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THE REPUBLIC OF UGANDA

Measuring Municipal Solid Waste in Uganda

Findings and Methodological Lessons from the Specialised Municipal Solid Waste Survey, 2024/25



African Statistics Week 2026
" Institutionalizing Water and Sanitation Statistics for Sustainable and climate –resilient development in Africa"

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Outline

- Introduction
- National Municipal Solid Waste Survey 2024/25
- Lessons Learnt

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Introduction: What Counts as Waste?

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Waste is any substance or object that is dumped, abandoned, discarded or disposed of or intended or required by law to be disposed of, *(National Environment Waste Management Regulations, 2020).*

Municipal Solid Waste (MSW)

Is waste generated within a local government, encompassing household waste and other similar wastes like commercial and institutional waste and street sweepings.



- Household
- Commercial
- Institutional
- Street sweepings

EXCLUDES

Hazardous waste , municipal sewage, construction & demolition waste



EXAMPLES OF HAZARDOUS WASTE

- E-waste
- Medical
- Chemical

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Intro Cont'd: The Waste Challenge

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A global challenge

Solid waste management challenges cities of all sizes; poorly disposed waste pollutes air, water and land (UN-HABITAT, 2010).

Developing economies

In low- and middle-income countries, waste is often disposed of in unregulated dumps or openly burned.

IN UGANDA

Urban Councils: Cities, Municipalities and Town Councils have the legal mandate for waste segregation, collection and proper disposal under the Local Government Act of 1997

8%

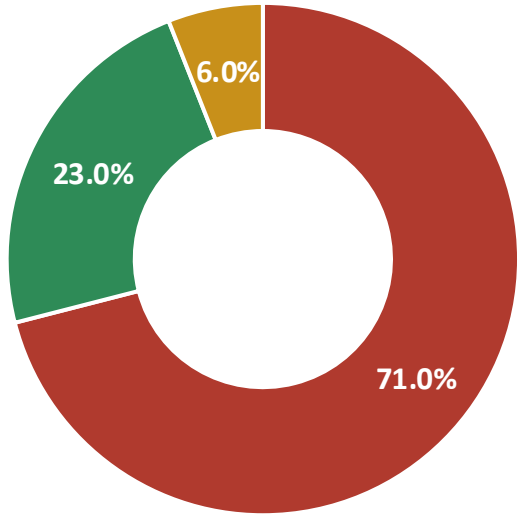
of households use proper disposal — waste collected by government or private vendors (NPHC, 2024)

71%

of cities & municipalities use open dumping, an inappropriate end-disposal option (RMSWMS, 2025)

Result: collection rates are very low, and disposal is too ineffective to mitigate waste challenges.

Waste disposal methods used by cities & municipalities



Source: UBOS, Rapid Municipal Solid Waste Management Assessment Report, 2025

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Intro Cont'd: Effects of Poor Waste Management

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Water-borne disease

Households exposed to potentially contaminated drinking water (E. coli) — UDHS 2022

89%

Rising water-treatment cost

NWSC spends Approximately UGX 9 billion a year as raw-water contamination grows (Monitor, Apr 2025)

~9 bn

Threat to aquatic life

Eutrophication and plastic waste accumulation

Urban flooding

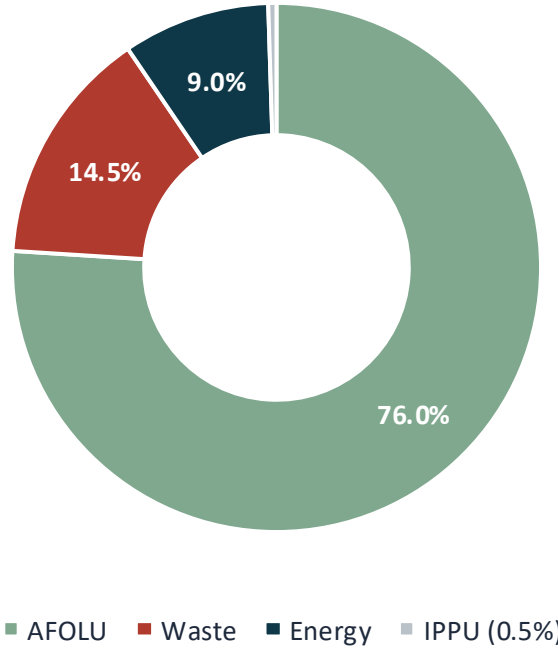
Waste blocks drainage channels

Climate change

Methane from decomposing organic waste; waste is Uganda's 2nd-largest GHG source

14.5%

Uganda's GHG emissions by sector



Source: Ministry of Water and Environment, Nationally Determined Contribution Report, 2022

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News Paper Publications on Poor Waste management on Water Resources

Why fish are dying in Lake Victoria

Tuesday, February 16, 2021



Dumping of waste choking L. Victoria

Thursday, March 18, 2021



A lake on Its deathbed: Who can save Lake Victoria?

Tuesday, October 17, 2023 — updated on October 28, 2023



The hidden cost of poor waste disposal

Friday, June 05, 2026



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Intro Cont'd: Relevance of Waste Statistics in Uganda

Reliable waste data underpins urban planning, circular economy investments, public health and climate accountability

Urban Planning & Infrastructure

- **Facility design:** landfill capacity, transfer stations, fleet size
- **Budget allocation:** cost services, set realistic user fees
- **Flood control:** track uncollected-waste hotspots in drains

Circular Economy & Green Growth

- **Resource recovery:** organic (45–64%), plastic, metal, paper streams
- **Private investment:** feedstock data for waste-to-energy, briquettes, fertilizer
- **Green jobs:** formal & informal work in sorting, collection, value addition

Public Health & Environment

- **Disease prevention:** cholera, typhoid, malaria, respiratory illness
- **Ecosystems:** leachate in wetlands, Lake Victoria basin, groundwater
- **Hazardous waste:** medical, e-waste, industrial — NEMA 2020 Regulations

Policy Monitoring & Climate Reporting

- **NDP IV & Vision 2040:** Natural Resources, Environment & Climate Change Programme
- **GHG inventory & NDCs:** CH4 and N2O activity data for UNFCCC
- **SDG accountability:** SDG 11.6.1, 12.3.1, 12.4.2, 12.5.1

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NDP IV and SDG Waste Indicators

