

Strengthening Urban Waste Governance in Jinja City: Policy Lessons from the SafiSiti Smart Waste Management System

1. Executive Summary

Urban waste management is one of the most straining challenges for Uganda's emerging cities. In Jinja City, it has become even more real. To address this, the SafiSiti Smart Waste Management System by the DataCities Initiative (ToroDev, Sunbird AI and UNGP) is piloted to introduce digital tracking through QR codes and real-time dashboards. This policy paper argues that while the piloting is currently improving waste data generation, analysis and use for accountability, urban environmental conservation and circular economy development, long-term sustainability requires a transition from a digital technology deterministic intervention to an integrated urban waste governance framework. The proposed reform agenda focuses on contextualizing and institutionalizing digital tools, upgrading physical infrastructure like waste weighbridges, and professionalizing the private sector through a phased compliance approach to meet National Environmental Management Authority (NEMA) requirements.

2. The Context of Urban Digital Transformation for Waste Management

Jinja City is experiencing accelerated growth that has exceeded the capacity of traditional manual waste monitoring systems. The complexity of modern waste volumes necessitates the adoption of “Smart City” technologies to ensure operational efficiency and evidence-informed planning, budgeting and policymaking. The SafiSiti system, introduced under the DataCities Initiative, provides the first real-time digital oversight of waste management in the Nalufenya and Central East wards. However, the city’s Technical Management Committee (TPC) in April 2026 revealed that digital technology alone cannot resolve systemic issues without complementary city governance reforms in regulation, infrastructure, and public participation.

3. Problem Analysis: The Waste Data-Infrastructure Gap

The primary obstacle to effective urban waste governance in Jinja is the absence of reliable, integrated and institutionalised data systems to inform how much waste is produced, how much it may cost to manage it monthly and how much can be re-used and recycled. Historically, the city has relied on fragmented reporting, making it difficult to monitor service provider performance and landfill utilization.

This problem is compounded by critical infrastructure constraints. Specifically, the lack of a waste weighbridge at the landfill site forces service providers to estimate waste quantities, which compromises the accuracy of all generated data. Furthermore, a significant compliance dilemma exists; while many private service providers support collection, they often fail to meet NEMA environmental standards due to limited financial and technical capacity. This creates a tension between maintaining essential city services and enforcing environmental regulations.

4. Key Findings from the SafiSiti Waste Data System Implementation

The pilot registered 1,496 collection points and successfully tracked over 400,000kgs of waste in a period of 5 months. These results prove that digital systems significantly reduce disputes and improve communication between city authorities and private contractors. Despite this progress, utilization of data remains uneven; some technical officers have been slow to adopt the digital system, reflecting a need for stronger institutional ownership and coordination. Additionally, the pilot is highlighting that without source segregation, most collected waste remains mixed, which limits the potential for a circular economy growth and places unnecessary pressure on the landfill.

5. Strategic Policy Recommendations

To transform these findings into sustainable city-wide waste governance and management improvements, Jinja City should adopt the following integrated policy reforms:

- *Institutionalize Smart Waste Governance:* The city must develop specific ordinances and bylaws that mandate the use of the SafiSiti Waste Management Data platform for all licensed waste collectors, moving digital tracking from optional to a city legal requirement for waste management service providers.

- *Establish a Phased Compliance Framework:* In collaboration with NEMA, the city should implement a structured transition roadmap for service providers. This includes technical training, equipment improvement linkages, and gradual licensing requirements to support professionalization without disrupting service delivery.
- *Prioritize Physical-Digital Infrastructure:* Immediate investment is required for a landfill waste weighbridge and automated weighing systems for service providers. Integrating these tools with the digital dashboard is essential for accurate data and long-term planning.
- *Expand Circular Economy Initiatives:* The city should provide incentives for waste segregation at the source and support private recycling enterprises, particularly those involving women and youth.
- *Strengthen Community Ownership:* Sustained environment conservation and public health/sanitation education programs are necessary to prevent the vandalism of digital waste management tools and to encourage public compliance with new waste disposal standards.

6. Conclusion

The SafiSiti Smart Waste Management System demonstrates considerable potential as a critical digital tool for urban waste visibility, accountability, planning, budgeting and circular economy development. However, its true value will only be realized when it is supported by reformed regulations, improved landfill infrastructure and a professionalized private sector. By adopting these reforms, Jinja City can lead the transition toward a smarter, more resilient, and environmentally sustainable urban future.

References

1. National Environment Management Authority (2019). *National Environment (Waste Management) Regulations, 2020*. Kampala, Uganda: NEMA.
2. Republic of Uganda (2019). *The National Environment Act, 2019*. Kampala, Uganda: Government of Uganda.
3. World Bank. (2018). *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050*. Washington, DC: World Bank.