its final disposal. [1]
3. Calculation method:

$$RECI\ (\%) = \frac{TRRT\ (Tonnes/year)}{TRG\ (Tonnes/year)} \times 100$$

Where:
RECI: Solid Waste Recycling.
TRRT: Total Recovered and Transformed Municipal Solid Waste.
TRG: Total Municipal Solid Waste Generated. [2]

4. Waste included:
Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of the roads and public places. [3]
5. Waste excluded:
Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.
6. Code:
RECI
7. Periodicity:
Annual [4]
8. Variables:

Total Municipal Solid Waste Recovered and Transformed: obtained from information on the amount of waste that local authorities, directly or through third parties, or even individuals if the report of information is made under some regulatory scheme, recover for its recycling.

Total Municipal Solid Waste Generated: obtained from estimates and/or data from the National Statistical Offices or other sectoral instances.

9. Units:

% based on tonnes generated

10. Reference period:

It will indicate the year to which the information that will be presented on the solid waste recycling indicator corresponds.

11. Reporting level:

National

Regional

Local

12. Source of information:

It is desirable that the information be based on the data provided by the local authorities responsible for the management and handling of solid waste.
In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.

13. Recommendations for the generation of statistics:

1. Consider the materials present in the waste that are susceptible to recovery for its recycling, depending on the conditions of the country. If applicable, include the list and a characterization that allows the identification of the materials that are recovered for recycling.

14. Suitability (Relevance)

It is an indicator that allows evaluating the installed and response capacity of the country regarding the trend in the region on the management of municipal solid waste in the recycling stage.
It allows to identify the proportion of solid waste generated that is recovered, avoiding its shipment to final disposal; and indirectly, estimate the number of emissions avoided by the production of new materials from virgin raw materials.
Also, recycling is usually included in the policies and regulations of the countries to promote the recovery and treatment of usable materials contained in waste. [5]

15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.

It allows monitoring compliance with the indicator SDG 12.5.1 National recycling rate, in tonnes of recycled material, specifically, through the amount of recovered recoverable materials.
Also, it contributes to identify the flow of materials and waste within a monitoring scheme of the transition towards the circular economy to be determined for the Latin American region and the Caribbean. [6]

Id	16. References:	
[1]	Methodological Guide. Emerging and Sustainable Cities Initiative. Annex Indicators, 2016, Inter-American Development Bank (IDB). p. 88	https://publications.iadb.org/publications/spanish/document/Gu%C3%ADa-Metodol%C3%B3gica-Emerging-and-Sustainable-Cities-Program- Third-edition%C3%B3n-Annex-of-indicators.pdf
	General guide for the management of household solid waste, 2016, Economic Commission for Latin America and the Caribbean (ECLAC). p. 71	https://www.cepal.org/es/publicaciones/40407-guia-general-la-gestion-household-solid-waste
	Metadata for Indicator 12.5.1 Sustainable Development Goals (SDGs), p. 1	https://unstats.un.org/sdgs/metadata/files/Metadata-12-05-01.pdf
	Options for the energy use of waste in the management of urban solid waste, 2017, GIZ, p. 14	https://www.giz.de/en/downloads/Guide%20GIZ%202017%20WasteToEnergy%20-%20SP.pdf
	Wise cities in terms of waste, 2021, UN Habitat. Waste Management, pg. 18, 28	https://unhabitat.org/sites/default/files/2021/02/Waste%20wise%20cities%20tool%20-%20EN%203.pdf
	Argentina	https://sinia.ambiente.gob.ar/images/uploaded/datasets/238/Metadata_recovery%C3%B3n.pdf
	Colombia	https://www.dane.gov.co/files/investigaciones/pib/ambientales/cuentas_environmental/waste-accounts/Bt-Waste-account-2019p.pdf
	guyana	https://librairie.ademe.fr/dechets-economie-circulaire/139-chiffres-cles-des-dechets-en-guyane-les.html#/44-type_de_produit- format_electronic
	Mexico	https://www.inegi.org.mx/programas/cngmd/2019/#Tabulados
	Peru	https://sinia.minam.gob.pe/informacion/tematicas?tematica=08

