



Reducing the waste burden in Ugandan cities

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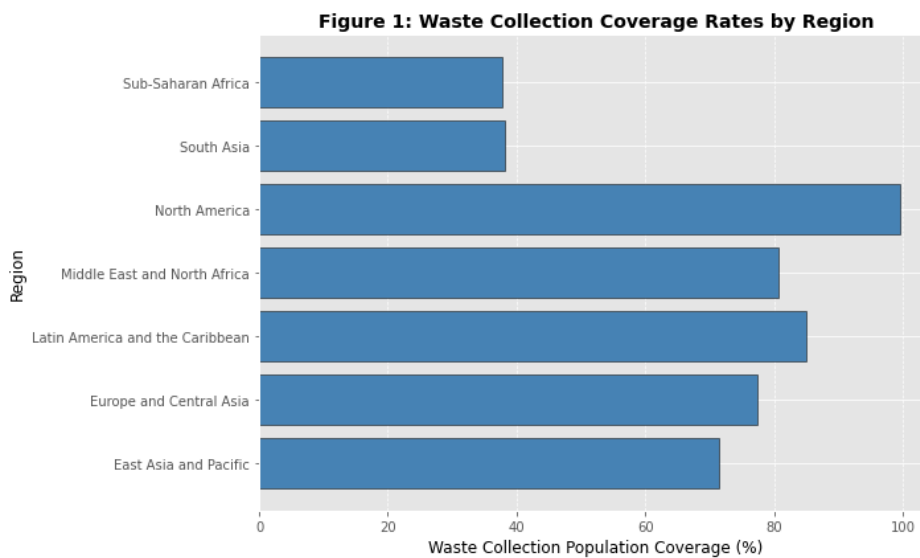
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In her presentation at the IGC's June 2024 Climate Change Workshop, Mychaela Paetow, a PhD researcher at the University of Southern California spoke about waste management practices in Uganda and policy ideas to help reform it.

Waste management is a growing challenge for Sub-Saharan Africa (SSA), which tends to perform worse in waste management, with less of the population covered by waste management services (Figure 1), lower collection rates, but with lower levels of waste production compared to other, higher income, regions.

Figure 1: Waste collection coverage rates by region



What a Waste Global Database (2018), World Bank Group

Rapid urbanisation in SSA is shifting a growing population more into cities, meaning that the already struggling municipal waste management systems will not sustain themselves in the coming years and decades. Indeed, urbanisation offers enormous opportunities for economic growth as information, supply chain, and talent networks concentrate to provide positive network effects. However, this concentration also amplifies challenges like waste management, potentially leading to super linear scaling of problems if the infrastructure and organisation of cities do not keep up. As cities grow, the complexity and volume of waste increase at a faster rate than population growth, necessitating innovative and scalable solutions to maintain urban sustainability and liveability.

Limited institutional capacity, inadequate infrastructure, poor waste management practices among households and businesses and the lack of proper disposal means are key barriers to city governments successfully adapting their waste management systems to population growth. On top of that, municipal governments in SSA already spend on average 20 percent of their budgets on waste management, making further investments challenging.

Mychaela's work focuses on this challenge in the Greater Kampala Metropolitan Area (GKMA), where the formal waste management system is governed by a two-pronged Public Private Partnership (PPP) that was established in 2014, whereby the Kampala Capital City Authority (KCCA) and private companies share waste collection responsibilities.

KCCA, the city government, has a fleet of trucks that collects about 70 percent of the total waste collected, free of charge, to the poorest residents who tend to have the least willingness to pay for waste collection. The remaining 30 percent of waste collection services are operated by several private waste collectors that are delegated responsibility to collect from the remaining areas of GKMA not covered by KCCA. Private collectors, unlike KCCA charge residents for waste pickup services. The lack of oversight and low willingness to pay among residents has led to significant gaps in service coverage, however. Overall, just 40% of waste is collected in Kampala, leaving the rest to be dumped in illegal dumpsites, in the streets and waterways, often burned. Open dumping and burning are common means of disposal across low-income countries and impose high negative externalities on residents from often the poorest and most waste burdened communities.

Waste burning also contributes to the global problem of climate change through the release of greenhouses gasses, and it increases the risk of respiratory and neurological diseases among locals because of the smoke that is produced. Trash from open dumping also gets lodged in drainage channels, preventing the flow of water during heavy rains causing and intensifying floods in Kampala.

