



# Waste Management

**Sustainable Framework for Amman Southern Gate**  
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# Sustainable Waste Management Framework for Amman Southern Gate

## Introduction

The Amman Southern Gate, a significant urban redevelopment project, gives a chance to establish a comprehensive and sustainable waste management system designed for a mixed-use, high-density area. A comprehensive waste management system is crucial for ensuring long-term resilience, cleanliness, and public health considering escalating environmental concerns and urban demands, while also supporting national and global sustainability objectives.

## Actions For Reducing Waste and Improving Waste Management for Amman Vision 2050

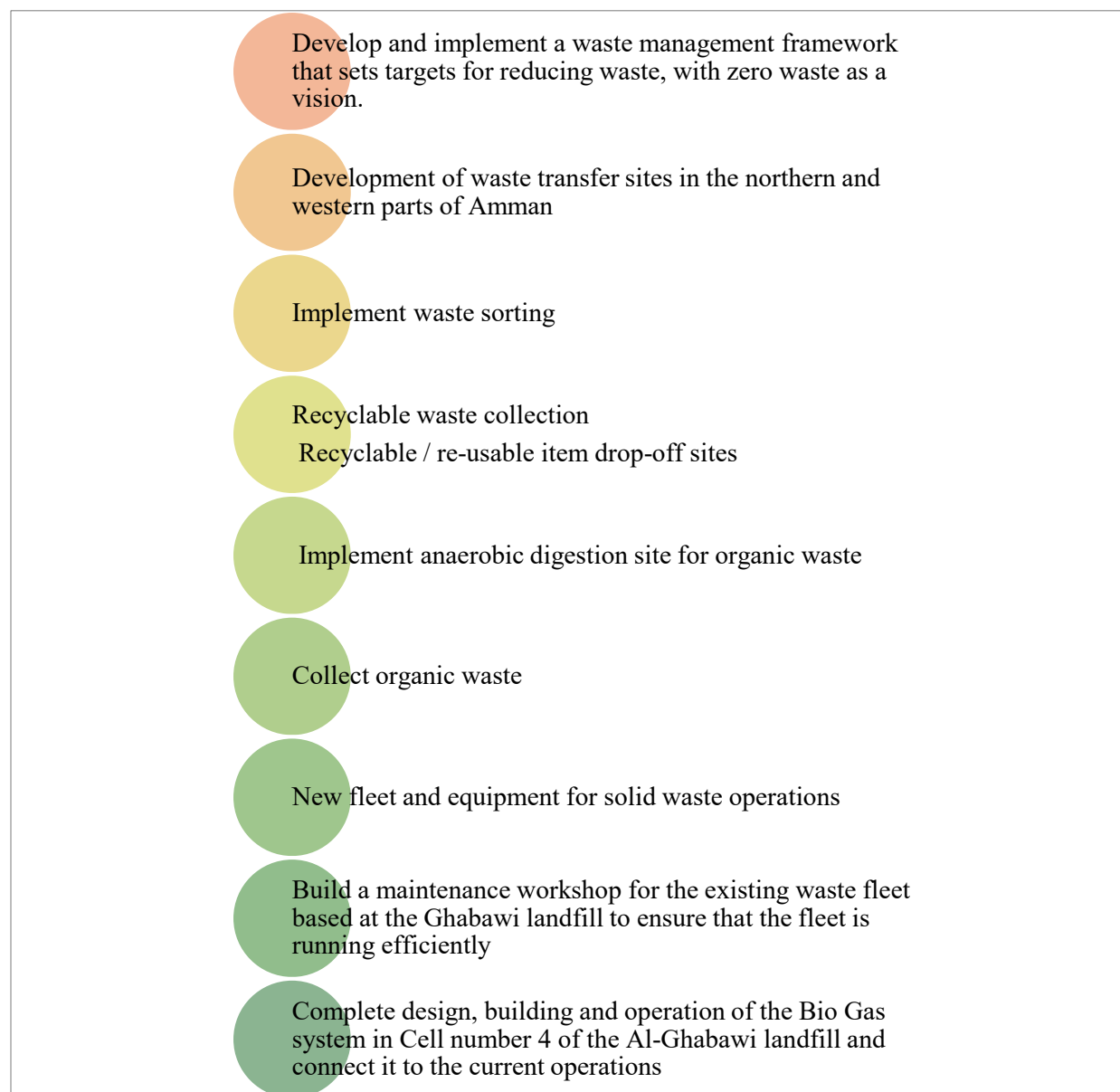


Figure 1: Amman Vision 2025 for reducing waste and improving waste management. *AMMAN CLIMATE PLAN CONTENTS*.

