

Original Paper

A Review of Institutional Frameworks & Financing Arrangements for Waste Management in Nigerian Cities

Michael Winter¹ & Fanan Ujoh^{1*}

¹ ICF Consulting, UK

* Fanan Ujoh, ICF Consulting, UK

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Abstract

Nigeria is rapidly urbanizing and is forecasted to become the 3rd most urbanized nation by 2100. Expectedly, the rapid urbanization presents challenges in many areas including the management of municipal services such as solid waste. This yawning failure is reflected in the poor quality of waste services across Nigerian cities. The study reviewed municipal waste management governance and institutional frameworks, and financing arrangements in two major cities in the North-western and south-eastern parts of Nigeria—Kano and Enugu cities. Key Informant Interviews (KIIs) using a number of structured questions checklist were conducted for the Heads of Government institutions responsible for waste management, Public Appropriation/Budget and Finance Units, as well as other key stakeholders including waste generators (residents and business owners), waste pickers and informal waste recyclers, and waste service providers. Additional, existing policy frameworks and infrastructure financing were reviewed. The findings reveal institutional and policy inadequacies, financing limitations, technical incapacity, infrastructural inadequacies, and socio-economic and attitudinal barriers, that collectively impede effective and efficient waste management service delivery in both cities. The assumption is that the findings of this study reflects the status in many Nigerian cities.

Keywords

municipal waste, institutional & financing frameworks, urban governance, Kano, Enugu

1. Introduction

By 2030, urban population worldwide is forecasted to grow by 1.4 billion, with city dwellers accounting for 60% of the world's population, reaching 2.6 billion by 2050 (USAID, 2010). According to the UN World Population Prospects (2014), global population (absolute numbers and density) indicate a rising population in Less Developed Countries (LDCs), especially in Asia and Africa. Although the pace and pattern of the projected urban growth and urbanisation is expected to vary by region, the vast majority of growth is expected to take place in developing countries hence, by 2050, it is projected that China, India and Nigeria would be the world's most populated countries, accounting for 37% (of the increase of nearly 2.5 billion people in the urban population by 2050) of global urban population. The growing population in Nigeria alone (the most populous African country) is expected to trigger regional concerns in areas of urbanisation, population flows, urban infrastructure and service delivery, food security, resource & wealth distribution, insecurity/conflicts, and environmental degradation; all of which have the capacity to impact the urban system. To say the least, there will be a significant increase in demand for municipal infrastructure and services delivery. It is therefore, particularly critical to begin to consider the mutually reinforcing fact of political economy and governance factors that will continue to affect the financing, provision and delivery of municipal infrastructure and services in Nigerian cities. Currently elsewhere, these factors are receiving increased attention regarding the ways in which they ultimately influence urban infrastructure provision and services delivery.

This study therefore, primarily aims to review the current status and also create an understanding of the interactions between governance and policy contexts within which municipal infrastructure financing and provision, and services delivery take place, as well as the characteristics of specifically reviewed MSWM service sector in Nigerian cities, using Enugu and Kano cities as case studies. The study objectives include, but not limited to, the following:

- a) Identification and review of the role of key factors that influence MSWM infrastructure provision and service delivery including urban governance, financing options, technical capacity, demographic characterization, city's physical, economic, and socio-cultural composition;
- b) Ascertain the level of informality in city expansion which is perceived as a determinant of constraints to equitable and effective MSWM services. Informal settlements—which may emerge as a result of numerous reasons including: high land prices, low wages, rapid in-migration, and government failures to control land planning, and housing market; and failure to match city expansion with infrastructure provision and service delivery (including those for effective MSWM)—inherently inhibit optimal service delivery, resulting in intensification of easily noticeable negative externalities;
- c) Determine the extent to which current MSWM service monitoring and cost-recovery is achieved through the relevant and available institutional frameworks at the city level;

- d) Determine whether there are policy gaps/policy conflicts & incoherence in terms of existing MSWM operational frameworks, and also among the 3 tiers of governance (Federal, State and Local Governments) in Nigeria; and,
- e) Finally, suggest an alternative framework (or a combination of frameworks) for improved MSWM infrastructure financing, provision, operations and service delivery.