NDP IV Strategic Shift: Transitions Uganda from a linear 'collect-and-dump' model toward a Circular Economy—promoting waste sorting at source, organic waste recovery, Extended Producer Responsibility (EPR), and green cities

Programme / Result Area	Core NDP IV Waste & Circular Economy Indicator	SDG	Indicator Definition
Municipal Solid Waste Management	Proportion of municipal solid waste collected and safely managed in controlled facilities (%)	SDG 11.6.1	Proportion of municipal solid waste (MSW) collected and managed in controlled facilities out of total MSW generated by cities.
Circular Economy & Recycling	Proportion of solid waste recycled, composted, or recovered for value addition (%)	SDG 12.5.1	National recycling rate and total tons of material recycled (including composting and material recovery).
Waste Infrastructure & Licensing	Number of engineered/sanitary landfills and licensed waste treatment facilities operational	SDG 12.3.1b	Per capita food waste (kg/year) across households, food service, and retail sectors
Pollution & Ecosystem Protection	Compliance rate of industries and urban centers with National Environment (Waste Mgmt) Regulations	SDG 12.4.2	: (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, disaggregated by treatment type.
Climate Mitigation (Waste)	Annual GHG emissions reduced/avoided from organic waste diversion and landfill gas capture (MtCO2e)		
Hazardous & E-Waste Control	Proportion of hazardous, biomedical, and electronic waste safely collected and treated (%)		

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Data Requirements for NDP IV and SDG Reporting

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11.6.1 MSW collected & managed in controlled facilities

12.3.1 Food waste

12.4.2 Hazardous waste

12.5.1 Recycling rate

Total MSW generated 11.6.1	Total MSW collected 11.6.1	Waste disposed of in controlled facilities 11.6.1	Waste collection coverage 11.6.1	Waste composition by category 11.6.1 12.3.1 12.5.1
Waste recycled and recovered 12.5.1	Organic waste composted 12.5.1	Hazardous waste generated and treated 12.4.2	Food waste generated 12.3.1	Waste disposal and treatment methods NDP IV

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Specialised MSW Survey (2024/25): Scope & WaCT Methodology

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First empirical application of the UN-Habitat Waste Wise Cities Tool (WaCT) across four regional cities in Uganda.

Gulu City
Northern Region

Fort Portal City
Western Region

Soroti City
Eastern Region

Masaka City
Central Region

7-STEP MATERIAL-FLOW MEASUREMENT FRAMEWORK (WaCT)

1–2 Prepare & stratify
GIS mapping; high / middle / low-income strata; list non-household generators

3 Household weighing
Daily collection, weighing & sorting into 12 fractions for 7 days

4 Non-household survey
Markets, schools, hotels, restaurants, shops, health facilities, offices

5 Recovery value chain
Compost sites, scrap dealers, recyclers, informal waste pickers

6 Disposal site audit
Incoming waste & control tier: uncontrolled → full

7 Mass balance & SDGs
Combine flows to compute SDG 11.6.1, 12.3.1(b), 12.5.1

FIELD QUALITY CONTROLS

Day-1 discard rule
Day-1 waste discarded to remove backyard backlog

12-fraction sorting
Food, garden, PET, HDPE, film, paper, cardboard, metal, glass, textiles, e-waste, inert

Empirical truck weighing
Bulk density (kg/m^3) where no weighbridge exists

City co-ownership
UBOS statisticians with City Environment Officers

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Objectives

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Main objective: test the applicability of the Waste Wise Cities Tool (WaCT) methodology for compiling SDG and NDP IV waste indicators in Ugandan cities.

SPECIFICALLY

- Characterize city waste composition
- Map legal and illegal waste collection points
- Assess control levels of disposal sites & recovery facilities
- Generate truck conversion factors to estimate waste collected

TEST THE METHODOLOGY FOR

SDG 11.6.1

Proportion of MSW regularly collected and managed in controlled facilities

SDG 12.5.1

National recycling rate

SDG 12.3.1b

Food Waste Index

Data gap: indicator 11.6.1 needs waste generated, collected and managed in controlled facilities — data that are inadequate or missing in most Ugandan cities and municipalities.

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Enumeration Areas & Household Selection Criteria

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A total of 90 households obtained from nine (9) Enumeration Areas (10 households from 3 survey areas from high-, middle- and low-income groups each) for each city; population ranging between 10,000 – 10,000,000 people

Housing Types by Income levels criteria

Income Level	Housing Type Example
High	Luxury condominium, single detached house with garden, sophisticated alarm systems
Middle	Apartments, single detached house without garden
Low or informal settlements	Slums, apartments with single rooms (apartments, mud house, rent less than 5% of GDP per capita)

Source: UN-Habitat (2020)