## Vision

Build a zero-waste, clean, and resilient neighborhood. By integrating waste minimization, efficient collection systems, recycling, community engagement, and smart technologies.

## Objectives

- Reduce waste generation at the source
- By 2035, get 70% of waste diverted from landfills.
- Improve the circular economy by recycling and reuse.
- Ensure sustainable residual waste disposal.
- foster behaviors and awareness of waste practices.

## Alignment with SDGs

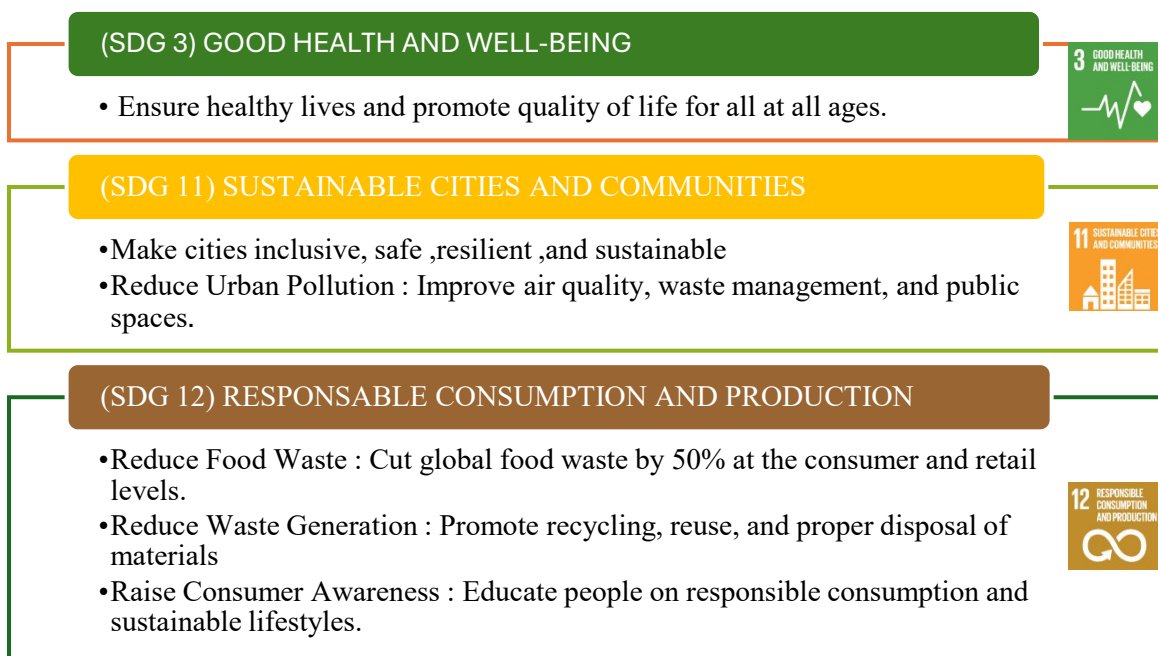


Figure 5: Sustainable Development Goals. THE 17 GOALS | Sustainable Development

## Literature Review: Waste Management

Solid waste management SWM constitutes a significant challenge in increasingly urbanizing regions such as Amman, Jordan. The Southern Gate neighborhood, presently in development, necessitates efficient waste management systems. Amman generates 0.6–1 kg of waste per capita day, predominantly organic waste (approximately 60%) (*Abu Qdais et al., 2020; Aljaradin & Persson, 2012*).

