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Data-Driven Sanitation Management: Bridging Gaps for Sustainable Interventions in Nyahururu Municipality

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Sanitation Scenario in Nyahururu

Kenya faces significant sanitation challenges, particularly in urban areas where infrastructure struggles to keep pace with rapid population growth. Nationally, **only 30% of the population has access to basic sanitation services**, as highlighted by the World Bank and other sources (Ndungu, 2018). In Nyahururu, a growing urban centre in Laikipia County, **inadequate sanitation infrastructure and unsafe waste disposal systems pose significant public health risks**. For example, a 2011 study in Maina slum, Nyahururu, found a 6.3% prevalence of typhoid fever, with risk factors including poor sanitation and water pollution, and other environmental factors (Andrew, 2016). Additionally, **Laikipia County loses approximately 267 million KES annually due to poor sanitation**, which includes costs related to access time, premature costs and productivity losses (MoH, 2014; Twaweza East Africa, 2024).

The Laikipia County Integrated Development Plan (CIDP) for the period 2023-2027 highlights sanitation as a critical challenge due to inadequate infrastructure and low household connection rates to improved sanitation systems (CGL, 2023). These shortcomings emphasize the urgency of adopting a data-driven approach to address systemic issues effectively. A well-informed strategy can bridge gaps by identifying high-risk areas and tailoring interventions to specific community needs.

Why Data Matters for Nyahururu's Sanitation Future

Nyahururu Water & Sanitation Company Ltd (NYAHUWASCO) recognizes an opportunity to transform sanitation delivery through a structured, data-driven approach. Currently, **the inadequacy of a comprehensive framework for collecting and utilising sanitation data limits the ability to design targeted, cost-effective, and scalable solutions**. Addressing this gap requires a strategic approach that leverages data to inform investments, enhance service efficiency, and drive sustainable sanitation improvements.

NYAHUWASCO envisions a collaborative effort where data-driven insights shape decision-making. Through partnerships, the company aims to develop and **implement methodologies that utilize geographical mapping, behavioural analyses, and community engagement to optimize resource allocation and ensure impactful interventions**. Establishing a robust data framework will enable NYAHUWASCO and its partners to:

- a) Identify sanitation hotspots for prioritized interventions
- b) Optimise resource distribution to maximize impact

- c) Develop context-specific solutions that respond to community needs
- d) Monitor and evaluate interventions to ensure long-term sustainability

Key data tools that can support this initiative include:

1. **Geospatial Mapping:** Identifies sanitation hotspots/gaps and supports targeted intervention planning. Similar initiatives in Nakuru County have improved investment strategies and service delivery (Geospatial World, 2012; NCG, 2019; GWOPA, 2022; IWA, 2023).
2. **Household Surveys:** Provide comprehensive data on community sanitation needs (Geospatial World, 2012; Filho *et al.*, 2019), ensuring precise and effective interventions, as recommended by the WHO/UNICEF Joint Monitoring Programme (JMP, 2023).
3. **Participatory Assessments:** Engage communities in identifying challenges and co-developing solutions, ensuring local ownership and long-term sustainability ensures that interventions are tailored to local realities. A World Bank-supported project in Nakuru County is a classical case study (GWOPA, 2022; IWA, 2023).
4. **OpenStreetMap Initiatives:** In Nairobi's informal settlements, OpenStreetMap projects have enhanced service provision by mapping sanitation deficiencies (Geospatial World, 2012; Filho *et al.*, 2019; Microgrant, 2020).

NYAHUWASCO **seeks to build local capacity** to effectively gather, interpret, and apply sanitation data. By working with development partners, academic institutions, and other stakeholders, the company aims to institutionalise data-driven planning in sanitation management. This approach will unlock key benefits, such as:

- a) Strategic, evidence-based geographic interventions
- b) Contextually appropriate and tailored solutions
- c) Robust and innovative technology implementation
- d) Resource-efficient funding mechanisms
- e) Enhanced community participation in solutions

Optimizing Stakeholder Engagement to Drive Data

A multi-stakeholder coalition is essential for effective implementation in Nyahururu municipality. The Nyahururu municipal council plays a key role in data collection and planning targeted interventions, ensuring alignment with local priorities.

The Ministry of Health contributes technical expertise and integrates efforts with national health goals, such as addressing Laikipia County's 26.7% child stunting rate linked to poor sanitation. Academic institutions provide evidence-based insights, while NGOs and community organizations facilitate grassroots engagement. Water Service Providers (WSPs), such as NYAHUWASCO, play a crucial role in promoting transformative sanitation technologies. This includes both sewered and non-sewered systems, for the realisation of safely managed sanitation (SMS).

NYAHUWASCO's extensive experience in water services positions it to integrate water and sanitation solutions effectively, particularly in areas where centralized sewer systems remain unfeasible.

Call to Action

Transforming the Nyahururu sanitation landscape requires collective action:

1. **Policymakers:** Prioritise data-driven interventions and allocate adequate funding based on Laikipia County's water and sanitation management for the development framework
2. **Development partners:** Support innovative sanitation solutions, including on-site sanitation technologies, to address gaps in conventional infrastructure
3. **Local stakeholders:** Actively participate in planning and implementation to ensure sustainability and ownership
4. **Water Service Providers (WSPs):** Invest in affordable onsite sanitation technologies while improving water supply reliability

By adopting a data-driven approach, Nyahururu can become a model for other municipalities facing similar challenges. This aligns with Kenya's vision 2030 (GoK, 2008) and the UN Sustainable Development Goals (SDG 6, especially Goal 6, target 2), which aims to ensure access to clean water and sanitation for all (UN, 2015).

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