



GREEN FINANCING MODELS IN SOLID WASTE MANAGEMENT: A CASE OF NAKURU COUNTY-KENYA

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INTEGRATED SOLID WASTE MANAGEMENT

- **Integrated solid waste management** is strategic approach waste that consists of pre-collection, collection, transportation, storage, treatment, and disposal. With the modern hierarchy of waste management includes prevention, minimization, reuse, recycling, energy recovery and disposal with an emphasis on maximizing resource use efficiency
- All these aspects require proper funding in rendering a good waste management service to the society.
- The County Government of Nakuru has adopted the ISWM model which is guided by the following four strategy goals:
 - Protection of public health
 - Reduction of poverty
 - Reduction of waste management cost
 - Protection of the environment
- The guiding principle being zero waste principal (waste is a resource that can be harnessed to create wealth, employment and reduce pollution of the environment – Don't waste WASTE Approach.

ISWM FINANCING MODEL

- The **financing** include all equipment and land used for collection, storage, disposal, re cycling /waste recovery, as well as the cost of **financing**,, legal fees, engineering, etc.
- Financing of solid waste management projects are pretty overwhelming for the County Government, because the government sees it as a critical part of the service they should render to the citizen and the citizen also hold it as a basis for measuring the performance of the government and using it as one of the conditions for re-election.

Financing for Solid Waste Management

- From different options for financing of solid waste management County Government of Nakuru has chosen two models depending on the following factors:
- Where are we in terms of solid waste management in the County?
- What is the end goal of providing waste management service to the citizen?
- What is the most cost-effective and sustainable way of achieving the end goal in a resource scarce setting? This boils down to financing options available within the government and non-government actors.

Financing models for Nakuru County

- **Public Financing**

- This primarily involves funding of waste management service entirely by the County Government through budgetary allocation
- The government gets its constitutional share of the National budget and allocates it to various sectors
- It also determines how it will generate the revenue for service delivery and through taxation or redistribution of funds generated from other sources.
- County Government targets CBDs of major towns and undertakes collection, transportation and disposal of waste, awareness creation and enforcement
- Public Financing also supports the following:

Cont.....

- **Waste disposal site Management**
- Ensures there are designated waste disposal site.(currently CGN has 3No.)
- General maintenance of the Disposal site
- Ensure Access roads are motorable
- Keeping proper records of waste quantities coming in and out of the disposal site
- Put in place appropriate control measures for the management of dumpsite fires
- Enhance security and control of the disposal sites so that illegal activities are contained
- All these efforts are concentrated at Central Business District areas(CBD)

Promoting source separation and recycling

Waste Resource recovery.

- Government focuses on improving the financial and environmental sustainability of the sector through:
- Waste separation and recovery in transfer stations - eg Naswama
- Organic waste composting eg Griincom
- Recycling – eg Ecotiles and Nawassco Fecal Sludge Management
- This addresses some of the fundamental issues of the sector such as behavior change toward recycling and source separation of waste
- Source of incentive that provides linkage and access to basic services for the poor and reducing the adverse impact of uncollected or inappropriately disposed waste

Financing models Cont.....

Public-Private Partnership (PPP)

- This is an arrangement which brings together the government and private sector in providing funds and management capabilities for the delivery of waste management service.
- The County Government has contracted private solid waste service providers in its countywide 36 waste management zones for a period 3 years.
- The recipient of the services (Citizen) pays waste collection fees directly to the private waste service provider as guided by the County Finance Act.
- PWSP recover recyclable waste and disposal residual into dumpsite
- The service provider pays waste management operation permits annually, tipping fees per load and inspection fees to the County Government.

Financing Models Cont.....