The Greater Amman Municipality GAM manages waste services, utilizing the Ghabawi landfill as the primary disposal location, which produces methane for electricity generation (*World Bank, 2014*). International assistance from GIZ and the World Bank has improved collection methods and public-private partnerships (*GIZ, 2018*). Notwithstanding this, the Southern Gate is devoid of specialized research.

- Waste Composition and Pressure

The waste stream in Amman is primarily composed of organic materials. Seasonal variations and the influx of refugees have augmented garbage quantities by more than 300 tons per day (*UNHCR, 2017*).

- Institutional and Governance Concerns

Despite GAM overseeing operations, inter-ministerial coordination is constrained and decentralization is insufficient (*Abu Qdais et al., 2020; World Bank, 2014*).

- Innovations and Technologies

Pilot initiatives like source segregation (achieving up to 59% efficiency) and PDIA-based changes demonstrate potential (*GIZ, 2018; PDIA, 2020*). Methane recovery at Ghabawi generates around 4.5 MW of power (*World Bank, 2014*). Nonetheless, Southern Gate has not yet reaped the advantages of these technology.

- Challenges

Barriers comprise insufficient funding, inadequate public engagement, poor enforcement, and restricted utilization of advanced technology (*Abu Qdais et al., 2020; Aljaradin & Persson, 2012*).

- Research Gaps and Recommendations

Most of literature concentrates on central Amman, resulting in insufficient exploration of Southern Gate. There is a necessity for more localized studies, experimental composting programs, digital tracking, and public participation initiatives.

## Types of waste in Amman Southern Gate

Amman Southern Gate design proposal includes a mix of agricultural, residential, commercial, recreational and infrastructure development. Waste can generally be categorized as solid waste and liquid waste. This report focuses exclusively on solid waste, which is diverse, generated by:

1. Organic waste, such as food waste, biodegradable materials and garden waste.
2. Recyclable waste, such as glass, plastics, paper, and metals.
3. Non-recyclable waste, which cannot be economically recycled.
4. Hazardous waste, such as cleaning products, paints, medical waste, agrochemical containers.
5. Electronics Waste, such as old electronics, appliances, and cables.

## Waste Management Strategies

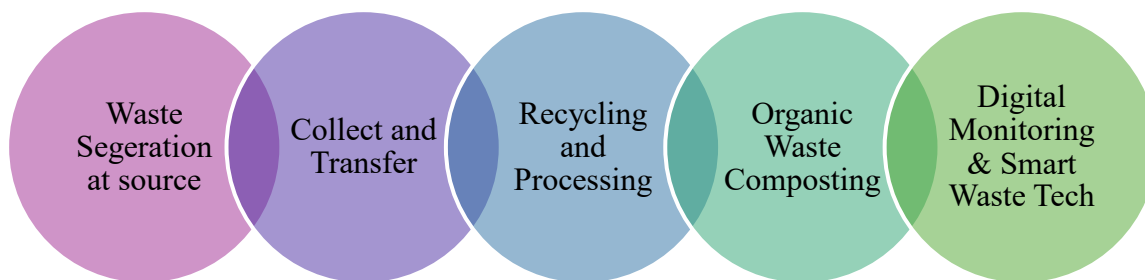


Figure 6: Waste management strategies. (By the author)

