

eThekwini (Durban), South Africa

GHG reduction potential in Road-to-ZW scenario: 63%

Key statistics (2017)

- Population: 3,947,020
- Total municipal solid waste generation: 1,368,480 tonnes per year
- Per capita waste generation: 0.95 kg/day
- Waste collection system:
 - <90% collection rate
 - Minimal separate collection by the municipality
- Waste diversion rate: 10%

The eThekwini municipality (Durban) is home to a patchwork of rural, peri-urban, and dense city neighborhoods with a range of economic resources. As many as 12% of households – largely in rural and informal housing settlements – do not receive official waste services. With negligible official separate collection and a discontinued curbside separate collection pilot program for household recyclables, the municipality relies heavily on waste pickers for material recovery. Conservative estimates of combined official and unofficial recovery rates suggest an overall material recovery rate of 10%, with unseparated waste being sent to landfill. But unofficial observations from experts in the area suggest much higher recovery rates for recyclables like PET bottles, paper, and cardboard through the informal sector. Despite this, the National Waste Picker Integration guidelines (2020) published by the Department of Forestry, Fisheries, and the Environment has yet to be implemented by the municipality, and informal waste workers still go unrecognized and unsupported. According to the 2016 Integrated Solid Waste Management plan, the municipality had set a goal of increasing the

amount of recovered recyclables by 10% each year, but there are no official programs in place to achieve that goal.

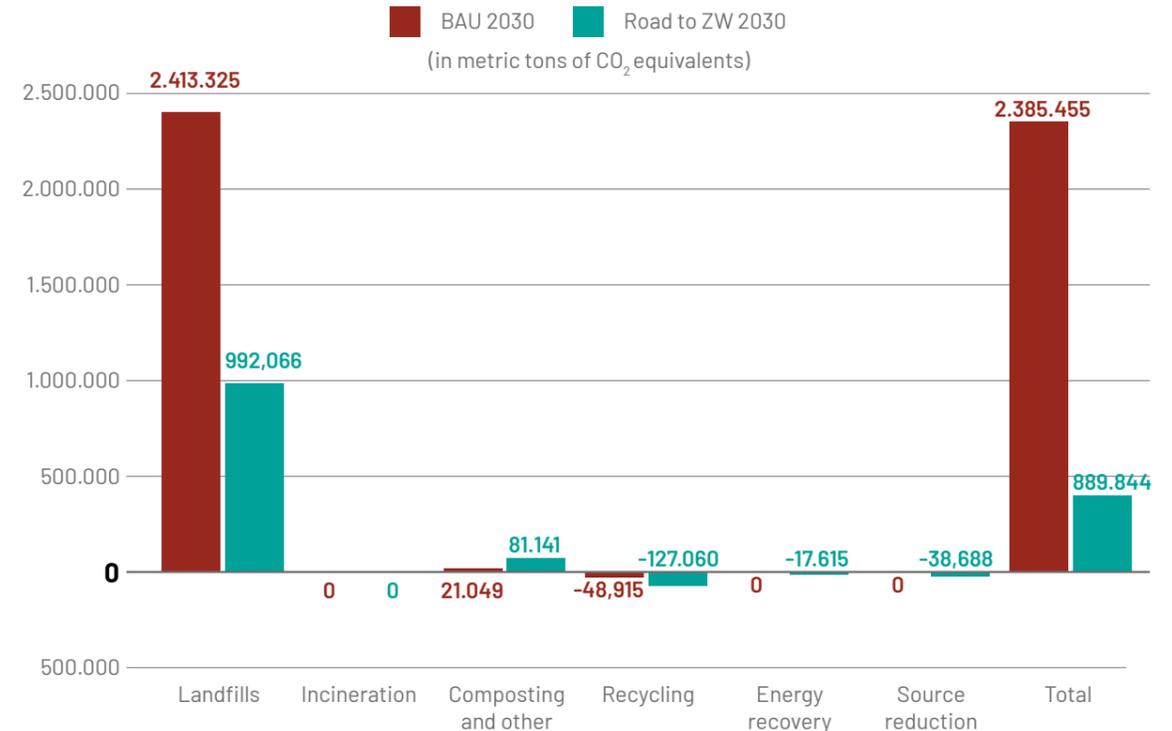
Organic waste management presents a significant opportunity for the municipality to reduce the load on its increasingly expensive landfills, with food and garden waste making up 43% of the combined domestic and commercial waste stream. Integration and support for waste pickers allows for better tracking and execution of material recovery, particularly for easier-to-recycle materials such as paper and cardboard. This coupled with separate collection of food and garden waste could reduce its waste sector greenhouse gas emissions by as much as 63% (or 1,495,611 tonnes of CO₂e) relative to business as usual, the equivalent of preventing 750,000 tonnes of coal from being burned. Plans in the city's recently published Climate Action Plan to reduce the amount of good quality leftover food waste by 80% would generate additional GHG emissions savings.



