

# São Paulo, Brazil

GHG reduction potential in Road-to-ZW scenario: 105%

## Key statistics (2020)

- Population: 11,869,860
- Total municipal solid waste generation: 3,882,430 tonnes per year
- Per capita waste generation: 0.9 kg/day
- Waste collection system: minimal official separate collection, no official monitoring of informal recycling
- Waste diversion rate: 1% excluding informal recycling

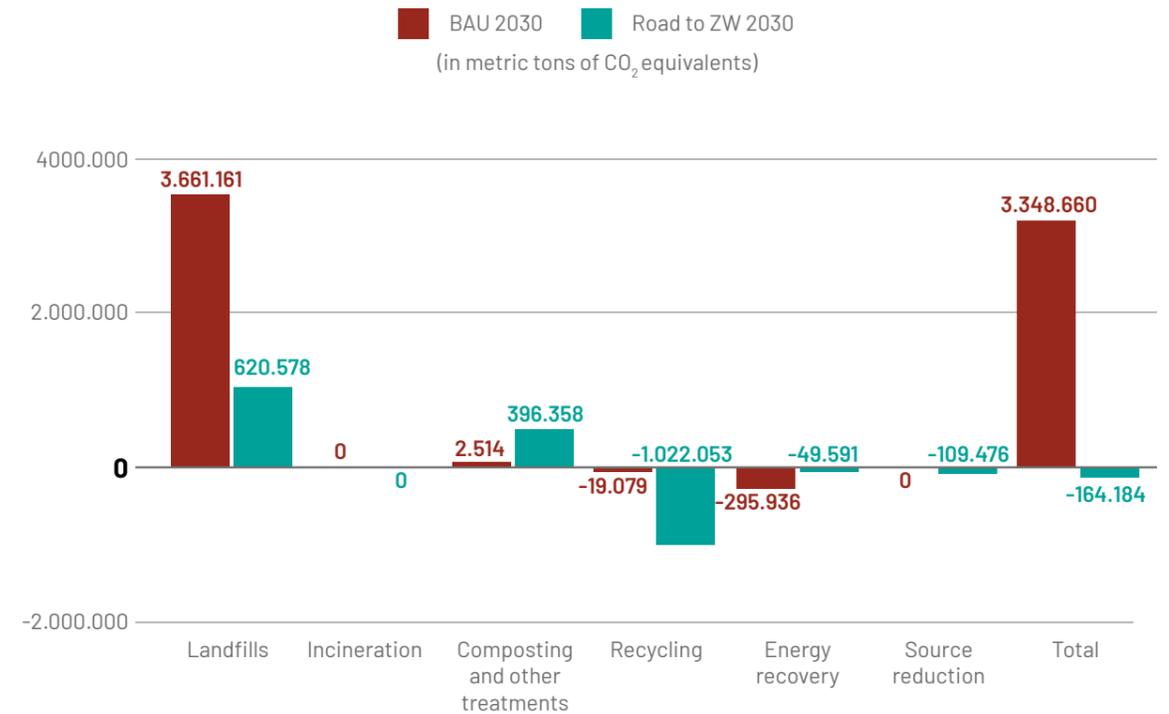
One of the largest cities in the world, São Paulo had a population of nearly 12 million people in 2020, a figure that is expected to grow by another half million people by 2030. The city relies almost exclusively on landfilling to manage its waste, with 99% of the waste officially tracked by the city going to landfills. An organized community of waste pickers and waste picker collectives recover a large share of recyclable materials, but this flow is poorly tracked by the city and not included in official estimates. This is reflected in the low recovery rates noted in the business as usual scenario for this analysis. Organics, which comprise half of the city's waste stream, have no informal recovery market, and are almost exclusively sent to landfill along with the rest of the mixed municipal waste collected by the city.