Low Income





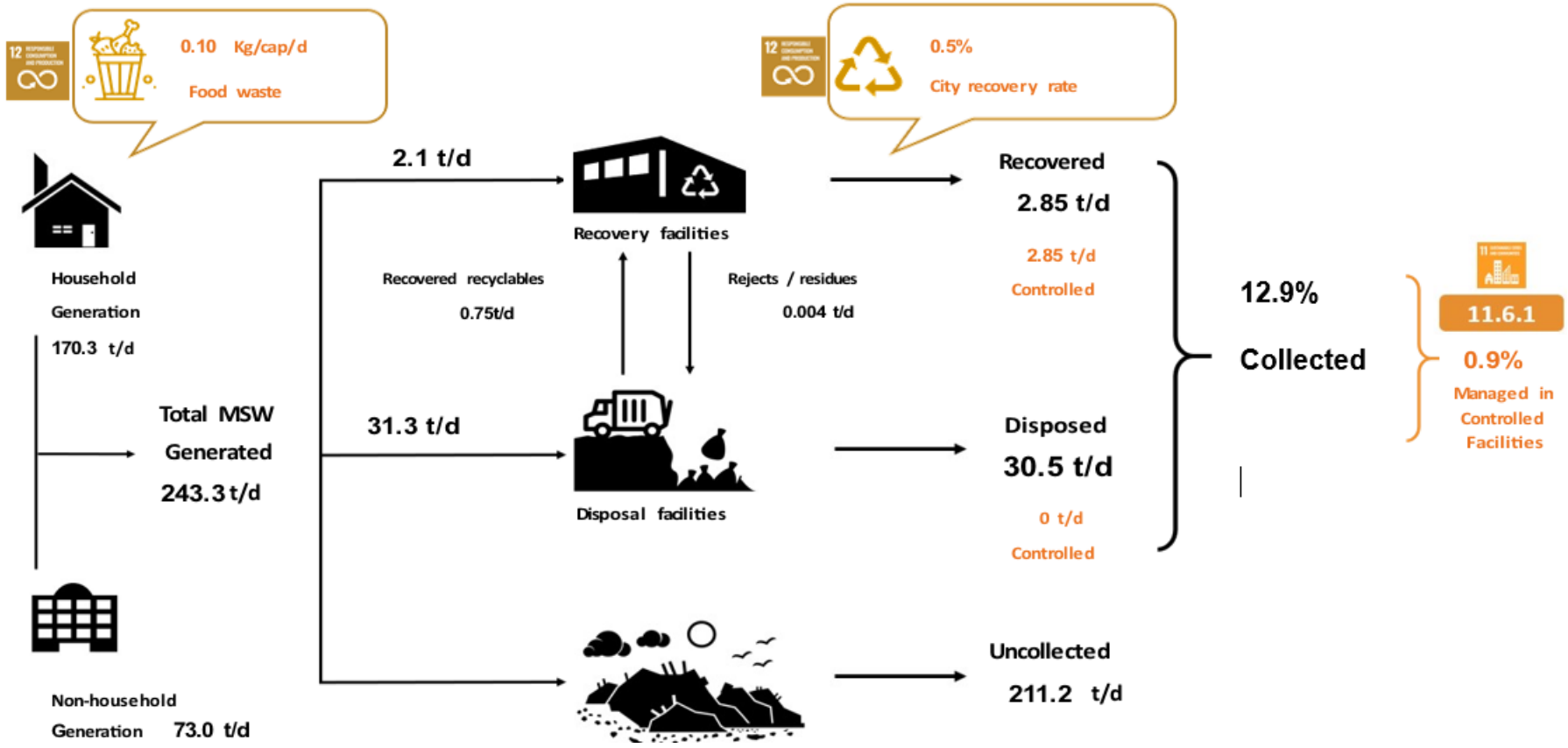
Middle Income



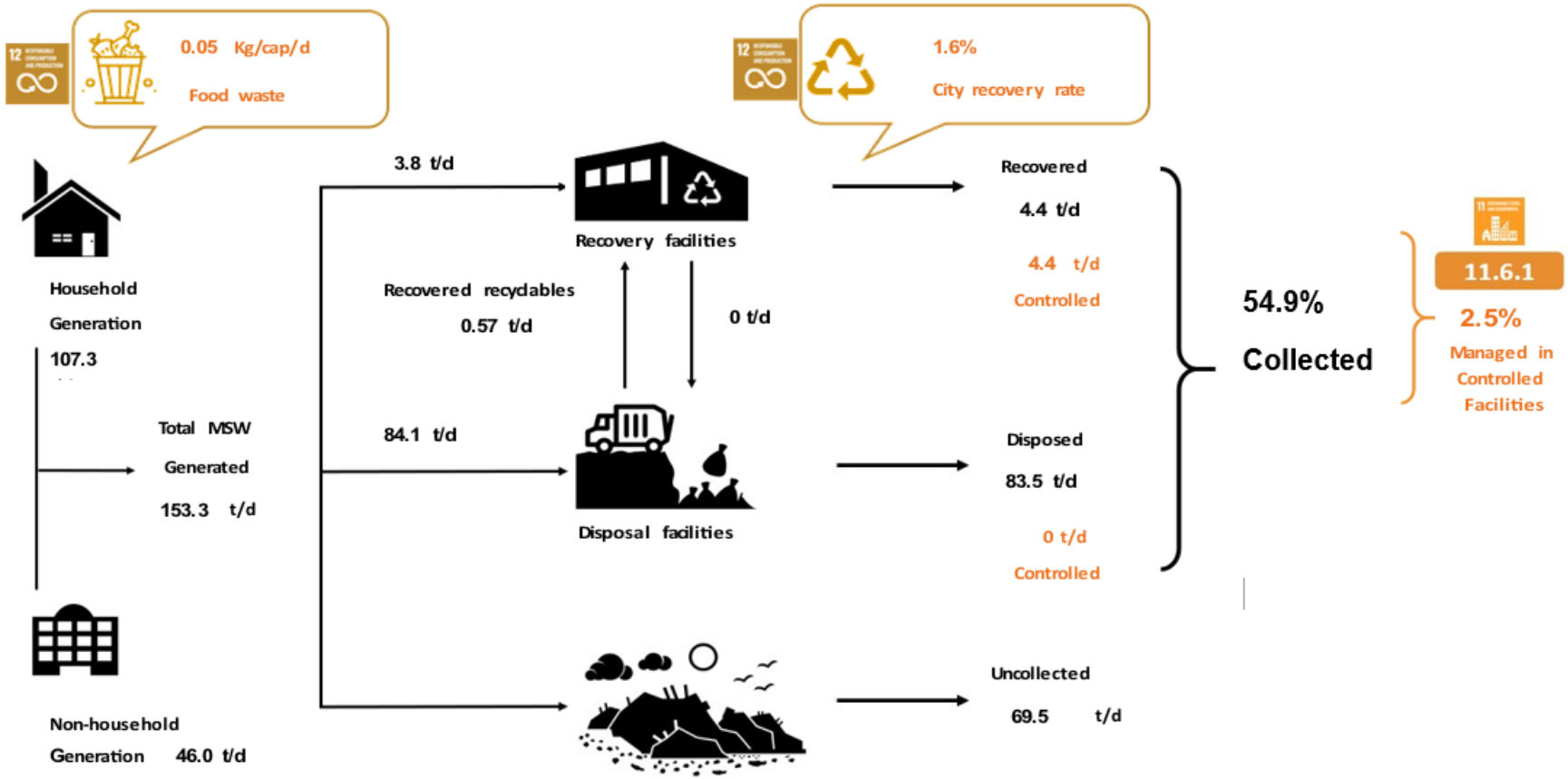
High Income

RESULTS

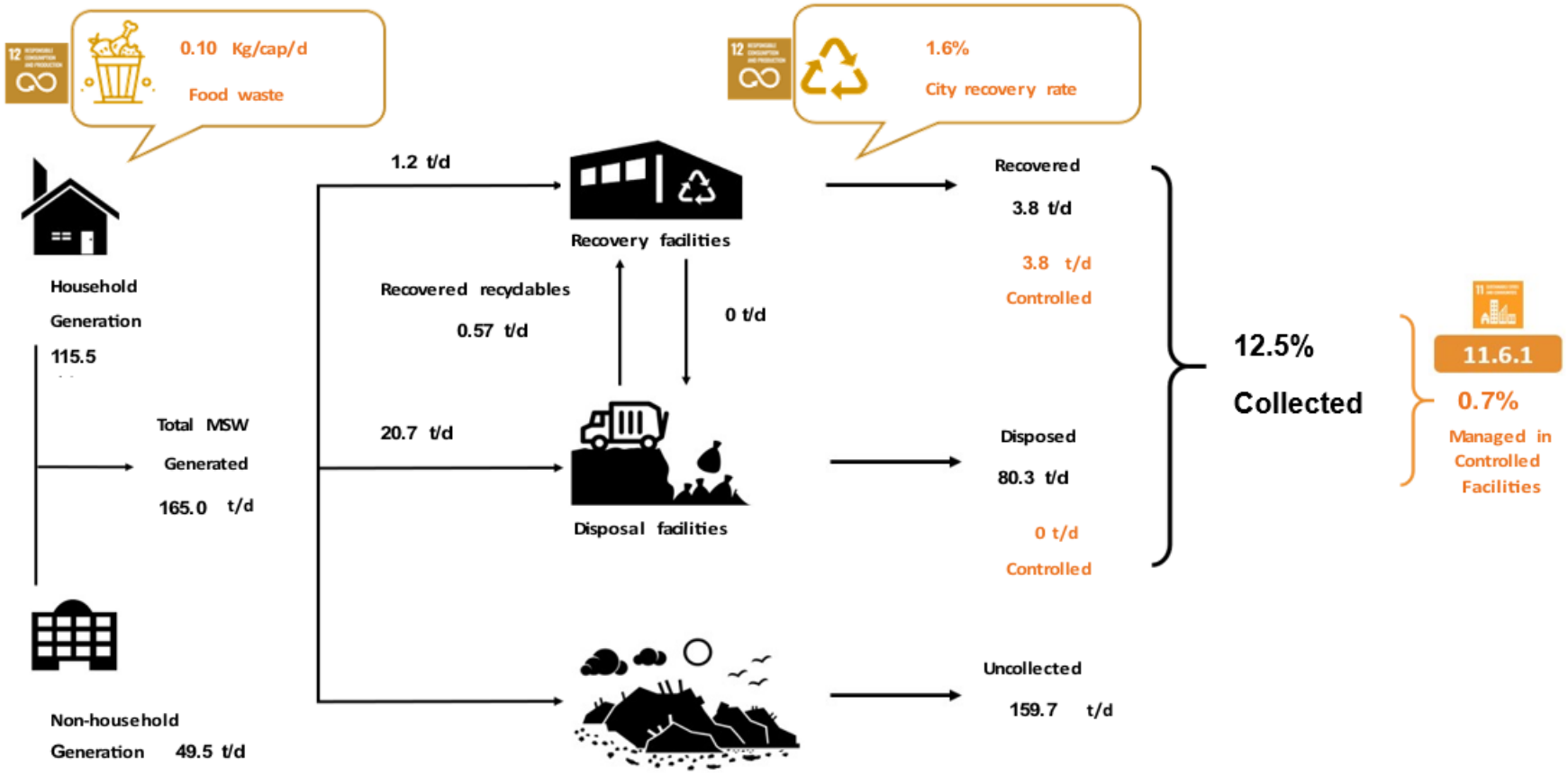
Flow Diagram – Gulu City



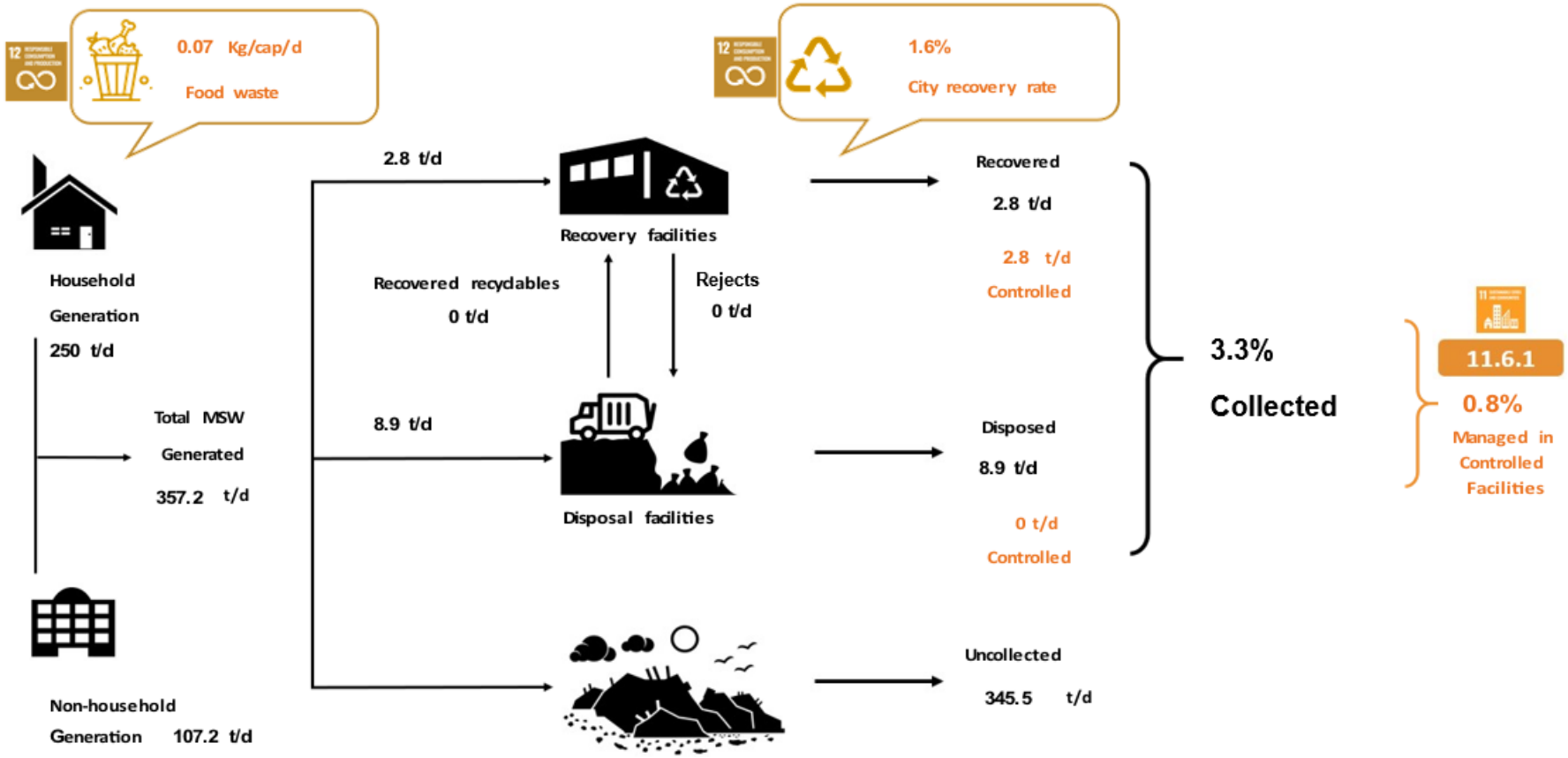
