

## Frequently Asked Questions

### General Information

#### 1. What is the City Waste Landscapes database?

The City Waste Landscapes database is a compilation of data and information on plastic pollution and the ecosystem of actors at a city / city state level.

Compiling data from 75 cities / city states (hereinafter referred to as “cities”) across 22 countries in Asia, Latin America and the Caribbean, this database provides an overview of the waste management and plastic pollution situation; the key actors; investment types; policies; and programs and initiatives that are in place to tackle plastic pollution in the respective cities.

#### 2. Why was the City Waste Landscapes database developed?

Plastic waste pollution is a challenge that is localized in nature, with the need for localized strategies to address the issue. Existing data on waste pollution in cities is often fragmented and there is a lack of standardization around the data points collected to understand the waste landscape. In the absence of such information, it is difficult for cities to benchmark their progress to improve waste management systems and implement effective strategies.

The tool provides a standardized, one-stop platform for city-level plastic waste and waste management-related data. It aims to simplify the search for relevant information and facilitate an improved understanding of the plastic pollution situation in the respective cities, the initiatives currently being undertaken to tackle the problem, and the key actors involved in the initiatives.

#### 3. What research methodology was used to collect the data?

Data was collected through desktop research and is reported as is, based on information available at the time of the research. Research was conducted between March and June 2023. Note that data has not been verified for authenticity or accuracy, with a reliance instead on more reputable sources of information.

The data sources include government websites or databases, such as Indonesia’s Sistem Informasi Pengelolaan Sampah Nasional / National Solid Waste Management Information System (SIPSN); reports from leading organizations in the plastic pollution and circular economy space, such as the International Union for Conservation of Nature, United Nations Development Programme, and the World Bank; journal or academic articles; and news articles.

#### 4. What are some considerations for using the data?

The following are additional considerations to be kept in mind as the data is used:

- The geographical boundaries of the cities listed may vary with each data point. For example, for Makati City in the Philippines, a part of Metro Manila, some of the data points included are for Metro Manila. In cases where city / city state level data is not available, national level data may have been included.
- For Singapore and the five Caribbean countries (Antigua and Barbuda, Dominican Republic, Haiti, Jamaica, and Saint Lucia), national-level data rather than city-level data were used. These countries have smaller population sizes compared to the other cities within the tool.

- In cases where data points for the same indicator contradict each other, the Research team has made a judgment call on the data points selected.
- Some data points have been derived or calculated based on other data points (e.g., per-capita data points).
- All currencies presented are in US dollars (USD) (i.e., GDP per capita, investment amounts). The latest available exchange rate at the time of data entry was used to convert the data from local currencies to USD.

When making direct comparisons between data points from various cities or countries, users should take note of the different methodologies and reporting years of various sources before drawing any conclusions.

Validation for the data included in the City Waste Landscapes tool was carried out primarily through the selection of sources which are considered highly reliable. These include peer reviewed journals and data available from reputable sources including from national and local government and other third-party sources. Additional checks to validate each data point was beyond the scope of the tool. Subject to availability of funding, we intend to add these additional checks on data in future iterations of the tool.

## 5. What is the scope of the City Waste Landscapes database?

The database covers a range of quantitative and qualitative information relevant to the local landscape of plastic pollution.

The following is a summary of the key categories of information included in the database:

- a. Demographics
- b. Solid Waste, Plastic Waste, and Waste Worker Statistics
- c. Municipal Waste Composition
- d. Waste Management (End-of-Life Solutions)
- e. Ecosystem and Key Actors
- f. Investment
- g. Waste Management Policies
- h. Programs and Other Initiatives

## 6. How were the cities selected?

The selection of cities was based on the following criteria:

- Capital city
- Mega cities where consumption, and likely plastic waste generation, is higher
- Cities for which data is already available based on existing research or studies
- Cities identified as plastic leakage hotspots by different studies, such as research by [Meijer et al., 2021](#)

As discussed above, the geographical boundaries may vary depending on the administrative divisions utilized for the particular study.