**Types of solid waste and their appropriate management methods for an integrated urban waste strategy:**

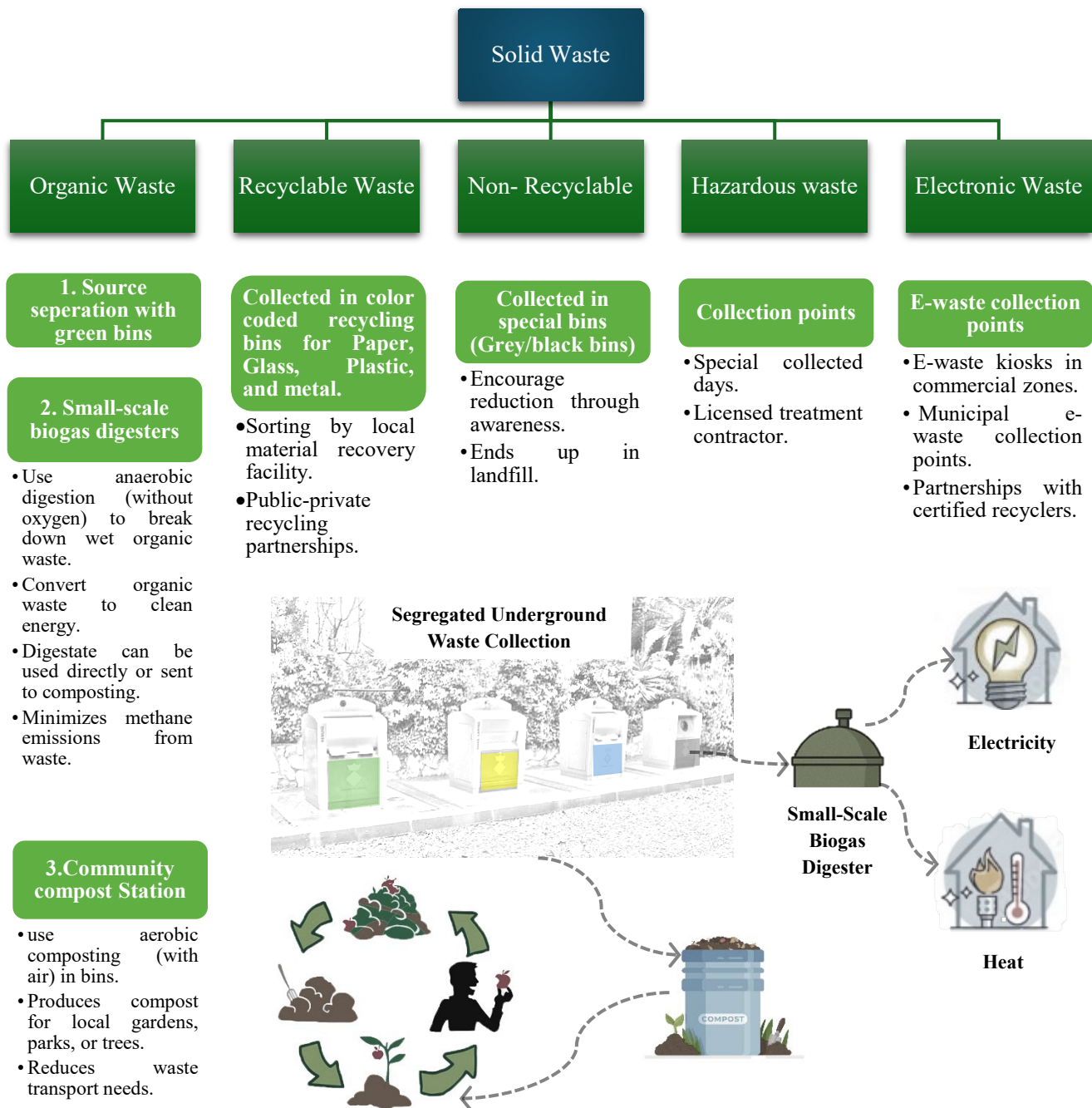


Figure 7 :Solid waste and their appropriate management methods. (By the author)