Flow Diagram – Fort Portal City



Flow Diagram – Soroti City



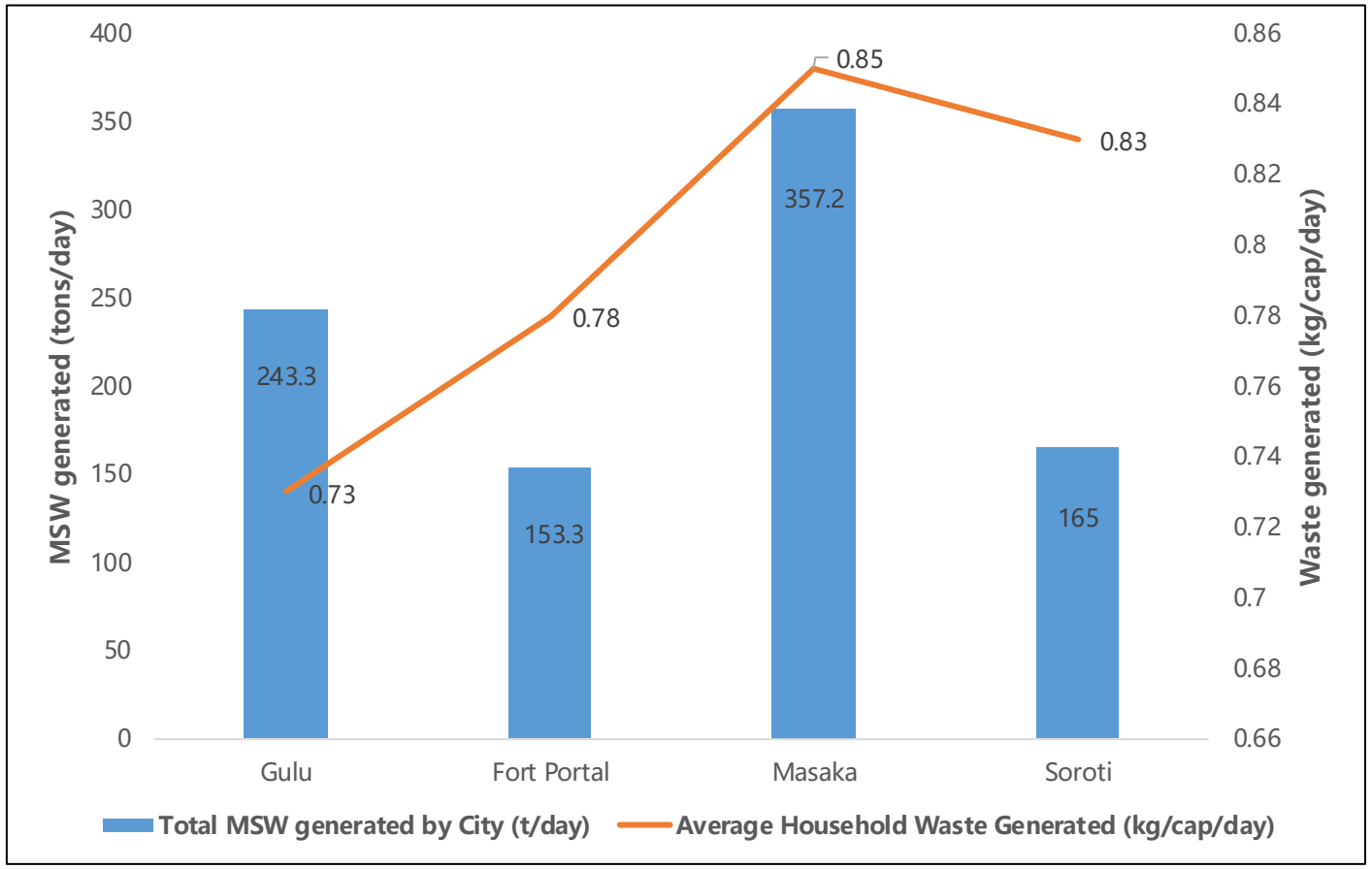
Flow Diagram – Masaka City



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Waste Generation per capita