## 7. Which cities are covered in the City Waste Landscapes database?

Asia			Latin America and the Caribbean		
<b>Cambodia</b> <ul style="list-style-type: none"> <li>Phnom Penh</li> </ul>	<b>India</b> <ul style="list-style-type: none"> <li>Ahmedabad</li> <li>Bengaluru</li> <li>Chennai</li> <li>Delhi</li> <li>Hyderabad</li> <li>Kolkata</li> <li>Mumbai</li> <li>Pune</li> <li>Udaipur</li> <li>Varanasi</li> </ul>	<b>Indonesia</b> <ul style="list-style-type: none"> <li>Bali</li> <li>Bekasi City</li> <li>Bogor City</li> <li>Depok City</li> <li>DKI Jakarta</li> <li>Makassar</li> <li>Malang</li> <li>Semarang</li> <li>Surabaya</li> <li>Tangerang City</li> </ul>	<b>Antigua and Barbuda</b> <ul style="list-style-type: none"> <li>Antigua and Barbuda</li> </ul>	<b>Argentina</b> <ul style="list-style-type: none"> <li>Buenos Aires (Metropolitan area)</li> </ul>	<b>Brazil</b> <ul style="list-style-type: none"> <li>Brasilia</li> <li>Rio de Janeiro</li> <li>São Paulo</li> </ul>
<b>Laos</b> <ul style="list-style-type: none"> <li>Vien Tien</li> </ul>	<b>Malaysia</b> <ul style="list-style-type: none"> <li>Johor</li> <li>Kuala Lumpur</li> <li>Malacca</li> <li>Penang</li> <li>Putrajaya</li> <li>Sabah</li> <li>Shah Alam</li> </ul>	<b>Philippines</b> <ul style="list-style-type: none"> <li>Caloocan City</li> <li>Cebu City</li> <li>Davao City</li> <li>Makati City</li> <li>Mandaluyong City</li> <li>Manila City</li> <li>Pasig City</li> <li>Quezon City</li> <li>Taguig City</li> </ul>	<b>Chile</b> <ul style="list-style-type: none"> <li>Santiago Province</li> </ul>	<b>Colombia</b> <ul style="list-style-type: none"> <li>Barranquilla</li> <li>Bogota</li> <li>Cali</li> <li>Medellin</li> </ul>	<b>Dominican Republic</b> <ul style="list-style-type: none"> <li>Dominican Republic</li> </ul>
<b>Singapore</b> <ul style="list-style-type: none"> <li>Singapore</li> </ul>	<b>Thailand</b> <ul style="list-style-type: none"> <li>Bangkok</li> <li>Chon Buri</li> <li>Nakhon Ratchasima</li> <li>Nakhon Si Thammarat</li> <li>Phuket</li> <li>Rayong</li> <li>Ubon Ratchathani</li> </ul>	<b>Vietnam</b> <ul style="list-style-type: none"> <li>Can Tho</li> <li>Da Nang</li> <li>Hai Phong</li> <li>Hanoi</li> <li>Ho Chi Minh City</li> <li>Long An Province</li> <li>Nam Dinh Province</li> <li>Quang Nam Province</li> </ul>	<b>Ecuador</b> <ul style="list-style-type: none"> <li>Guayaquil</li> <li>Quito</li> </ul>	<b>Haiti</b> <ul style="list-style-type: none"> <li>Haiti</li> </ul>	<b>Jamaica</b> <ul style="list-style-type: none"> <li>Jamaica</li> </ul>
			<b>Mexico</b> <ul style="list-style-type: none"> <li>Guadalajara City</li> <li>Mexico City</li> <li>Monterrey City</li> </ul>	<b>Panama</b> <ul style="list-style-type: none"> <li>Panama City</li> </ul>	<b>Peru</b> <ul style="list-style-type: none"> <li>Lima (Metropolitan area)</li> </ul>
			<b>Saint Lucia</b> <ul style="list-style-type: none"> <li>Saint Lucia</li> </ul>		

## 8. Who can use the database, and what can they use it for?

The database can be used by individuals, city planners, and organizations such as non-governmental organizations (NGOs), corporates, and investors who are interested in information on any of the cities covered. For example, a company considering a plastic waste reduction campaign can refer to the database to understand the current amounts of plastic waste generated and identify other programs or initiatives that have been implemented.