## Waste Management Strategies on the selected zone:

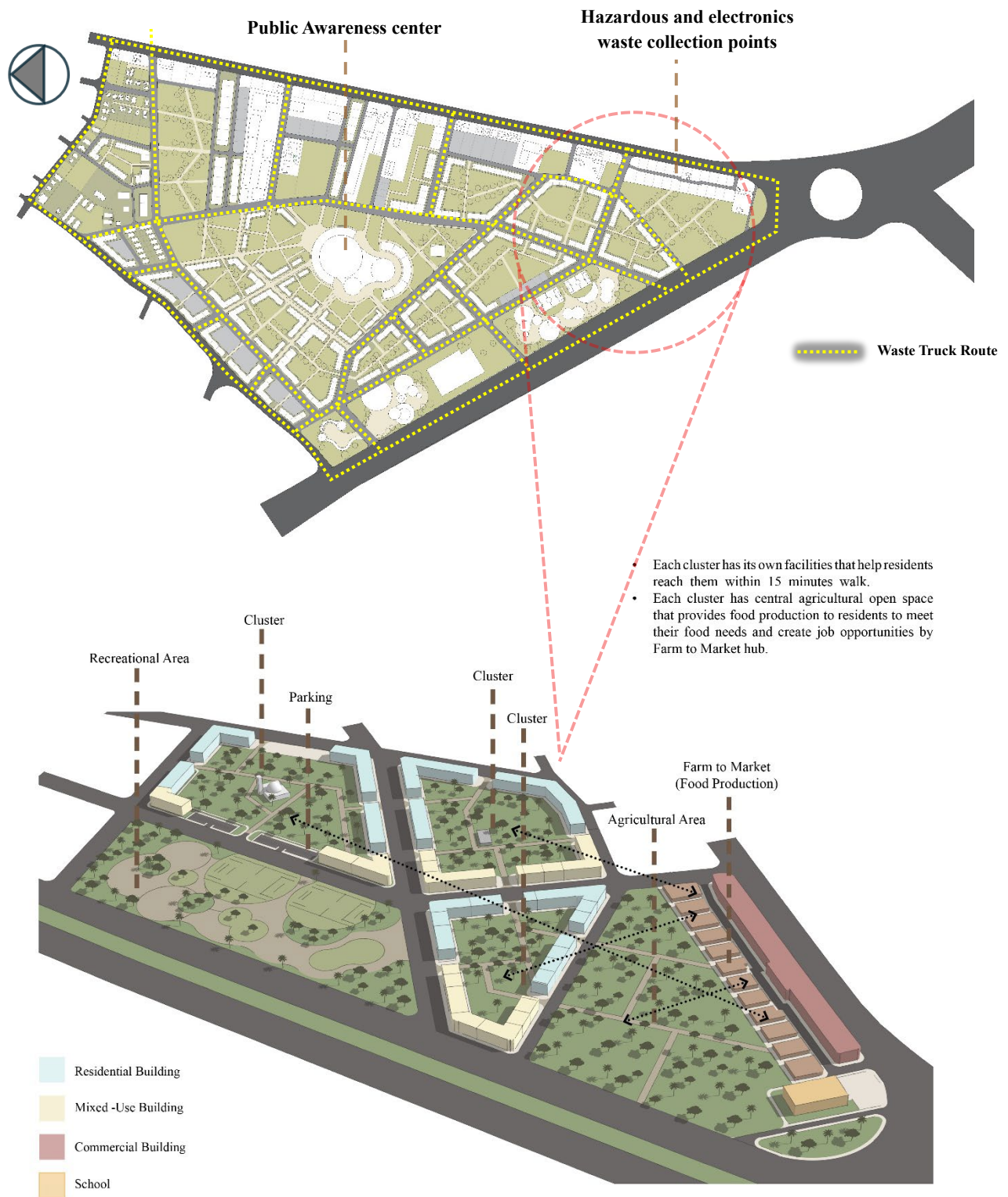


Figure 8: Waste Management approach. (By the author)

- Smart waste bins with fill-level sensors and solar compactors for public areas
- Underground waste containers in high-density zones to avoid street clutter.
- Central composting site for landscaping and urban farming reuse.