Kampala's waste management challenges extend to its only official sanitary landfill, Kiteezi. Despite reaching capacity in 2015, Kiteezi continues to receive over 1200 tons of trash daily. This overuse has led to trash seepage polluting local underground water supplies and frequent spillovers into surrounding communities. In August of this year, the problem culminated in a trash landslide that engulfed several homes and killed over 30 people.

Increasing recycling is a way to reduce the stress on Kampala's waste management system and improve its efficiency. Recycling offers dual benefits: reducing landfill waste and creating commercial opportunities for the private sector. However, Kampala and other Ugandan cities face a significant barrier: minimal separation of recyclable and non-recyclable waste. According to Mychaela's presentation, only 4 percent of waste in Kampala is recycled. In Kampala, there is little to no source-level separation (households, businesses, and markets), the most efficient way of separating waste. This increases the cost of separating waste by making the process of separation and assembly of recyclable material more cumbersome.

Instead, waste separation primarily occurs through informal waste pickers who collect recyclables from Kiteezi, open dump sites, streets, waterways and even bins prior to collection. Waste pickers operate independently or under contract to dealers, who transport recyclables to processing facilities. Formal waste collectors also participate in this informal economy to a lesser extent, salvaging materials en route to landfills to supplement their incomes (GGGI 2018).

Providing bins for different waste types (e.g. recycling, compost, etc) in tandem with a campaign of community engagement is one policy option for increasing source-level separation. Lack of access to bins and a belief that recycling is not important have been shown in other countries to be constraints to getting households to properly dispose of and separate their waste (Oyekale 2018). In Maputo, an intervention that provided waste bins for recyclable and non-recyclable waste resulted in sixteen times more recycling for treated households compared to control groups. Other studies have demonstrated that engagement with community leaders and informational feedback improve waste separation and the overall level of hazardous waste in the treated communities (Dutta-Powell, 2023). Getting community is critical to helping to educate and encourage residents to use the waste bins as intended, as well as establishing community norms that discourage the theft of bins, which has proved to be an issue for policy implementation in other country contexts.

Establishing waste banks could be considered to increase waste separation at the household and community level. Waste banks are community-driven facilities where residents deposit sorted recyclable waste in exchange for money or other incentives. These banks operate at the local level, often managed by community members or local organisations, and serve as collection points for materials like plastics, paper, and metals. The initial setup costs are relatively low, involving expenses for a basic structure, weighing scales, and storage containers. Waste banks have been shown in other countries to not only enhance recycling rates but also create economic opportunities for low-income communities. Dhokhikah and Trihadiningrum (2020) found that waste banks in African urban areas boost public awareness about recycling and reduce the waste burden on municipal systems. Williams and Millington (2019) noted that waste banks support the circular economy by diverting valuable materials from landfills, easing the pressure on landfills and reducing environmental degradation. Miezah et al. (2015) observed that waste banks also serve as educational hubs, teaching residents about sorting practices and promoting a culture of sustainability.

Plastic bag bans are another policy lever which has been tried in many low-income countries. While plastic bag bans in low-income countries have shown mixed results, a meta-analysis by Knoblauch et al. (2018) found that such bans generally lead to reduced plastic bag use and environmental littering, though

effectiveness varies widely based on policy design, enforcement stringency, and the availability of affordable alternatives. Plastic bag bans have been tried out by several of Uganda's neighbours— Rwanda, Kenya, and Tanzania have all have them. Studies have shown that in these contexts, successful implementation hinges on three key factors: strict enforcement, public education, and support for environmentally friendly alternatives (Behuria, 2021; Kalina et al., 2019).

Mychaela's own work focuses on trying to **increase willingness to pay** for waste management among households. She has partnered with Yo-Waste, a private waste collector that delivers on-demand waste pickup services to households and small businesses, to implement an intervention in Kampala and its surrounding areas. The project involves randomly treating low-income households in slum areas to on-demand waste pickup services. These households will receive free services for a predetermined period, after which they will have the option to either discontinue or start paying for the service.

A key feature of this intervention is the variation in treatment intensity across villages. In some villages, 100 percent of households will receive free waste pickup services, while in others, only 50 percent will be treated. This design is motivated by the negative externalities imposed by poor waste management practices like open dumping or burning. The research hypothesises that the impact on willingness to pay will be larger for households in more intensely treated villages. The rationale is that when an entire community participates, the environmental gains are more substantial and evident to the community, potentially increasing the incentive for households to continue with the service.

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