Dar es Salaam, Tanzania

GHG reduction potential in Road-to-ZW scenario: 65%

@Peter Mitchell

Key statistics (2017)

- **Population: 5,200,000**
- **Total municipal solid waste generation: 1,679,000 tonnes/year**
- **Per capita waste generation: 0.9 kg/day**
- **Waste collection: 40% collection rate (no statistics for separation)**
- **Waste diversion rate: no statistics**

Dar es Salaam is the third fastest growing city in Africa and the ninth fastest growing in the world, with a population projected to be nearly 11 million by 2030. The growth of urbanization, industrialization, and population in Dar es Salaam city has increased the solid waste generation rate.

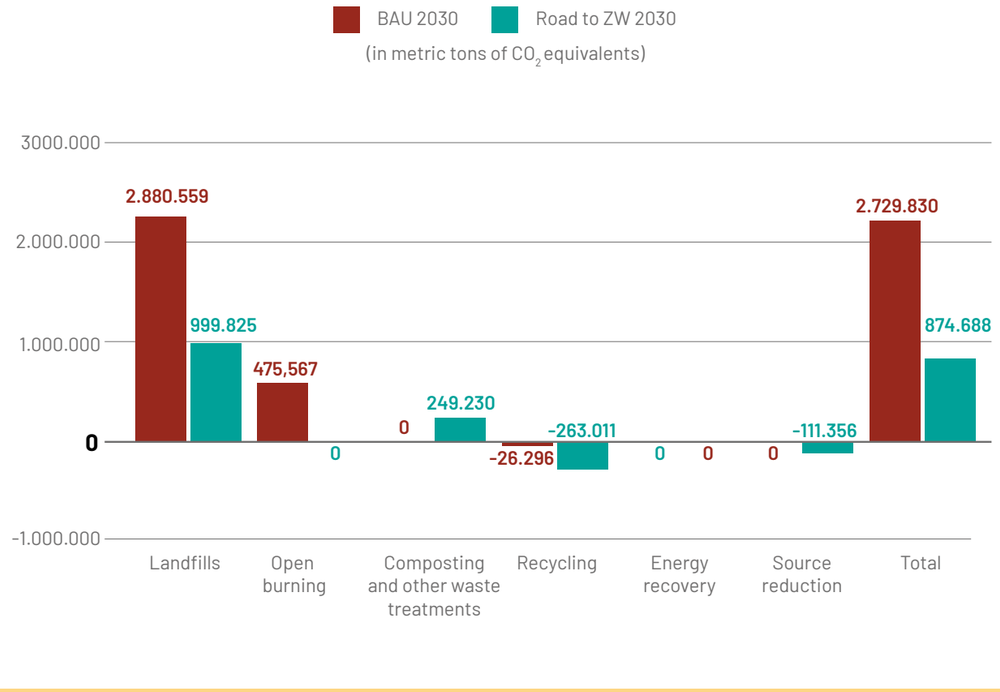
Poor waste collection, lack of reliable disposal sites, inadequate solid waste infrastructure, and insufficient guidelines on waste separation at source are among the major challenges in the waste sector. The city generates an estimated 5,600 tonnes of solid waste daily, and only between 900 and 1,500 tonnes are taken to the dumpsite by the city. The waste is transported and dumped at the only official dumpsite, Pugu-Kinyamwezi, which does not have gas collection or other mitigation measures. The rest of the waste is dumped onto vacant land or waterways, and much is burned in the open.

In Dar Es Salaam, recycling is currently spearheaded by the efforts of an informal army of self-employed, micro-entrepreneurial waste pickers. According to the Tanzania Investment Guide on Waste Management 2020, a total of 15 informal recycling transfer stations and one official government-managed dumpsite are mapped out across the city, supporting the operations of approximately 1,237 waste pickers. Waste pickers collect recyclables from houses and streets and work at the dumpsite as well, collecting an average of 20 kilograms per day.