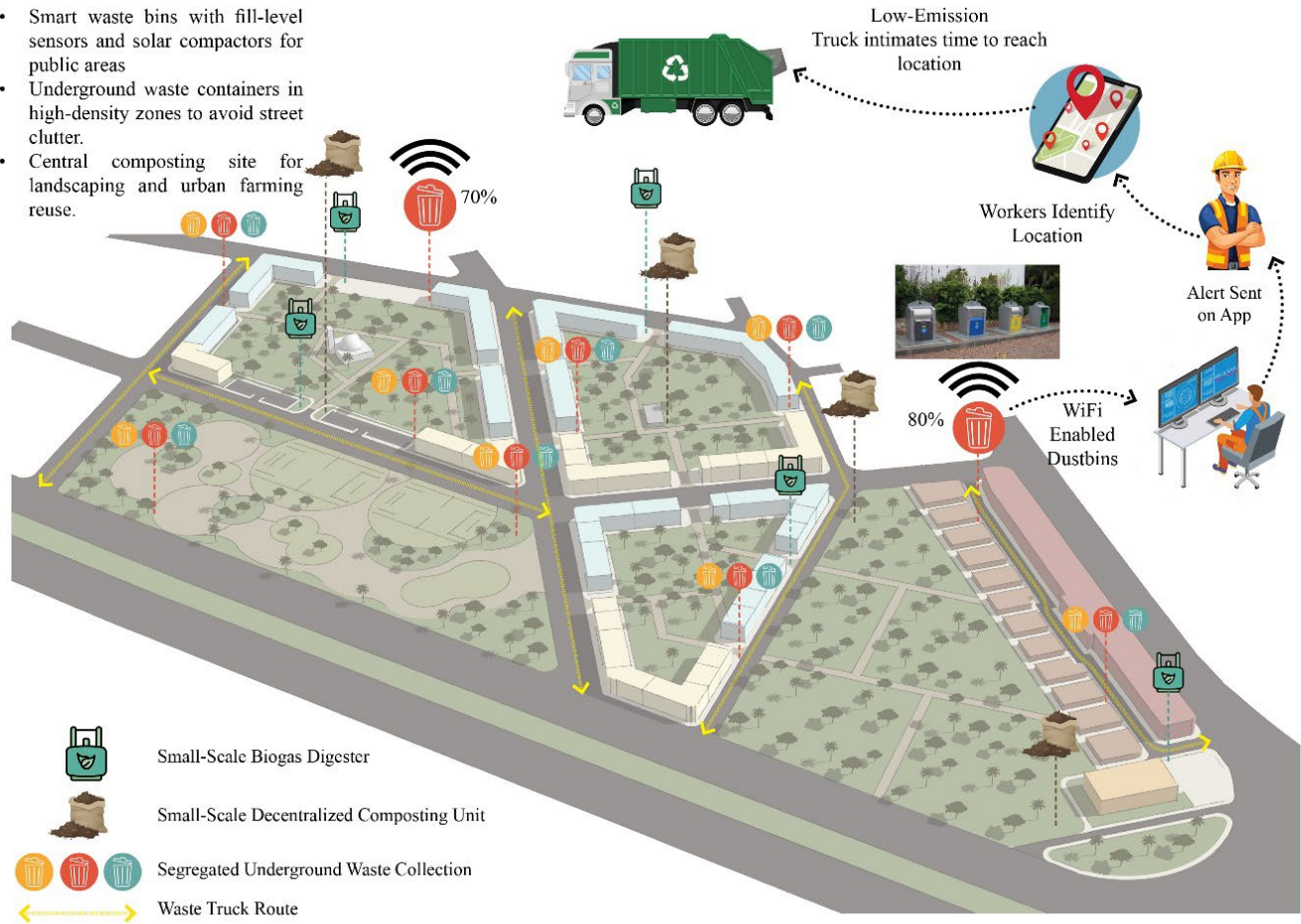


Figure 9: Waste Management approach. (By the author)

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