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eThekwini in 2030 – Business as Usual vs. Road to Zero Waste

The below chart shows estimates for annual GHG emissions associated with waste management in eThekwini by 2030 in two scenarios: 1) Business as Usual (BAU) based on the data from 2020, and 2) Road to Zero Waste based on consultations with local partners including the Urban Futures Centre of Durban University of Technology, groundWork, and Asiye eTafuleni. Assumptions that informed each scenario are detailed in the table below.



Treatment	BAU 2030	Road-to-ZW 2030
Landfill	1,335,017 tonnes of municipal solid waste landfilled per year Responsible for the entirety of GHG emissions	740,848 tonnes of municipal solid waste landfilled per year 45% reduction in landfilling, 59% reduction in landfill gas emissions
Incineration	none	none
Composting & other treatments	97,283 tonnes composted	333,041 tonnes composted
Recycling	79,555 tonnes officially; the informal sector handles much more	268,142 tonnes by strengthening the informal sector. Results in 2.6 times the GHG savings of BAU
Energy recovery	none	199,824 tonnes anaerobically digested, producing 17,615 tonnes CO ₂ e in emissions savings through energy generation
Source reduction	none	SUP restrictions avoid 44,997 tonnes of plastic and 38,688 tonnes CO ₂ e GHG emissions
Overall diversion rate	11%	47%

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Key takeaways

- 1** High organic content in eThekweni's waste stream makes separate collection and composting/anaerobic digestion critical to reducing the city's waste emissions, particularly from landfills. The food waste reduction goal in the city's Climate Action Plan is a step in the right direction, but there is a lot more that can be done to prevent organic waste.
- 2** In the Road to Zero Waste scenario, eThekweni would achieve an increase in its overall diversion rate from 11% to 47%, avoiding annual GHG emissions by 1,495,611 CO₂e in 2030.
- 3** This approach would reduce annual residual waste by 46%, landfill methane emissions by 59%, and overall GHG emissions by 63%, compared to the Business as Usual 2030 scenario.
- 4** The Road to Zero Waste scenario includes diverting 80% of organics from landfill to anaerobic digestion (37.5%) and composting (62.5%), increasing recycling rates to 80% for paper and cardboard recycling, doubling the amount of glass and metals recovered, and introducing a ban on single-use plastic.
- 5** Informal recyclers play a critical role in recycling in Durban, and the city has yet to recognize and support their grassroots efforts. Waste pickers' associations and environmental justice NGOs continue to advocate for the municipality to become an ally and partner in their efforts toward a zero waste city.

Recommendations

- **Organics**, which constitute 43% of the waste stream and are responsible for a large proportion of the municipality's baseline greenhouse gas emissions, should be separately collected and diverted from landfill to composting and/or anaerobic digestion, either at community-scale sites such as garden compost piles, or larger facilities depending on local community needs and resources. Fulfilling the goal set forth in the municipality's Climate Action Plan to reduce good quality leftover food in the waste stream by 80% is also critical to managing waste-related emissions.
- **Recyclables** should be managed through improved integration of the existing informal recycling system that already recovers significant amounts of paper, cardboard, and plastic that never enter the waste stream and are not captured by current data. The municipality should draw on the expertise of waste pickers to manage the most appropriate material recovery strategies for each neighborhood, including buy-back centers, door-to-door collection, and material recovery facilities.
- **Single-use plastic** should be banned in order to reduce the amount of difficult-to-recycle materials in the waste stream that can only go to landfill.



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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 to access the full report and detailed notes on data and methods.