

4 Waste Collection

At a Glance:

- ▶ **MSW collection is an important aspect in maintaining public health in cities around the world.**
- ▶ **The amount of MSW collected varies widely by region and income level; collection within cities can also differ greatly.**
- ▶ **Collection rates range from a low of 41% in low-income countries to a high of 98% in high-income countries.**

Waste collection is the collection of solid waste from point of production (residential, industrial commercial, institutional) to the point of treatment or disposal. Municipal solid waste is collected in several ways:

- 1. House-to-House:** Waste collectors visit each individual house to collect garbage. The user generally pays a fee for this service.
- 2. Community Bins:** Users bring their garbage to community bins that are placed at fixed points in a neighborhood or locality. MSW is picked up by the municipality, or its designate, according to a set schedule.
- 3. Curbside Pick-Up:** Users leave their garbage directly outside their homes according to a garbage pick-up schedule set with the local authorities (secondary house-to-house collectors not typical).
- 4. Self Delivered:** Generators deliver the waste directly to disposal sites or transfer stations, or hire third-party operators (or the municipality).
- 5. Contracted or Delegated Service:** Businesses hire firms (or municipality with municipal facilities) who arrange collection schedules and charges with

customers. Municipalities often license private operators and may designate collection areas to encourage collection efficiencies.

Collected MSW can be separated or mixed, depending on local regulations. Generators can be required to separate their waste at source, e.g., into “wet” (food waste, organic matter) and “dry” (recyclables), and possibly a third stream of “waste,” or residue. Waste that is un-segregated could be separated into organic and recycling streams at a sorting facility. The degree of separation can vary over time and by city. ‘Separation’ can be a misnomer as waste is not actually separated

False Creek,
Vancouver, Canada





Separate garbage containers, Singapore

Photo: Cyrus Tata

but rather is placed out for collection in separate containers without first being ‘mixed’ together. Often, especially in developing countries, MSW is not separated or sorted before it is taken for disposal, but recyclables are removed by waste pickers prior to collection, during the collection process, and at disposal sites.

The degree of source separation impacts the total amount of material recycled and the quality of secondary materials that can be supplied. Recyclables recovered from mixed waste, for example, tend to be contaminated, reducing marketing possibilities. However, source separation and separate collection can add costs to the waste collection process.

Collection programs need to be differentiated by type of generator. Often more attention is devoted to residential waste even though this is usually less than 50% of the total waste stream. Waste generated by the ICI sector tends to be collected better, because of more efficient containerization and purpose-built vehicles, and benefits from the collection of fees. Residential waste collection, on the other hand, tends to be more expensive to collect per tonne as

waste is more dispersed. Annex G provides data for MSW collection in cities over 100,000.

The percent of MSW collected varies by national income and by region. Higher income countries tend to have higher collection efficiency although less of the solid waste management budget goes towards collection. In low-income countries, collection services make up the bulk of a municipality’s SWM budget (as high as 80 to 90% in many cases), yet collection rates tend to be much lower, leading to lower collection frequency and efficiency. In high-income countries, although collection costs can represent less than 10% of a municipality’s budget, collection rates are usually higher than 90% on average and collection methods tend to be mechanized, efficient, and frequent. While total collection budgets are higher, they are proportionally lower as other budget items increase. For further information on estimated solid waste management costs according to income level, please refer to Annex E.

The degree and sophistication of waste picking influences overall collection. In cities like Buenos Aires, waste pickers tend to remove recyclables

after the waste is placed curbside. The resulting scattered waste is more costly to collect: in some cases the value of recyclables are less than the extra costs associated with collecting the disturbed waste. In some cities informal waste pickers have strong links to the waste program and municipally sanctioned crews can be prevented from accessing the waste as informal waste pickers process the waste. Waste pickers can be formally or informally organized into groups or unions with varying degrees of autonomy and political voice.

Containerization is an important aspect for waste collection, particularly from residential generators. If waste is not set out for collection in closed containers it can be disturbed by vermin such as dogs and rats, and it can become water-logged, or set afire.

Frequency of collection is an important aspect readily under a municipality's control. From a health perspective, no more than weekly collection is needed. However in some cities, largely because of culture and habituation, three-times per day residential collection is offered (e.g. Shanghai). Good waste collection programming requires an ongoing iterative approach between collection crews and generators (usually households). Therefore, waste generators should be aware of the true costs of collection, and ideally be charged for these directly.

MSW Collection by Income

The data show that the average waste collection rates are directly related to income levels. Low-income countries have low collection rates, around 41%, while high-income countries have higher collection rates averaging 98%. Figure 4 shows the average collection percentage by income. Annex K details MSW collection rates by country.

MSW Collection by Region

Figure 5 shows MSW collection efficiency by region. Regions with low-income countries tend to have low collection rates. South Asia and Africa are the lowest with 65% and 46% respectively. Not surprisingly, OECD countries tend to have the highest collection efficiency at 98%.

FIG. 4
Waste Collection Rates by Income

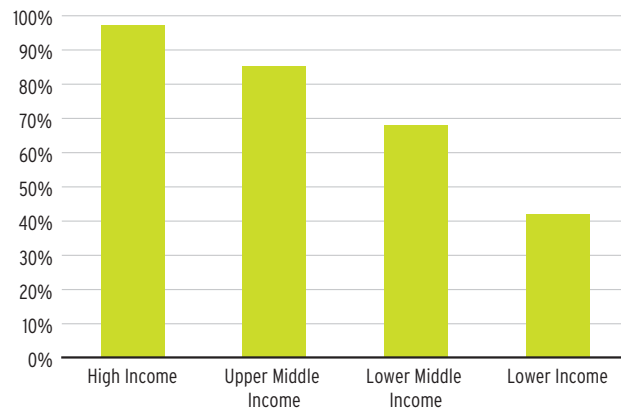


FIG. 5
Waste Collection Rates by Region