and Waste Generation by City



Household Waste weighing



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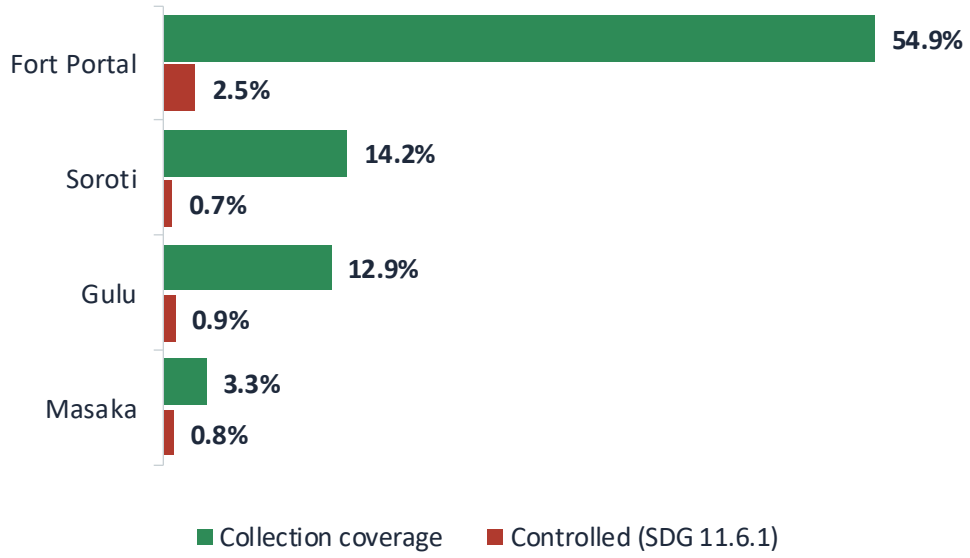
Waste Collected and managed in controlled facilities (Indicator 11.6.1)