Typically, MSWM is the most problematic and expensive issue facing Local Government Areas (LGAs) in Nigeria (often in excess of 50% of municipal budgets). Budgets are usually insufficient, generally lack transparency and is coupled with the absence of appropriate cost recovery mechanisms. Additionally, weak government institutions, partly due to allocation of insufficient financial and human resources by decision makers, further compound efficiency and effectiveness of MSWM service delivery. Also, institutionally unclear roles, responsibilities, poor communication, non-integration, “turfism”, often with corruption and other malpractices also account in part for the failure of MSWM systems in most Nigerian cities. Weak regulatory framework and enforcement; insufficient attention to public education and stakeholder engagement; inadequate service coverage, particularly in low income (high density) neighbourhoods; lack of attention to health & safety standards; all cumulatively worsen the quality of MSWM services in Nigerian cities (Adam, 2007; Ibem, 2009; Nabegu, 2010; Abila & Kantola, 2013; Butu & Mshelia, 2014; Nabegu & Mustapha, 2015; NIAF, 2016).

On the basis of the many critical concerns listed above, this study looked into several influencing factors such as rapid urbanisation, socio-cultural (including religion), political & economic settings, financing options, operations & management, institutional and legislative framework/governance structures and M&E strategies, and the role these factors collectively play in determining the reach and quality of MSWM service delivery in Nigerian cities, using Enugu and Kano as case study cities.

This study therefore, builds on incremental knowledge obtained from various sources including previous studies, documented and gazetted Government materials, stakeholder and key informant interviews, field observations and questionnaire survey of key stakeholders at the case study cities.

1.1 Urbanization Trends and Challenges in Nigeria

Several studies reveal a global trend with more people living in urban areas than in rural areas. In 1950, 30% of the world’s population was urban, with an increase of up to 54% as at 2014, and a projection of 66% of global population to be urban residents by 2050 (Figure 1). Further analysis reveal that the most urbanized regions include Northern America (82% urban population in 2014), Latin America and the Caribbean (80%), and Europe (73%). Although only 40% of Africa’s population was urban in 2014, the urban population is projected to rise rapidly over the coming decades to hit 56% by 2050 (UN World Urbanization Prospects, 2014). Currently, large cities are concentrated in the global South, with medium-sized cities (and those with less than 1 million inhabitants) in Asia and Africa recognized as the fastest growing urban agglomerations.

By 2050, it is projected that China, India and Nigeria will be the world’s most populated countries, accounting for 37% (of the increase of nearly 2.5 billion people in the urban population by 2050) of

global urban population. For Nigeria specifically, population is projected to grow from its current estimated 183,523,000 (47.8% urban) to about 273,120,000 in 2030, surpassing USA by mid-century in 2050 (440,355,000) and almost doubling USA's population by the end of the century in 2100 (913,834,000 with about 54% urban). As the world continues to urbanize, sustainable development challenges will be increasingly concentrated in cities, particularly in Less Developed Countries (LDCs) where the pace of urbanization will continue to be fastest and Nigeria specifically (Figure 1). Urbanization will continue to play an increasingly important role in economic growth and sustainability (where proactive steps are taken) or unsustainable and "poverty-ridden" hotspots (where steps are not taken to plan for the expanding population). It is thus, critical to design and implement integrated policies to improve the lives of especially urban, but also, rural dwellers.