[2]	Methodological Guide. Initiative Emerging and Sustainable Cities. Annex Indicators, 2016, Inter-American Bank of Development (IDB). p. 88	https://publications.iadb.org/publications/spanish/document/Gu%C3%ADa-Metodol%C3%B3gica-Emerging-and-Sustainable-Cities-Program- Third-edition%C3%B3n-Annex-of-indicators.pdf .
	Wise cities in terms of waste, 2021, UN Habitat. Waste Management, pg. 18, 28	https://unhabitat.org/sites/default/files/2021/02/Waste%20wise%20cities%20tool%20-%20EN%203.pdf
	Metadata for Indicator 12.5.1 Sustainable Development Goals (SDGs), p. 1	https://unstats.un.org/sdgs/metadata/files/Metadata-12-05-01.pdf
	Argentina	https://sinia.ambiente.gob.ar/images/uploaded/datasets/238/Metadata_recovery%C3%B3n.pdf
	Colombia	https://www.dane.gov.co/files/investigaciones/pib/ambientales/cuentas_environmental/waste-accounts/Bt-Waste-account-2019p.pdf
	General Law for Prevention and Comprehensive Waste Management, Last reform published DOF 01-18-2021.	http://www.diputados.gob.mx/LeyesBiblio/ref/lgpgir.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf
	Information on residues of Eurostat.	https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=en
	Explanatory texts of Eurostat's per capita generation, recycling and bio-waste recycling indicators.	https://ec.europa.eu/eurostat/cache/metadata/en/sdg_11_60_esmsip2.htm#relevance1644323358286
[6]	Material Flow Diagram for the European Union, 2020.	https://ec.europa.eu/eurostat/cache/sankey/circular_economy/sankey.html?geos=EU27&year=2020&unit=G_T&materials=TOTAL&highlight=&nodeDisagg=0101101100&flowDisagg=true&translateX=250.847639490480556&translateY=97.12932537820149&scale=0.5223303379776745&language=EN&xyz=89&material=F6_2

VI. Organic Waste Composting

1. Indicator:
Organic waste composting
Abbreviated name:
Composting
2. Definition:
Proportion of organic municipal solid waste sent to biological degradation processes in presence of oxygen and under controlled conditions. [1]
3. Calculation method:

$$COMP\ (\%) = \frac{TROPC\ (Tonnes/year)}{TRG\ (Tonnes/year)} \times 100$$

Where:
COMP: Composting of Organic Waste.
TROPC: Total Organic Municipal Solid Waste Processed by Composting.
TRG: Total Municipal Solid Waste Generated. [2]

4. Waste included:
Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of the roads and public places. [3]

5. Waste excluded:
Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.

6. Code:
COMP
7. Periodicity:
Annual [4]
8. Variables:

Total Organic Municipal Solid Waste sent to Composting: obtained from information on the amount of waste that local authorities, directly or through third parties, or even individuals in the event that they report information under some regulatory scheme, treat the organic waste fraction through compost.

Total Municipal Solid Waste Generated: obtained from estimates and/or data from the National Statistical Offices or other sectoral instances.

9. Units:

% based on tonnes generated

10. Reference period:

It will indicate the year to which the information that will be presented on the indicator of organic waste composting corresponds.

11. Reporting level:

National

Regional

Local

12. Source of information:

It is desirable that the information be based on the data provided by the local authorities responsible for the management and handling of solid waste.
In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.

13. Recommendations for the generation of statistics:

1. Indicate whether the country has criteria and/or specifications for the identification/determination of the proportion of the organic fraction of municipal solid waste that is sent to biological degradation processes in the presence of oxygen and under controlled conditions; if so, provide the information that allows its consultation. [5]

14. Suitability (Relevance)

It is an indicator that allows evaluating the country's installed capacity regarding the trend in the region concerning the management of municipal solid waste in the organic fraction processing stage.
It also helps to identify the proportion of waste that would be diverted to some organic waste processing system through its biological degradation in the presence of oxygen and under controlled conditions. [6]

15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.

In addition, it allows monitoring compliance with the indicator SDG 12.5.1 National recycling rate, in tons of recycled material, punctually with the amount of organic waste treated through composting and/or some aerobic process.
At the time, it contributes to identify the flow of materials and waste within a monitoring scheme of the transition towards the circular economy that is determined for the Latin American region and the Caribbean. [7]

Id	16. References:	
[1]	Methodological Guide. Emerging and Sustainable Cities Initiative. Annex Indicators, 2016, Inter-American Development Bank (IDB). p. 88	https://publications.iadb.org/publications/spanish/document/Gu%C3%ADa-Methodology-Emerging-and-Sustainable-Cities-Program- Third-edition%C3%B3n-Annex-of-indicators.pdf
	general guide for household solid waste management, 2016, Economic Commission for Latin America and the Caribbean (ECLAC). p. 71	https://www.cepal.org/es/publicaciones/40407-guia-general-la-gestion-household-solid-waste
	Indicator Metadata 12.5.1 Sustainable Development Goals (SDGs), p. 1	https://unstats.un.org/sdgs/metadata/files/Metadata-12-05-01.pdf
	How to Compost? Household Composting, 2020, GIZ, p. 7	https://www.giz.de/en/downloads/Brochure%20How%20to%20Compost%20ENo.pdf
	Methodological Guide. Emerging and Sustainable Cities Initiative. Annex Indicators, 2016, Inter-American Development Bank (IDB). p. 88	https://publications.iadb.org/publications/spanish/document/Gu%C3%ADa-Methodology-Emerging-and-Sustainable-Cities-Program- Third-edition%C3%B3n-Annex-of-indicators.pdf
	Indicator Metadata 12.5.1 Sustainable Development Goals (SDGs), p. 1	https://unstats.un.org/sdgs/metadata/files/Metadata-12-05-01.pdf