MSW collected and managed in controlled facilities by city

City	Total MSW Generated (Tons/Day)	Uncollected Waste Share (%)
Masaka	357.2 t/day	96.7%
Gulu	243.3 t/day	87.1%
Soroti	165.0 t/day	85.8%
Fort Portal	153.3 t/day	45.1%

Fort Portal leads: 54.9% collected (84.1 t) and 2.5% controlled (3.8 t). Masaka collects just 3.3% (11.7 t).

Collected vs managed in controlled facilities (%)



Disposal sites had no control. Only recovery facilities had some control, so only their waste counts as "controlled".

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HOUSEHOLD WASTE COMPOSITION

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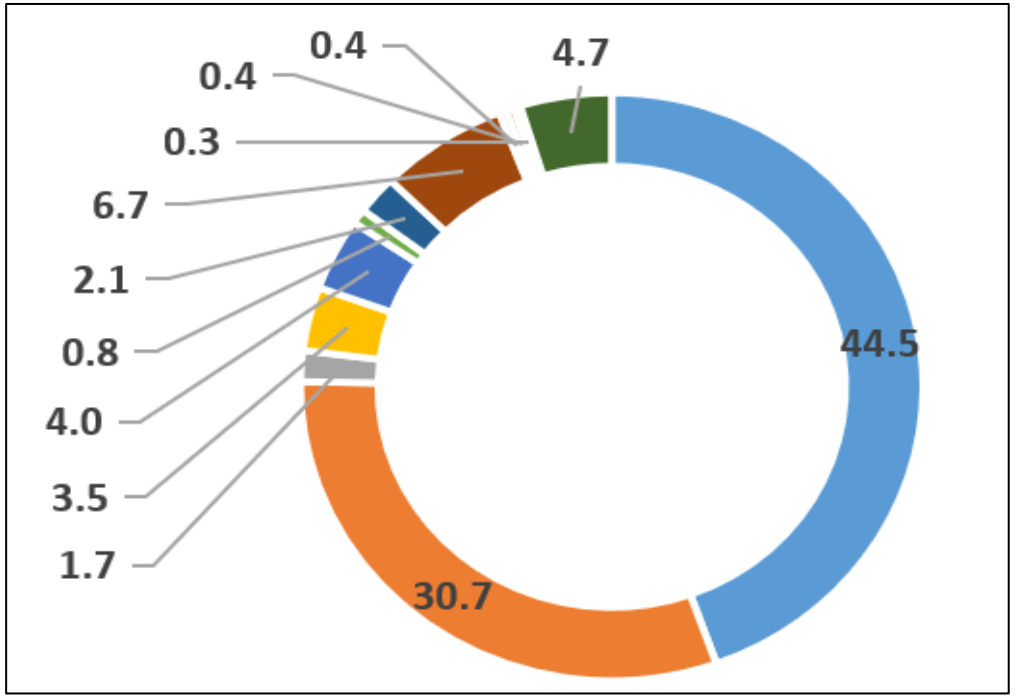


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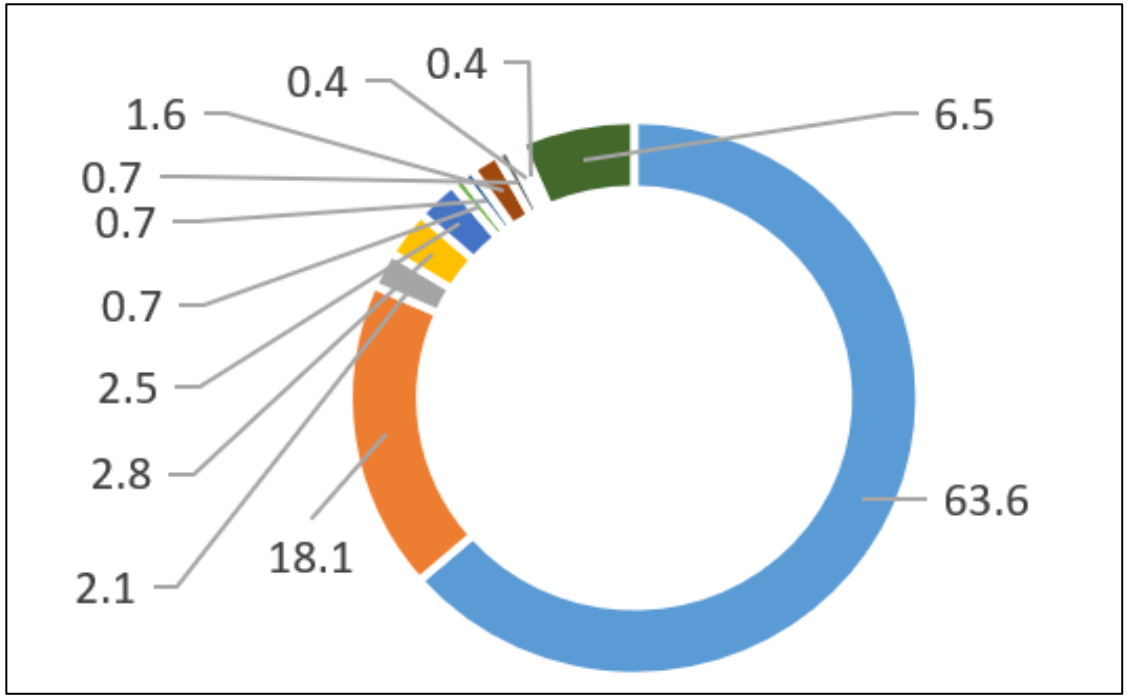
Composition by City