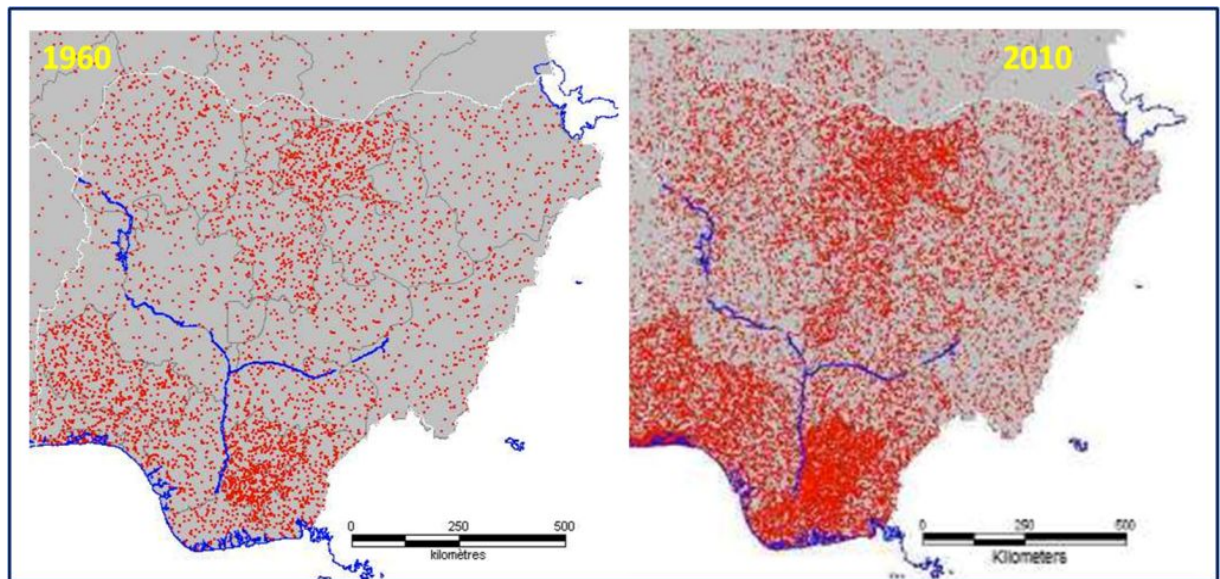


Figure 1. Population Density in Nigeria over 50 Years: Areas of Historical Urbanisation Remain the Focus of More Recent Urban Population Growth in Nigeria [one dot = 10,000 people] (e-Geopolis, 2007)

The rate of urbanization in Nigeria (the most populous African country) is expected to trigger regional concerns in areas of population flows, increased demand for urban infrastructure and service delivery, food insecurity, resource & wealth distribution, insecurity/conflicts, and environmental sustainability and natural disasters challenges; all of which have the capacity to impact on urban infrastructure (including adequacy, funding and provision) and on service delivery systems.

1.2 Conceptual Framework

The "Good Urban Governance" (GUG) Framework is a participatory, home-grown process for assessing the quality of local/urban governance in Nigeria (UNDP-UN Habitat, 2011). The framework relies on household surveys, multi-level stakeholder FGDs, and documented/archived/gazetted

administrative reports. The GUG Framework is built on 5 principles, viz: Effectiveness, Equity, Security, Accountability, & Participation following the stages shown in Figure 2.