Nipe Fagio, a local group that has been building cooperative-led zero waste systems in Dar es Salaam since 2019, sees great potential in formation and formalization of waste collection cooperatives in reducing the city's waste and carbon footprint. As an example, Wakusanya Taka Bonyokwa Cooperative Society's contribution to separate collection helped to divert more than 80% of the waste generated in a low-income sub-ward of Bonyokwa, in the Ilala district in Dar es Salaam through composting, reuse, and recycling, reducing the waste to 10-20%.

Dar es Salaam in 2030 – Business as Usual vs. Road to Zero Waste

The below chart shows estimates for annual GHG emissions associated with waste management in Dar es Salaam by 2030 in two scenarios: 1) Business as Usual (BAU) based on the data from 2016, and 2) Road to Zero Waste based on consultations with local groups including Nipe Fagio. Assumptions that informed each scenario are detailed in the table below.



Treatment	BAU 2030	Road-to-ZW 2030
Landfill (dumpsites)	2,739,300 tonnes of municipal solid waste disposed, including open burning and open dumping	1,123,481 tonnes of municipal solid waste. Open burning is ended. Landfill gas emissions drop by 47%
Incineration	Open burning is prevalent; we estimate 508,023 tonnes CO_2e	none
Composting & other treatments	none	1,192,801 tonnes composted
Recycling	Informal sector active but no data available	423,018 tonnes recycled, resulting in 371,654 tonnes CO_2e reduction
Energy recovery	none	none
Source reduction	none	Single-use plastic bans reduce plastic waste by 129,514 tonnes, resulting in 111,356 tonnes CO_2e avoided (a 35% reduction in total plastic waste generation)
Overall diversion rate	0%	53%

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Key takeaways

1. The biggest portion of GHG emissions in Dar es Salaam is methane emissions from organic waste in dumpsites, due to the lack of proper organic waste management systems, such as separate organic waste collection and composting, despite the high amount of organic waste generated (49% of the total municipal solid waste, 39% kitchen waste and 10% grass and wood).

2. In the Road to Zero Waste scenario, **Dar es Salaam would achieve an increase in overall diversion rate from 0% to 53%, avoiding annual GHG emissions by 1,889,583 tonnes CO_2e in 2030.**

3. **This approach would reduce annual residual waste by 59%, landfill methane emissions by 47%, and overall GHG emissions by 65%, compared to the Business as Usual 2030 scenario**. More than two thirds of this reduction would come from reduced landfill methane emissions, and another quarter from ending open burning.

4. The Road to Zero Waste scenario includes 80% diversion rates for organics, paper, cardboard, glass, and metal, and 15% for plastic, textiles, and electronics, ending open burning, banning single-use plastic (except for sanitary uses, such as diapers, and clear PET bottles, which are part of an existing recycling economy). Organic waste would be managed in a network of neighborhood-level composting stations, of which pilots already exist.

5. Nipe Fagio has been working assiduously in the waste sector for many years, and envisions a road-to-zero-waste future built together by waste pickers who have long been playing a critical role in capturing the value of discarded materials in Dar es Salaam.

Recommendations

- **Stop open burning**. The city must prevent waste from being burned in the open by all means, as it generates GHG emissions in addition to posing risks to the environment and public health.
- **Ban most single-use plastic**. Tanzania has already put in place regulations to stop producing, transporting, selling, and using single-use plastic carrier bags, straws, and plastic seals, and is establishing extended producer responsibility regulations. With strong political will and the ongoing Single-Use Plastic Free East African Community campaign, the city can further reduce plastic waste through more stringent regulations.
- **Integrate waste pickers into the waste management sector**. The city supports waste pickers for their waste collection and material recovery efforts, by providing adequate equipment, infrastructure, and certification support. The City should also support grassroots organizations and educational programs in their efforts to train residents on effective waste reduction practices.
- **Support the integration of waste cooperatives into the waste management sector**. The layout of the city, especially in unplanned low-income neighborhoods, make it difficult for waste collection vehicles to reach households. Waste cooperatives can have an essential role in door-to-door collection with the enforcement of segregation at source, servicing areas that have been historically offgrid.
- **Implement segregation of waste at source linked to segregated waste collection**. Segregation of waste at source, when combined with collection systems for segregated waste, increase composting and recycling rates, resulting in significant rates of waste recovery.

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Written by: Ana Lê Rocha. 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.