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Fort Portal



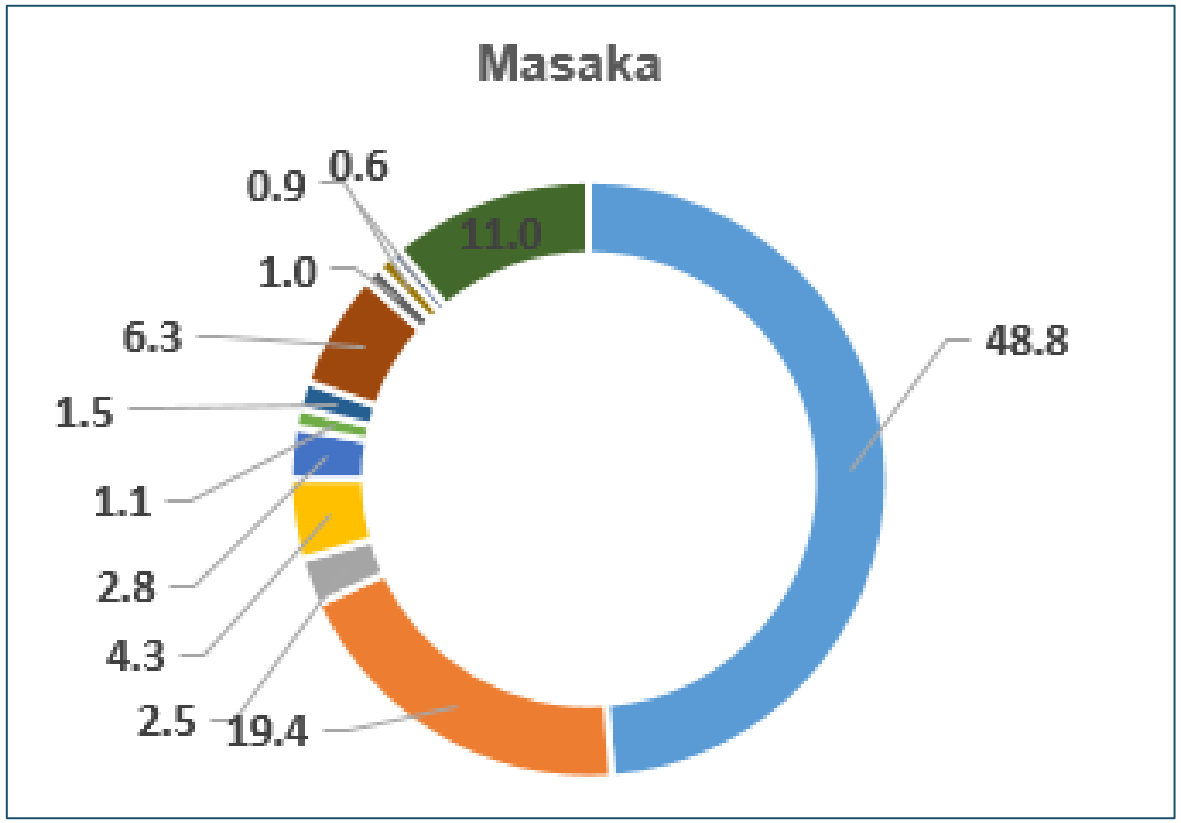
Gulu

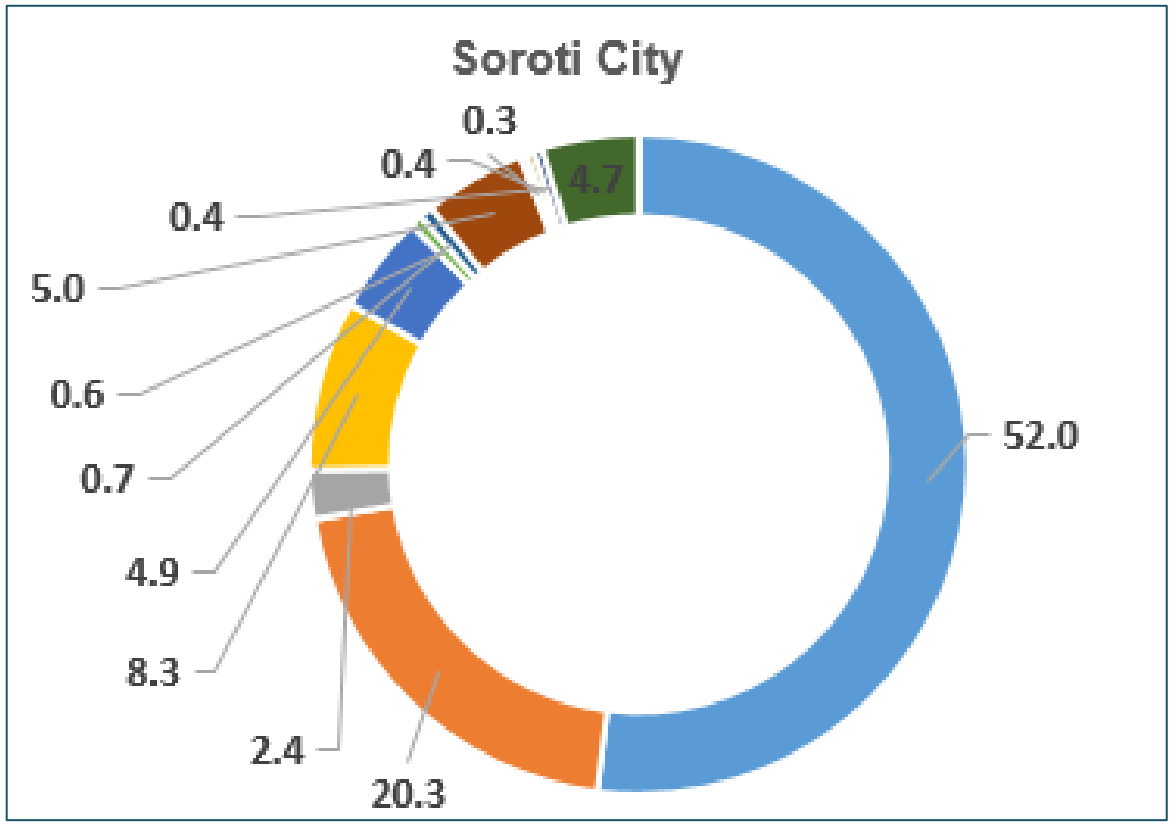


- Kitchen/Canteen Waste
- Garden/Park Waste
- Paper&Cardboard
- Plastics - Film
- Plastics - Dense
- Metals
- Glass
- Textiles & Shoes
- Wood (Processed)
- Special Wastes
- Composite Products
- Other