	General Law for the Prevention and Integral Management of Waste, Last reform published DOF 01-18-2021.	http://www.diputados.gob.mx/LeyesBiblio/ref/lgpgir.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf
[4]	Information on waste from Eurostat.	https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=in
[5]	Municipal GAD 2020, INEC, Ecuador	https://www.ecuadorencifras.gob.ec/gad-municipales/
[6]	Explanatory texts of the Eurostat bio-waste recycling indicators.	https://ec.europa.eu/eurostat/cache/metadata/en/cei_wm030_esmsip2.htm
[7]	Material flow diagram for the European Union, 2020.	https://ec.europa.eu/eurostat/cache/sankey/circular_economy/sankey.html?geos=EU27&year=2020&unit=G_T&materials=TOTAL&highlight=&nodeDisagg=0101101100&flowDisagg=true&translateX=250.84763949048056&translateY=97.12932537820149&scale=0.5223303379776745&language=EN&xyz=89&material=F6_2

VII. Waste Processing with Anaerobic Digestion

1. Indicator:
Waste processing by Anaerobic Digestion
Abbreviated name: Anaerobic digestion
2. Definition:
Proportion of municipal solid waste that is sent for processing through degradation of organic matter called methanization, or anaerobic digestion under conditions of absence of free oxygen, with production of biogas and a solid-liquid residue called digestate. [1]
3. Calculation method:

$$DIGE\ (\%) = \frac{TRPDA\ (Tonnes/year)}{TRG\ (Tonnes/year)} \times 100$$

Where:
DIGE: Waste Processing with Anaerobic Digestion.
TRTDA: Total Municipal Solid Waste Processed Through Anaerobic Digestion.
TRSMG: Total Municipal Solid Waste Generated. [2]

4. Waste included:
Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of the roads and public places. [3]

5. Waste excluded:
Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.

6. Code:
DIGE
7. Periodicity:

Annual [4]

8. Variables:

Total Municipal Solid Waste Processed Through Anaerobic Digestion: obtained from the information on the amount of waste that local authorities, directly or through third parties either, even individuals, if they report information under some regulatory scheme, treat the organic fraction of the waste through anaerobic digestion.
Total Municipal Solid Waste Generated: obtained from estimates and/or data from the National Statistics Offices or other sectorial instances.

9. Units:

% based on tons generated

10. Reference period:

It will indicate the year to which the information that will be presented on the indicator processing with anaerobic digestion corresponds.
.

11. Reporting level:

National

Regional

Local

12. Source of information:

It is desirable that the information be based on the data provided by the local authorities responsible for the management and handling of solid waste.
In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.

13. Recommendations for the generation of statistics:

1. Although this is statistical information that is still in an initial stage, or in its case, it is non-existent, it would be appropriate to collect data to identify existing cases or projects or in the process of execution in the region in order to contribute to the enrichment of the statistical heritage.
2. Indicate if the country has criteria and/or specifications for the identification/determination of the proportion of the organic fraction of municipal solid waste that is treated by anaerobic digestion; if so, provide the information that allows its consultation.

14. Suitability (Relevance)

It is an indicator that allows evaluating the installed and response capacity of the country regarding the trend in the region on the management of municipal solid waste in the processing stage of the organic fraction. Also, it helps to identify the proportion of waste that would be diverted to some organic waste processing system through its biological degradation in the absence of oxygen and under controlled conditions.
In addition, it allows quantifying the reduction of CO2e emissions derived from the processing of the organic solid municipal waste fraction. [5]

15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.
It allows monitoring compliance with the indicator SDG 12.5.1 National recycling rate, in tons of recycled material. It will be especially relevant to identify the way in which the by-products derived from anaerobic digestion will be quantified, given that the metadata indicator refers to tons of recycled material. At the time, it contributes to identify the flow of materials and waste within a monitoring scheme of the transition towards the circular economy that is determined for the Latin American region and the Caribbean. [6]