To improve overall material recovery rates and address the high levels of organic waste, the city has put forth a plan to greatly increase its mechanical-biological treatment (MBT) capacity to treat all of the city's mixed municipal waste. Unfortunately for the plan, it is not feasible for

the city to scale up MBT capacity quickly enough to process all municipal waste by 2030, nor is it possible for MBT alone to achieve the target recovery rates for recyclables that the city has set in the Climate Action Plan (34% of paper and cardboard, 25% of plastic). Instead, waste pickers and advocates at citizen organization Pólis Institute have proposed an alternative scenario that integrates existing waste picker expertise and networks to institute separate collection for recyclables and organics, and divert materials from landfill to composting and recycling. This would be complemented by a ban on certain single-use plastic, greatly reducing the amount of waste sent to landfill without costly investments in MBT facilities.

## São Paulo in 2030 – Business as Usual vs. Road to Zero Waste

The below chart shows estimates for annual GHG emissions associated with waste management in São Paulo by 2030 in two scenarios: 1) Business as Usual (BAU) based on the data from 2019, and 2) Road to Zero Waste based on consultations with local groups including Pólis Institute. Assumptions that informed each scenario are detailed in the table below.



Treatment	BAU 2030	Road-to-ZW 2030
Landfill	4,334,595 tonnes of municipal solid waste per year	1,939,677 tonnes of municipal solid waste per year (55% reduction)
Incineration	none	none
Composting & other treatments	none	1,723,724 tonnes of organics composted per year and 1,939,677 tonnes per year of residuals are processed with MRBT
Recycling	Significant informal sector recycling escapes formal data collection	Expanded informal sector role captures an additional 715,980 tonnes of dry recyclables per year
Energy recovery	Landfill gas is captured and flared without energy recovery	Landfill gas is captured and flared without energy recovery
Source reduction	none	127,327 tonnes of plastic packaging are avoided through a single-use plastic ban
Overall diversion rate	1%	68%

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## Key takeaways

- 1** As organics make up half of São Paulo's waste stream and separate collection and treatment for organic waste is almost non-existent, methane emissions from organic waste in landfills are the primary source of GHG emissions in São Paulo.
- 2** In the Road to Zero Waste scenario, **São Paulo would achieve an increase in overall diversion rate from 1% to 68%, avoiding annual GHG emissions by 3,512,844 tonnes CO<sub>2</sub>e in 2030.**
- 3** **This approach would reduce annual residual waste by 55%, landfill methane emissions by 83%, and overall GHG emissions by 105%, compared to the Business as Usual 2030 scenario; the waste system will be transformed into a net-negative sector.**
- 4** The Road to Zero Waste scenario includes diverting 80% of organic waste from landfills, increasing recycling rates by integrating waste pickers and separate collection, and implementing a single-use plastic ban.
- 5** The city's proposed plan to address waste sector emissions and achieve its recovery rate goals solely through MBT is infeasible; instead, improving organic waste treatment and strengthening recycling efforts led by organized waste pickers would greatly increase the city's municipal solid waste diversion.

## Recommendations

- **Waste picker** integration can draw on the expertise of informal waste workers to expand current informal recycling efforts, which account for the majority of recycling in the city, and achieve the city's target recovery rates for certain recyclable materials without costly investments in MBT infrastructure.
- For **organic waste**, which makes up half of São Paulo's waste stream but has no commercial value, waste pickers and other actors would need to be financed to separately collect it and divert it from landfill to composting to achieve the large GHGs emissions savings seen in this analysis.
- **Single-use plastic** bans can reduce the amount of difficult-to-recycle materials in the waste stream that would otherwise end up in landfills, saving the city money and greenhouse gas emissions.



@Lana Estânia/MNCR



Written by: John Ribeiro-Broomhead. This case study was prepared as part of the report, "Zero Waste to Zero Emissions: How Reducing Waste Is a Climate Gamechanger (GAIA, 2022)." Please visit [www.no-burn.org/zerowaste-zero-emissions](http://www.no-burn.org/zerowaste-zero-emissions) to access the full report and detailed notes on data and methods.