The database allows users to access city-level data, as well as compare across cities within one country and across cities in different countries.

## 9. Can I provide feedback on the database?

Yes! As the data has been collected through desktop research, we recognize that there may be newer or local-language data sources that may not have been considered. We invite stakeholders to share their feedback and perspectives on this work to help us improve the data available on the City Waste Landscapes database. You can submit your feedback through the feedback form available on the database [page](#).

## 10. What are the future plans for the database?

The City Waste Landscapes database may be updated with data for more cities. If there is a particular city you would like to see added to the database, you can submit your feedback through the feedback form available on the database [page](#).

## 11. Can I cite data from the City Waste Landscapes database?

Yes, please attribute all data citations to “Source: The Circulate Initiative’s City Waste Landscapes database” and direct audiences back to the website.

## Indicators – Overview and Definitions

### 12. What are the indicators presented in the City Waste Landscapes database?

The following is a list of the indicators within each key category of information. The information presented on indicators, such as key actors, and programs and initiatives, is based on research undertaken by The Circulate Initiative and may not be an exhaustive list.

Category	Indicators
<b>Demographics</b>	<ul style="list-style-type: none"> <li>› Total population</li> <li>› Tourist arrivals</li> <li>› Gross domestic product (GDP) per capita</li> <li>› No. of households</li> </ul>
<b>Solid Waste, Plastic Waste, and Waste Worker Statistics</b>	<ul style="list-style-type: none"> <li>› Municipal Solid Waste Generated</li> <li>› and/or Municipal Solid Waste Generated per capita</li> <li>› Municipal Solid Waste Collected</li> <li>› and/or Municipal Solid Waste Collected per capita</li> <li>› Plastic Waste Generated</li> <li>› and/or Plastic Waste Generated per capita</li> <li>› Plastic Waste Collected</li> <li>› and/or Plastic Waste Collected per capita</li> <li>› Plastic Leakage</li> <li>› and/or Plastic Leakage (%)</li> <li>› % composition of Plastic Waste in Municipal Solid Waste</li> <li>› No. of waste workers</li> </ul>
<b>Municipal Solid Waste (MSW) Composition</b>	MSW composition components (based on weight or volume, where specified)
<b>Waste Management (End-of-Life Solutions)</b>	<ul style="list-style-type: none"> <li>› End-of-life fates                             <ul style="list-style-type: none"> <li>› % of waste diverted to landfills</li> <li>› % of waste composted</li> <li>› % of waste incinerated</li> <li>› % of plastic waste collected in the city that is recycled</li> </ul> </li> <li>› Landfill(s) to which waste is diverted</li> <li>› Waste-to-energy (WTE) plants                             <ul style="list-style-type: none"> <li>› Name of WTE plant</li> <li>› Status (operational or announced)</li> <li>› Year implemented / to be implemented</li> <li>› Capacity</li> </ul> </li> </ul>

Category	Indicators
<b>Ecosystem and Key Actors</b>	Organizations involved in activities that tackle plastic pollution in the city. The following are the categorizations of the key actors: <ul style="list-style-type: none"> <li>› Governments</li> <li>› Corporates</li> <li>› Civil society organizations (includes NGOs)</li> <li>› Recycling companies and aggregators</li> <li>› Waste management providers</li> <li>› Financial institutions</li> <li>› Others</li> </ul>
<b>Investment</b>	Investments that have been made to tackle plastic pollution <ul style="list-style-type: none"> <li>› Description of investment</li> <li>› Investment amount</li> <li>› Source of funding</li> </ul>
<b>Waste Management Policies</b>	Local, regional or national policies that are applicable to plastic pollution
<b>Programs and Other Initiatives</b>	Programs/initiatives that aim to tackle plastic pollution

Below are additional notes on some of the indicators:

Indicator	Notes
<b>Tourist Arrivals</b>	Depending on available data, tourist arrivals can include domestic and international tourists; domestic tourists only; or international tourists only.
<b>Municipal Solid Waste (MSW)</b>	MSW typically refers to waste generated from: households, commerce and trade, small businesses, office buildings and institutions (schools, hospitals, government buildings). It also includes bulky waste (e.g. white goods, old furniture, mattresses) and waste from selected municipal services, e.g. waste from park and garden maintenance, waste from street cleaning services (street sweepings, the content of litter containers, market cleansing waste), if managed as waste. The definition excludes waste from municipal sewage networks and treatment, municipal construction and demolition waste. <sup>1</sup> The exact definition applied may vary for each city.
<b>Plastic Leakage</b>	Plastic leakage typically refers to plastic waste that is not kept within managed (formal or informal) systems or is littered; hence, it can enter the environment/ocean. <sup>2</sup> The exact definition applied may vary for each city.

<sup>1</sup> UN Habitat. (2021). *Waste wise cities tool* [online]. Available from: <https://unhabitat.org/sites/default/files/2021/02/Waste%20wise%20cities%20tool%20-%20EN%203.pdf>

<sup>2</sup> The Circulate Initiative. (2023). *Mapping Local Plastic Recycling Supply Chains: Insights from Selected Cities in India* [online]. Available from: [https://www.thecirculateinitiative.org/\\_files/ugd/77554d\\_3015af411a8c4e5c98473757e86f1d28.pdf?index=true](https://www.thecirculateinitiative.org/_files/ugd/77554d_3015af411a8c4e5c98473757e86f1d28.pdf?index=true)

Indicator	Notes
<b>Waste workers</b>	<p>Individuals who extract recyclable materials from the waste stream to support their livelihood, selling materials into the recovery system.<sup>3</sup></p> <p>Depending on available data, this might include individuals who are formally or informally employed. The exact definition applied may vary for each city.</p>
<b>Landfill</b>	<p>Landfill mainly describes landfill disposal facilities and sanitary waste dumps permitted by the authorities. Some data sets might also include illegal dumping (dumpsites) and unsanitary landfills.<sup>4</sup></p>
<b>Waste-to-energy (WTE) plant</b>	<p>This mainly includes formal, permitted WTE plants with heat and electricity recovery, where known. Data sets might also include some basic incineration plants without energy recovery, depending on data sets available, and biogas plants.<sup>5</sup></p>
<b>Investment</b>	<p>This includes investments to manage waste in the city in the form of:</p> <ul style="list-style-type: none"> <li>▸ The city's annual solid waste management budget</li> <li>▸ Investments to improve waste management infrastructure or increase recycling capacity</li> <li>▸ Investments in new solutions to reduce waste</li> <li>▸ Funds provided to organizations whose operations lead to the overall reduction of waste in the city</li> </ul> <p>For the city's annual solid waste management budget, depending on the source, this might refer to the entire budget or specific components of the budget relevant to solid waste management.</p>

<sup>3</sup> UN Habitat. (2021). *Waste wise cities tool* [online]. Available from:

<https://unhabitat.org/sites/default/files/2021/02/Waste%20wise%20cities%20tool%20-%20EN%203.pdf>

<sup>4</sup> The Circulate Initiative. (2023). *Mapping Local Plastic Recycling Supply Chains: Insights from Selected Cities in India* [online].

Available from:

[https://www.thecirculateinitiative.org/\\_files/ugd/77554d\\_3015af411a8c4e5c98473757e86f1d28.pdf?index=true](https://www.thecirculateinitiative.org/_files/ugd/77554d_3015af411a8c4e5c98473757e86f1d28.pdf?index=true)

<sup>5</sup> Ibid.

### 13. How are the MSW composition categories defined?

To consolidate the MSW categories from different sources, these have been standardized to follow the [International Solid Waste Association \(ISWA\) Plastic Pollution Calculator](#) definitions. The table below shows eight categories and the various types of waste captured within each. The nomenclature of waste types mentioned below follow original sources. Some of the waste types have been captured only in one category to avoid double counting. "Glass, Ceramic, Stone" for example, has been captured under the waste type "Glass" even though the waste may include ceramic and stone; which, when separately reported, is captured under "Others".