Id	16. References:	
[1]	Metadata for Indicator 12.5.1 Sustainable Development Goals (SDGs), p. 1, 4.	https://unstats.un.org/sdgs/metadata/files/Metadata-12-05-01.pdf
	Options for the energy use of waste in the management of urban solid waste, 2017, GIZ, p. 31	https://www.giz.de/en/downloads/Guide%20GIZ%202017%20WasteToEnergy%20-%20SP.pdf
	Conceitos for or Environmental Licensing of Biogas Plants, 2016, National Secretary [of Sanitation	https://antigo.mdr.gov.br/images/stories/ArquivosSNSA/probiogas/licenciamento- usinas-biogas.pdf
	General Law for the Prevention and Integral Management of Waste, Last reform published DOF 01-18-2021.	http://www.diputados.gob.mx/LeyesBiblio/ref/lgpgir.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf

Information about Eurostat residuals. Explanatory texts of the Eurostat bio-waste recycling indicators.	https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=en https://ec.europa.eu/eurostat/cache/metadata/en/cei_wm030_esmsip2.htm
[6] metadata of Indicator12.5.1 Goals of Sustainable Development (SDG), p. 1, 4.	https://unstats.un.org/sdgs/metadata/files/Metadata-12-05-01.pdf
flow chart materials for the European Union, 2020.	https://ec.europa.eu/eurostat/cache/sankey/circular_economy/sankey.html?geos=EU27&year=2020&unit=G_T&materials=TOTAL&highlight=&nodeDisagg=0101101100&flowDisagg=true&translateX=250.84763949048056&translateY=97.12932537820149&scale=0.5223303379776745&language=EN&xyz=89&material=F6_2

VIII. Waste Processing by Co-processing

1. Indicator:
Waste processing byCo-processing
Abbreviated name: Co - processing
2. Definition:
Proportion of municipal solid waste used in the productive system with the purpose of recovering energy and resources and consequently reducing the use of conventional fuels and raw materials by its substitution. [1]
3. Calculation method:

$$COPR\ (\%) = \frac{TRPC\ (Tonnes/year) \times 100}{TRG\ (Tonnes/year)}$$

Where:
COPR: Processing by Co-processing.
TRPC: Total Municipal Solid Waste Processed Through Co-processing.
TRG: Total Municipal Solid Waste Generated.

4. Waste included:
Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of the roads and public places. [2]
5. Waste excluded:
Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.
6. Code:
COPR
7. Periodicity:
Annual [3]

8. Variables:

Total Municipal Solid Waste Processed Through Co-processing: obtained from the information on the amount of waste that local authorities, directly or through third parties, either even individuals, in the event that they report information under some regulatory scheme, process the waste through Co-processing.
Total Municipal Solid Waste Generated: obtained from estimates and/or data from the National Statistics Offices or other sectorial instances.

9. Units:

% based on tonness generated

10. Reference period:

It will indicate the year to which the information that will be presented on the indicator waste processing by co-processing corresponds.
.

11. Reporting level:

7.4.1National
7.4.2Regional
7.4.3 City

12. Source of information:

It is desirable that the information be based on the data provided by the local authorities responsible for the management and handling of solid waste.
In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.

13. Recommendations for the generation of statistics:

1. Although this is statistical information that is still in an initial stage, or in its case, it is non-existent, it would be appropriate to collect data to identify existing cases or projects or in the process of execution in the region to contribute to the enrichment of the statistical heritage.
2. In the event of quantifying the emissions avoided using solid waste as alternative fuel in other production processes, it must be defined from which sector such quantification is accounted.

14. Suitability (Relevance)

This indicator allows dimensioning the proportion of waste that is used through its calorific value in other production processes; and, it allows calculating its incidence on the useful life of (the) final disposal sites based on the volume of solid waste that would be avoided from being sent to lockdown. [4]

15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.	
In terms of climate change, the indicator helps to identify the proportion of CO2e emissions avoided, assuming solid waste is used as an alternative fuel to replace fossil fuels. It also helps to identify the flow of materials and waste within a monitoring scheme of the transition towards the circular economy to be determined for the Latin American region and the Caribbean. [5]	