- The County Government of Nakuru remains the supervisor, coordinator and regulator and ensures compliance of the contract by private solid waste service providers.
- The Government provided guiding regulatory frameworks for easier execution of the service.
- The service providers expected to abide by all policies, laws, rules, regulations and an appropriate practice incidental to sound waste handling, collection, transportation, storage and disposal including recycling.
- PSWP submit monthly returns to County Government on volume of waste collected and safely disposed, volume recycled, gross earnings received, fees paid to County Government, staffing structure and challenges faced.
- This is enables monitoring ..waste moved and individual progress

Financial Benefit to Government

EXPENDITURE BY PSPs

Cost of trucks(yr) - $36 * \text{US\$}20000 = \text{US\$}1080000 / 3 = \text{US\$}240000$

- Fuel(yr)- $36 \text{ Trucks} * 15 \text{ ltrs} * \text{US\$}1 * 26 = \text{US\$}14040 * 12 = \text{US\$} 168480$
- Personnel(yr) - $36 \text{ PSPs} * 6 \text{ staff} * \text{US\$}5.71 * 26 * 12 = \text{US\$}384808$
- Maintenance(yr) $36 \text{ Trucks} * \text{US\$}80 / \text{month (av.)} * 12 = \text{US\$}34560$
- **Total savings (yr) = US\$ 827848**

REVENUE GENERATED

- Tipping Charges (yr) $72 \text{ trips} * \text{US\$}5 * 26 * 12 = \text{US\$}112320$
- Inspection Fee(yr) $36 * \text{US\$}30 / \text{month} * 12 = \text{US\$}12960$
- Permit (yr) $36 * \text{US\$}200 = \text{US\$}7200$
- **Total revenue(yr) = US\$132480**

- **Total Revenue to Govt(yr) = US\$960328**

FINANCIAL BENEFIT TO PWSPs

ANNUAL EARNINGS BY PSPs

From waste collection and disposal

US\$ 3000*36*12 = US\$ 1296000

From waste recycling

US\$ 0.1*40000 tonnes = US\$4000000

Total earnings P.a. = **US\$5296000**

Waste Recovery centre



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Organic Waste Composting



GREEN COMMUNITY COMPOST

Composting (Organic fertilizer) approx. 3000
tones/year



Ecotiles – Trace Recyclers - Plastics



FECAL SLUDGE MANAGEMENT

Truck loads of fecal sludge are transported into the Nakuru Water and Sanitation Services Company's processing plant, where they are emptied into drying beds located inside greenhouses and dried for two to three weeks. The dried chunks are heated in a kiln at high temperatures to burn off any harmful gases and increase the amount of carbon, making the feces more flammable. This step also makes the feces powder odorless.



Fecal Sludge Management

Briquette Making from Fecal sludge:

The wet balls (briquettes) are then spread onto drying racks and are left to dry under the sun for 2-3 days before weighing and packaging (Saving 88 trees per ton produced) and providing clean efficient cooking solution and employment

Using briquettes in energy saving jiko



Integration of Green interventions

This has been mainstreamed in County planning and regulatory framework as below:

- Five Year plan-Nakuru County integrated Development plan 2018-2020.(enhanced ISWM in the County)
- Departmental five year strategic plan (under review)
- Annual Development Plans
- Annual Budget allocations.
- Nakuru County Waste Management strategy
- Nakuru County solid waste Management policy

Opportunities

- Provision of sustainable livelihoods through job creation in various waste collection and recovery.
- Employment opportunities both directly and indirectly - Groups involved in county solid waste management comprises; community based organizations (CBOs), youth groups, women groups and private entities.
- Waste recovery- Reduced Waste streams to the disposal sites by approximately 40000 tones per year,
- Reduced expenditure on waste management by County Govt.
- Wider scope stakeholder involvement in waste investments.
- Increasing transparency and accountability in the management of solid waste – County Government resource



Challenges

- Inadequate Resources – little funding in waste management initiative by Governments
- Lack of investment capital by Waste sector investors
- Lack of markets for recyclables – eg compost
- Low prices for recyclables – not competitive
- Low awareness on waste– regulations, responsibilities, effects on health or the environment



THANK YOU