Organic Waste	Garden Waste	Paper & Cardboard	Metals	Glass	Plastics	Textiles	Others
<ul style="list-style-type: none"> <li>▸ Biodegradable</li> <li>▸ Bones and Shells</li> <li>▸ Coconut / Coconut Shells</li> <li>▸ Food &amp; Kitchen Waste</li> <li>▸ Green Waste</li> <li>▸ Organic Material</li> <li>▸ Other Organic</li> <li>▸ Vegetable</li> <li>▸ Food &amp; Kitchen Waste</li> </ul>	<ul style="list-style-type: none"> <li>▸ Garden Green Waste</li> <li>▸ Garden Yard Waste</li> <li>▸ Grass/Leaves/Wood</li> <li>▸ Horticultural</li> <li>▸ Wood/Bamboo</li> <li>▸ Wood, Cloth (Organic-Dry)</li> <li>▸ Wood &amp; Leaves</li> <li>▸ Wooden Matter</li> <li>▸ Wooden Materials</li> <li>▸ Sticks And Leaves</li> <li>▸ Timber (Wood)</li> <li>▸ Yard Waste/Wood</li> </ul>	<ul style="list-style-type: none"> <li>▸ Tetra Pak</li> <li>▸ Paperboard</li> <li>▸ Paper &amp; Recyclables (including Metals)</li> <li>▸ Paperboard</li> <li>▸ Paper &amp; Recyclables (including Metals)</li> </ul>	<ul style="list-style-type: none"> <li>▸ Aluminum</li> <li>▸ Metal (Ferrous)</li> <li>▸ Metal (Non-Ferrous)</li> <li>▸ Steel</li> <li>▸ Steel &amp; Materials</li> <li>▸ Tins</li> </ul>	<ul style="list-style-type: none"> <li>▸ Bottles</li> <li>▸ Glass/Bottle</li> <li>▸ Glass, Ceramic, Stone</li> </ul>	<ul style="list-style-type: none"> <li>▸ Consumable Plastics</li> <li>▸ Fiberglass</li> <li>▸ Industrial Plastics</li> <li>▸ Plastics (including 1% Styrofoam)</li> <li>▸ Plastic (Other Composite)</li> <li>▸ Plastic &amp; Packaging</li> <li>▸ Plastic, Rubber</li> <li>▸ Plastics/ Sachets/ Bottles</li> </ul>	<ul style="list-style-type: none"> <li>▸ Cloth/Rags</li> <li>▸ Fabric</li> <li>▸ Rags</li> <li>▸ Rags &amp; Textiles</li> <li>▸ Sanitary Textiles</li> <li>▸ Textile/ Leather</li> </ul>	<ul style="list-style-type: none"> <li>▸ Ash &amp; Sludge</li> <li>▸ Bags &amp; Packaging</li> <li>▸ Bio Medical Waste/ Medical Waste</li> <li>▸ Coal Slag</li> <li>▸ Composite Packaging</li> <li>▸ Construction &amp; Demolition</li> <li>▸ Diapers</li> <li>▸ E-Waste</li> <li>▸ Foam</li> <li>▸ Hazardous (Household And Others)</li> <li>▸ Inert</li> <li>▸ Non-Hazardous Sanitary Waste</li> <li>▸ Non-Recycled Waste (Soil, Sand, Porcelain)</li> <li>▸ Pathological Waste</li> <li>▸ Residual</li> <li>▸ Rubber &amp; Leather</li> <li>▸ Sand, Silt, Fine Earth, Oil</li> <li>▸ Sanitary</li> <li>▸ Scrap Tyres</li> <li>▸ Special Wastes</li> <li>▸ Stone &amp; Ceramic</li> <li>▸ Uncategorized</li> <li>▸ Used Slag</li> </ul>



### 14. Are there data points that were calculated?

Data points that might have been calculated include:

- GDP per capita (from GDP and total population data)
- MSW generated per capita (from MSW generated amount and total population data)
- MSW collected per capita (from MSW collected amount and total population data)
- MSW collected (from MSW generated amount and reported waste collection rates)
- Plastic waste generated (from share of plastic in MSW composition and MSW generated)

The data points may be calculated based on sources from different years.