Id	16. References:	
[1]	Options for energy use of waste in the management of urban solid waste, 2017, GIZ, p. 27	https://www.giz.de/en/downloads/Guide%20GIZ%202017%20WasteToEner gy%20-%20SP.pdf
	Waste co-processing in cement kilns. 2012. Inter-American Federation of Cement. (FICEM) Brochure, p. 2	http://ficem.org/brochure-ficem/brochure_coprocesa_oficio-2012.pdf
	Basel Convention. Technical guidelines. 2012. United Nations Environment Program (UNEP), p. 8	https://17c79e5f-94a4-4216-8a25-636033b759dc.filesusr.com/ugd/46ae8e_5d3ad1592b034242b7fca74c344eacf6.pdf
	Guidelines on pre-processing and co-processing of waste in cement production. 2020. Lafarge Holcim-GIZ, p. 10	http://afcp.info/Coprocesamiento/Documentos-de-Interes/GIZ-2020-Guidelines-pre-coprocessing-en.pdf
	General Law for Prevention and Comprehensive Waste Management, Last reform published DOF 01-18-2021.	http://www.diputados.gob.mx/LeyesBiblio/ref/lgpgir.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf
	Information on residues of Eurostat.	https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=en
	Explanatory texts of the Eurostat bio-waste recycling indicators.	https://ec.europa.eu/eurostat/cache/metadata/en/sdg_11_60_esmsip2.htm#relevance1644323358286https://ec.europa.eu/eurostat/cache/metadata/en/cei_wm030_esmsip2.htm#relevance1644323069597

[5] Material flow diagram for the European Union, 2020.	https://ec.europa.eu/eurostat/cache/sankey/circular_economy/sankey.html?geos=EU27&year=2020&unit=G_T&materials=TOTAL&highlight=&nodeDisagg=0101101100&flowDisagg=true&translateX=250.84763949048056&translateY=97.12932537820149&scale=0.5223303379776745&language=EN&xyz=89&material=F6_2

IX. Waste processing through WTE

1. Indicator:
Waste processing through WTE
Abbreviated name: Thermovalorization
2. Definition:
Proportion of municipal solid waste processed to recover energy in the form of heat, electricity, or gas using incineration technologies, landfill gas collection, and pyrolysis/gasification. [1]
3. Calculation method:

$$WTE\ (\%) = \frac{TRWTE\ (Tonnes/year)}{TRG\ (Tonnes/year)} \times 100$$

Where:
WTE: Waste Processing through WTE.
TRPWTE: Total Municipal Solid Waste Processed Through Waste To Energy.
TRG: Total Municipal Solid Waste Generated.

4. Waste included:
Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of the roads and public places. [2]
5. Waste excluded:
Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.
6. Code:
WTE
7. Periodicity:

Annual [3]

8. Variables:

Total Municipal Solid Waste Processed Through Waste to Energy: obtained from the information on the amount of waste that local authorities, directly or through third parties, or

Even individuals, in the event that they report information under some regulatory scheme, treat waste through Waste to Energy.
Total Municipal Solid Waste Generated: obtained from estimates and/or data from the National Statistics Offices or other sectorial instances.

9. Units:

% based on tonnes generated

10. Reference period:

It will indicate the year to which the information that will be presented on the treatment via WTE indicator corresponds.

11. Reporting level:

National

Regional

Local

12. Source of information:

It is desirable that the information be based on the data provided by the local authorities responsible for the management and handling of solid waste.
In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.

13. Recommendations for the generation of statistics:

1. As long as the processing of municipal waste through waste to energy is identified and reported, it would be pertinent to compile qualitative and/or descriptive information on initiatives, suppliers and/or project promoters.

14. Suitability (Relevance)

This indicator allows dimensioning the proportion of waste that is incinerated, including recovery energetic; and also, it allows calculating its incidence on the useful life of (the) final disposal sites based on the volume of solid waste from which its shipment to confinement would be avoided. [4]

15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.

The indicator to identify the flow of waste within a monitoring scheme of the transition towards the circular economy that is determined for the Latin American and Caribbean region, assuming that the management of municipal solid waste is subject to a hierarchy in which this alternative of processing is considered. [5]

Yod	16. References:	
[1]	Methodological Guide. Emerging and Sustainable Cities Initiative. Annex Indicators, 2016, Bank Inter-American Development Bank (IDB).	https://publications.iadb.org/publications/spanish/document/Gu%C3%ADa-Methodol%C3%B3gica-Emerging-Cities-Program-and-Sustainable-Third-edition-Annex-of-indicators.pdf
	General guide for the management of household solid waste, 2016, Economic Commission for Latin America and the Caribbean (ECLAC). p. 69	https://www.cepal.org/es/publicaciones/40407-guia-general-la-household-solid-waste-management
	Options for the energy use of waste in the management of urban solid waste, 2017, GIZ, p. 7	https://www.giz.de/en/downloads/Guide%20GIZ%202017%20Waste ToEnergy%20-%20SP.pdf
	Wise cities in terms of waste, 2021, UN Habitat. Waste management. Page 12	https://unhabitat.org/sites/default/files/2021/02/Waste%20wise%20cities%20tool%20-%20EN%203.pdf
	Waste to Energy. Considerations for Informed Decision Making. 2019. United Nations Environment Program (UNEP), p. eleven	https://www.unep.org/ietc/resources/publication/waste-energy-considerations-informed-decision-making
	Metadata of the Indicator 11.06.1 Sustainable Development Goals (SDGs), p. 4.	https://unstats.un.org/sdgs/metadata/files/Metadata-11-06-01.pdf
	General Law for the Prevention and Comprehensive Waste Management, Last reform published DOF 01-18-2021.	http://www.diputados.gob.mx/LeyesBiblio/ref/lgpgir.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf
[3]	Information on waste from Eurostat.	https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=en
[4]	Explanatory texts of the Eurostat bio-waste recycling indicators.	https://ec.europa.eu/eurostat/cache/metadata/en/sdg_11_60_esmsip2.htm#relevance1644323358286 https://ec.europa.eu/eurostat/cache/metadata/en/cei_wm030_esmsip2.htm#relevance1644323069597