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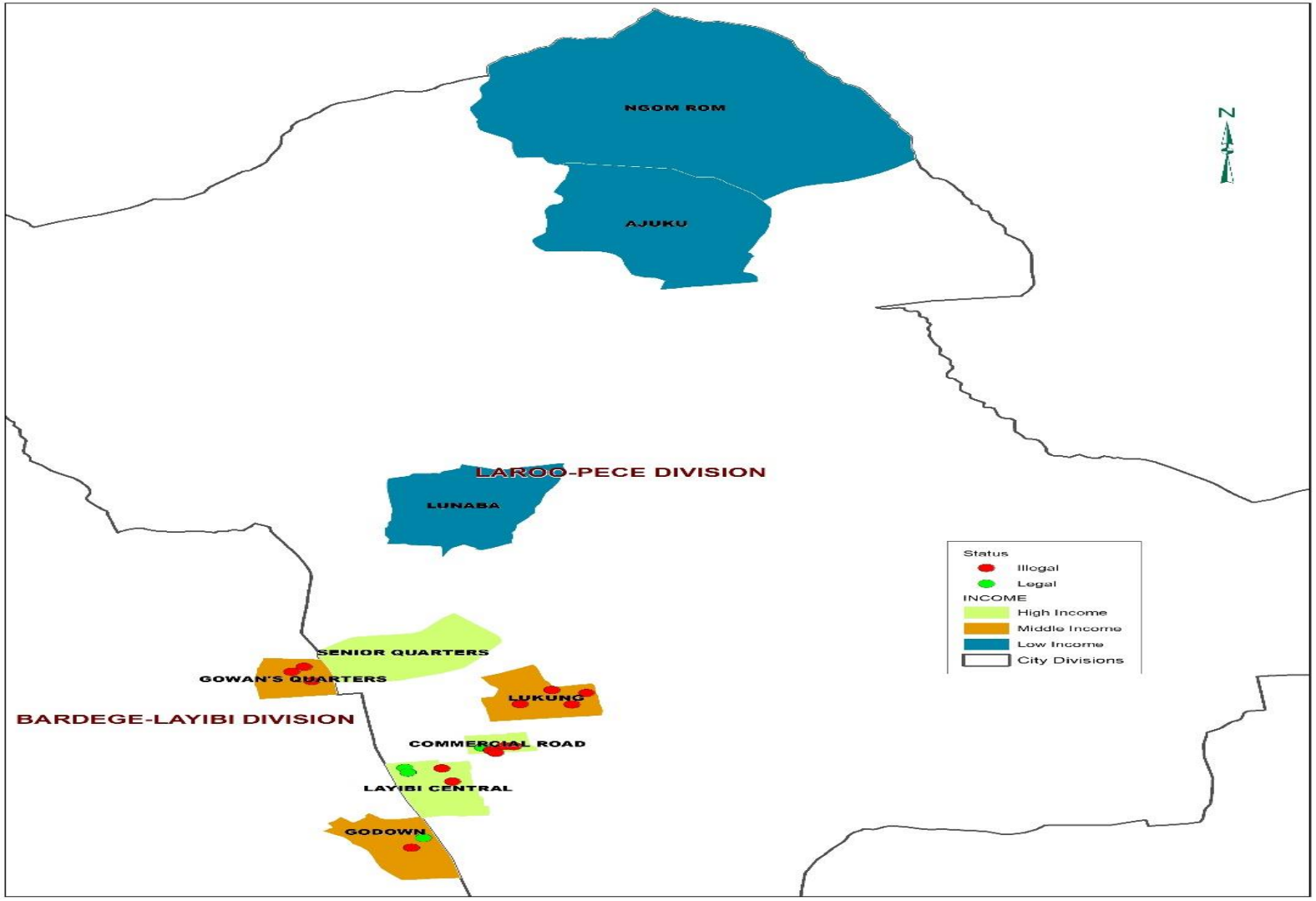


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Waste collection points mapping – Gulu City

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Illegal point



Gazetted point



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Waste weight Conversion factors for Trucks used in Gulu City

Sn.	Type of Truck	Details	Empty (Tons)	Loaded (Tons)	Net Weight (Tons)
		**Compressor Truck**	9.76	15.1	5.34
		**Skip Loader** (Volumetric Capacity = 8 tons)	7.150	i. 9.090 ii. 9.420 iii. 10.15 iv. 9.370	i. 1.940 ii. 2.270 iii. 3.000 iv. 2.222 Average weight 2.358

Not done in Fort Portal and Soroti City due to lack of a weigh bridge

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Lessons Learnt

01

Household-level diversion

Households reuse kitchen & food waste (e.g. banana peels) as livestock feed — so total waste generated is underestimated.

Effect on the data

Total waste generated is underestimated

02

Post-collection organic diversion

Trucks divert organic market waste straight to farms as mulch or manure, bypassing disposal-site clerks — so waste collected is underestimated.

Effect on the data

Total waste collected is underestimated

03

Incomplete recycler registries

No updated registers of recyclers, including intermediate and apex traders, limits tracking of recovered waste.

Effect on the data

Recovered waste is hard to track

04

Local context & income strata

International housing criteria for income groups need customizing to Uganda's urban settlement patterns.

Effect on the data

Income strata need local criteria

05

Empirical truck conversion factors

Most authorities lack weighbridges and rely on volume estimates — empirical weighing is vital.

Gulu skip loaders

8 t	2.4 t
assumed	measured

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Conclusion

The methodology works

Compiling SDG 11.6.1, 12.5.1 and 12.3.1b with WaCT is achievable in Ugandan cities — with adjustments for local context, especially the housing characteristics used to classify income groups.

Only rough collection estimates

Of all the inputs needed for indicator 11.6.1, the four cities only had rough estimates of MSW regularly collected — with some inaccuracies.

Generation & recovery are grey areas

The amounts of MSW generated and recycled/recovered were unknown across all cities — yet WaCT can generate the data at every phase.

The way forward: as the official producer of statistics and coordinator of the NSS, UBOS should adopt the recommendations and implement them with key stakeholders to ensure effective waste data production across the country.



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