[5] Circular economy in Latin America and Caribbean. Opportunity for a transformative recovery, 2021, ECLAC. Page 10 https://repositorio.cepal.org/bitstream/handle/11362/47309/1/S2100423_en.pdf

X. CO2e emission from the waste sector

1. Indicator:
CO2e emission of the waste sector
Abbreviated name: GHG Emissions of the Waste Sector

2. Definition:
It is the estimate of carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O) emissions from the following categories: solid waste disposal, biological processing of solid waste and incineration and open burning of waste. [1]

3. Calculation method:
CO2e emissions from the waste sector can be calculated through the 2019 refinement at 2006 IPCC guidelines. [1]

4. Waste included:
Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of the roads and public places. [2]

5. Waste excluded:
Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.

6. Code:
EMIS

7. Periodicity:
Annual [3]

8. Variables:

9. Units:
MtonnesCO2e/year

10. Reference period:
It will indicate the year(s) to which the information that will be presented on the indicator CO2e emission of the waste sector corresponds.

11. Reporting level:

National

12. Origin of the information:

It is desirable that the information be based on data provided by local authorities responsible for the management and handling of solid waste.

In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.

13. Recommendations for the generation of statistics:

1. The estimate of the generation of CO2e emissions from the waste sector must be checked and validated by the national authority that has powers in accordance with the institutional arrangement that has started the country.

14. Suitability (Relevance)

It is an indicator that could be used as a monitoring mechanism for compliance with international commitments; for example, the report to the Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change on its emission sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol (Inventories greenhouse greenhouse). [4]

15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.

The indicator makes it possible to monitor compliance with the SDG indicator 13.2.1 at the regional level Number of countries that have reported the establishment or implementation of an integrated policy, strategy or plan that increases their capacity to adapt to the adverse effects of climate change and that promote climate resilience and low greenhouse gas emissions development without compromising food production (for example, a national adaptation plan, a nationally determined contribution, a national communication or a biennial report update)
[5]

Id	16. References:	
[1]	2019 Refinement to the 2006 IPCC Guidelines for National Inventories of Greenhouse Gases. Volume 5. Waste.	https://www.ipcc-nggip.iges.or.jp/public/2019rf/vol5.html
	General Law for the Prevention and Integral Management of Waste, Last reform published DOF 01-18-2021.	http://www.diputados.gob.mx/LeyesBiblio/ref/lgpgir.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf
	Information on waste from Eurostat.	https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=en

United Nations Framework Convention on Climate change	https://unfccc.int/resource/userman_nc_sp.pdf
SDG 13 Climate action	https://agenda2030lac.org/es/metas/132

XI. Income from rates or fees

1. Indicator:
Income from rates or fees
Abbreviated name: GIRS income from Rates or Fees

2. Definition:
It is the invoiced and collected value reported by those responsible for the provision of municipal solid waste management services. [1]

3. Calculation method:

$$INGR\ (USD/Person\text{-}year) = \frac{IRTT\ (USD/year)}{P\ (Person) \times RECO\ (\%)}$$

Where:
INGR: Income from Rates or Fees
IRTT: Income Collected by Rates and Fees related to the Management and Handling of Municipal Solid Waste.
Q: Population
RECO: Municipal Solid Waste Collection. [2]

4. Waste included:
Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of the roads and public places. [3]

5. Waste excluded:
Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.

6. Code:
INGR

7. Periodicity:

Annual [4]

8. Variables:

Income Collected by Rates and Fees related to the Management and Handling of Municipal Solid Waste: obtained from information on the amount of income collected by the local authorities, directly or through third parties, derived from the management and handling of municipal solid waste

Total population: this variable is obtained from the Population Censuses at the national level, and/or from statistical estimates by the National Statistics Offices or other sectoral instances.
Municipal Solid Waste Collection: obtained from information on the amount of revenue collected by local authorities, directly or through third parties, refers to the daily average amount of municipal solid waste collected.

9. Units:

USD/person-year

10. Reference period:

It will indicate the year to which the information that will be presented on the income from rates or fees indicator corresponds.

11. Reporting level:

National

Regional

City

12. Source of information:

It is desirable that the information be based on the data provided by the local authorities responsible for the management and handling of solid waste.
In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.

13. Recommendations for the generation of statistics:

1. It would be opportune to complement the indicator with the collection of qualitative and descriptive information on the implementation of fee systems in order to contribute to the enrichment of the collection of information on the solid waste sector in the region.

14. Suitability (Relevance)

This indicator makes it possible to identify and have orders of magnitude on the economic income from the local authorities of each country, in the exercise of their functions for the provision of the municipal solid waste management service. [5]

15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.

Does not

Id	apply 16. References:	
[1]	General guide for the management of household solid waste, 2016, Economic Commission for America Latin America and the Caribbean (ECLAC). p. 148, 180	https://www.cepal.org/es/publicaciones/40407-guia-general-la-gestion-residuos-solidos-domiciliary
	Colombia	http://www.sui.gov.co/web/aseo/reportes/comerciales/facturacion-y-recaudo
	Brazil	http://www.snis.gov.br/downloads/diagnosticos/rs/2020/Glossario_Indicadores_RS2020.pdf
	general law for the Prevention and Integral Management of Waste, Last reform published DOF 18-01-2021.	http://www.diputados.gob.mx/LeyesBiblio/ref/lgpgir.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf
	Information on Eurostat residuals.	https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=en

[5]	Texts explanatory indicators of per capita generation, recycling and recycling of bio-waste and municipal waste by waste management operations Eurostat.	https://ec.europa.eu/eurostat/cache/metadata/en/cei_pc031_esmsip2.htm#relevance1644323035836 https://ec.europa.eu/eurostat/cache/metadata/en/sdg_11_60_esmsip2.htm#relevance1644323358286 https://ec.europa.eu/eurostat/cache/metadata/en/cei_wm030_esmsip2.htm#relevance1644323069597 https://ec.europa.eu/eurostat/cache/metadata/en/env_wasmun_esms.htm

XII. Waste Management Costs

1. Indicator:
Waste management costs
Short name: Cost GIRS
2. Definition:
It is the accrued expense reported by those responsible for the provision of municipal solid waste management services. [1]
3. Calculation method:

$$\text{COST (USD/Person-year)} = \frac{\text{GTGRS (USD/year)}}{\text{P (Person)} \times \text{RECO (\%)}}$$

Where:
COST: Cost of Waste Management
GTGRS: Total Expenditure on Municipal Solid Waste Management Services.
Q: Population
RECO: Municipal Solid Waste Collection. [1]

4. Waste included:
Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of the roads and public places. [2]
5. Waste excluded:
Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.
6. Code:
COST

7. Periodicity:

Annual [3]

8. Variables:

Total Expenditure on Municipal Solid Waste Management Services: obtained from the information on the expense accrued by local authorities, directly or through third parties, derived from the management and handling of municipal solid waste.

Total population: this variable is obtained from the Population Censuses at the national level, and/or from estimates statistics by the National Statistical Offices or other sectoral instances.

Municipal Solid Waste Collection: obtained from information on the amount of revenue collected by local authorities, directly or through third parties, refers to the daily average amount of municipal solid waste collected.

9. Units:

USD/Person-year

10. Reference period:

It will indicate the year to which the information that will be presented on the indicator of waste management cost corresponds.

11. Reporting level:

National

Regional

Local

12. Source of information:

It is desirable that the information be based on the data provided by the local authorities responsible for the management and handling of solid waste.

In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.

13. Recommendations for the generation of statistics:

It would be appropriate to complement the indicator with the collection of qualitative and descriptive information on the implementation of information systems, transparency and accountability regarding the management and handling of municipal solid waste, in order to contribute to the enrichment of the information pool.

on the solid waste sector in the region.

14. Suitability (Relevance)

This indicator makes it possible to identify and have orders of magnitude on the expenditures and expenses of the local authorities of each country in the exercise of their functions for the provision of the municipal solid waste management service. [4]

15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.

It does not apply.

go 16. References:

	Peru	https://sinia.minam.gob.pe/indicadores/gasto-manejo-residuos-solidos-municipal https://sinia.minam.gob.pe/indicador/1629
[1]	General Law for the Prevention and Integral Management of Waste, Last reform published DOF 01-18-2021.	http://www.diputados.gob.mx/LeyesBiblio/ref/lgpgir.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf
	waste information from Eurostat.	https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?he ang=in
	Explanatory texts of the generation indicators per capita, recycling and recycling of bio-waste and municipal waste by Eurostat waste management operations.	https://ec.europa.eu/eurostat/cache/metadata/en/cei_pc031_esmsip2.htm#relevance1644323035836 https://ec.europa.eu/eurostat/cache/metadata/en/sdg_11_60_esmsip2.htm#relevance1644323358286 https://ec.europa.eu/eurostat/cache/metadata/en/cei_wm030_esmsip2.htm#relevance1644323069597 https://ec.europa.eu/eurostat/cache/metadata/en/env_wasmun_esms.htm

XIII. Employed Personnel

1. Indicator:
Employed Personnel
Short Name: Reported Jobs
2. Definition:
It is the relationship between the number of employees in activities for municipal solid waste management and the number of people served as part of the provision of municipal solid waste services. [1]
3. Calculation method:

$$EMPL\ (employees/1{,}000\ inhabitants) = \frac{\_NTAPubl\ (employees) + NTAPriv\ (employees)\_}{TP\ (inhabitants)} \times 1000$$

Where:
EMPL: Employed Personnel
NTAPub: Number of Workers of Public Agents in the Municipal Solid Waste Management Services.
NTAPriv: Number of Workers of Private Agents in Municipal Solid Waste Management Services
PT: Total population [2]

4. Waste included:
Waste generated in the houses, which result from the elimination of the materials they use in their domestic activities, the products they consume and their containers, packaging or packages; the waste that comes from any other activity within establishments or on public roads that generates waste with household characteristics, and those resulting from the cleaning of the roads and public places. [3]
5. Waste excluded:
Hazardous, special waste, special handling waste, incompatible or others that due to their characteristics are subject to regulatory provisions and/or regulations other than municipal solid waste, such as construction waste, waste from the agricultural sector, sludge from process from wastewater treatment plants, waste from the industrial, commercial and service sectors that due to their volumes and characteristics require specific specifications for its management and handling.
6. Code:
EMPL
7. Periodicity:

Annual [4]

8. Variables:

Number of Workers of Public Agents in the Municipal Solid Waste Management Services: obtained from information on the number of personnel employed by the

local authorities in the management and handling of municipal solid waste.
Number of Workers of Private Agents in Municipal Solid Waste Management Services: obtained from information on the number of personnel employed by private actors in the management and handling of municipal solid waste.
Total population: this variable is obtained from the Population Censuses at the national level, and/or from statistical estimates by the National Statistics Offices or other sectoral instances.

9. Units:

employees/1,000 inhabitants

10. Reference period:

It will indicate the year to which the information that will be presented on the number of people involved in the provision of municipal solid waste management services corresponds.

11. Reporting level:

National

Regional

Local

12. Source of information:

It is desirable that the information be based on the data provided by the local authorities responsible for the management and handling of solid waste.
In the event of presenting information based on statistical estimates, describe in detail the methodology used and the sequence of its application.

13. Recommendations for the generation of statistics:

1. If possible, contemplate the differentiation of the person employed in aspects of management and personnel used in the handling of municipal solid waste.

14. Suitability (Relevance)

This indicator makes it possible to identify the personnel employed by local authorities or through third parties in each country, in the exercise of their functions for the provision of the municipal solid waste management and handling service.
Additionally, it allows obtaining orders of magnitude on that sector of the population dependent on formal activities related to the management and handling of municipal solid waste by local authorities. [5]

15. Base for collecting information on: Sustainable Development Goals, Circular Economy and Climate change.

It does not apply

Id	16. References:	
[1]	Brazil Colombia Brazil General Law for the Prevention and Integral Management of Waste, Last reform published DOF 01-18-2021. Information on waste from Eurostat.	http://www.snis.gov.br/downloads/diagnostics/rs/2020/Glossary_Indicators_RS2020.pdf http://www.sui.gov.co/web/aseo/reportes/administreatment/personal-eng http://snis.gov.br/downloads/diagnosticos/rs/2020/Glossary_Indicators_RS2020.pdf http://www.diputados.gob.mx/LeyesBiblio/ref/lgpggo.htm https://www.diputados.gob.mx/LeyesBiblio/pdf/263_180121.pdf https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=en
[5]	Explanatory texts of the generation indicators per capita, recycling and recycling of bio-waste and municipal waste by Eurostat waste management operations.	https://ec.europa.eu/eurostat/cache/metadata/en/env_wasmun_esms.htm https://ec.europa.eu/eurostat/cache/metadata/en/cei_wm030_esmsip2.htm#relevance1644323069597 https://ec.europa.eu/eurostat/cache/metadata/en/cei_pc031_esmsip2.htm#relevance1644323035836