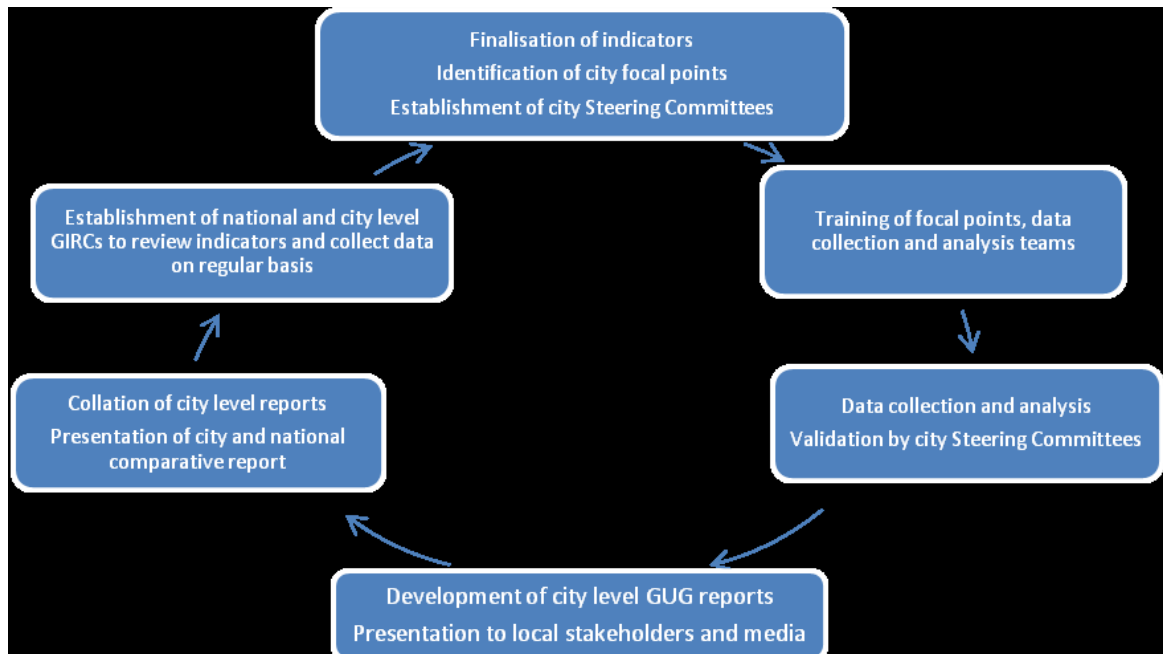


Figure 2. Main Stages of the GUG Framework for Assessing Urban Governance in Nigeria (UNDP-UN Habitat, 2011)

Generally, cities “work” economically when they bring together large populations—of both people and enterprises—with diverse skills and capabilities in a dynamic and fluid competitive environment that stimulates both creativity and productive efficiency. But the ability of cities to function effectively in this way is conditional on the existence of key physical infrastructure and critical service delivery of sufficient quality and in enough quantity to provide a platform for growth as opposed to a ceiling. Where the physical environment is not built to provide easy movement of goods and people, or activities are not coordinated so as to provide an equal level of municipal service delivery for the rich and poor, many of the benefits of being a city are lost and the city becomes effectively no more than a large collection of villages.

Cities also work because the portion that individual households and businesses must bear in the shared public costs of the infrastructure that connects them together and links them to key publicly provided common services is dramatically less than the costs that they would have to bear in substituting for them on an individual and private basis, as long as the related infrastructure is actually publicly provided or provided by the private sector in effective partnership with government.

This study therefore, views MSWM within the context of municipal service delivery and as directly influenced by governance and institutional frameworks which outline specific/target infrastructure and operational guidelines (financing, operations, enforcement, monitoring & evaluation, and quality

assurance/control, etc.) for adequate coverage and quality service delivery. The conceptualization of this study is thus, within the localised GUG framework for assessing good governance in Nigeria. In adapting the GUG framework, this study relied on similar investigative methods (multi-level stakeholder surveys and interviews, and documented/archived/gazetted administrative reports and institutional legislations) and the key principles of effectiveness, equity, security, accountability, & participation applied by the originators of this framework. The full scope of the GUG framework was however, not been adapted due to reasons clearly stated under Section 3 (limitation of study). Clearly, efforts were made to review the institutional and technical capacity of waste service delivery in Kano and Enugu cities, as well as the financing sources and values for infrastructure and equipment, participatory levels (PSPs and CBOs/NGOs, etc.) and operational planning for service delivery within the case study cities.

2. Study Area

The study focused on 2 Nigerian cities: Kano (a major city in North-western Nigeria) and Enugu (a major city in South-eastern Nigeria) cities.

2.1 Kano City (Capital of the “Centre of Commerce State”)

Kano is the largest city in the Sudano-sahelian region of Nigeria (Figure 3) and has for centuries been the most important commercial and industrial nerve centre of Northern Nigeria, attracting millions from all parts of the country and beyond (Nabegu, 2010, 2012, 2013). Immigration, a natural growth rate of 3% (according to the National Population Census of 2006) and increasing commercial activities have further increased the population and spatial size of the city.

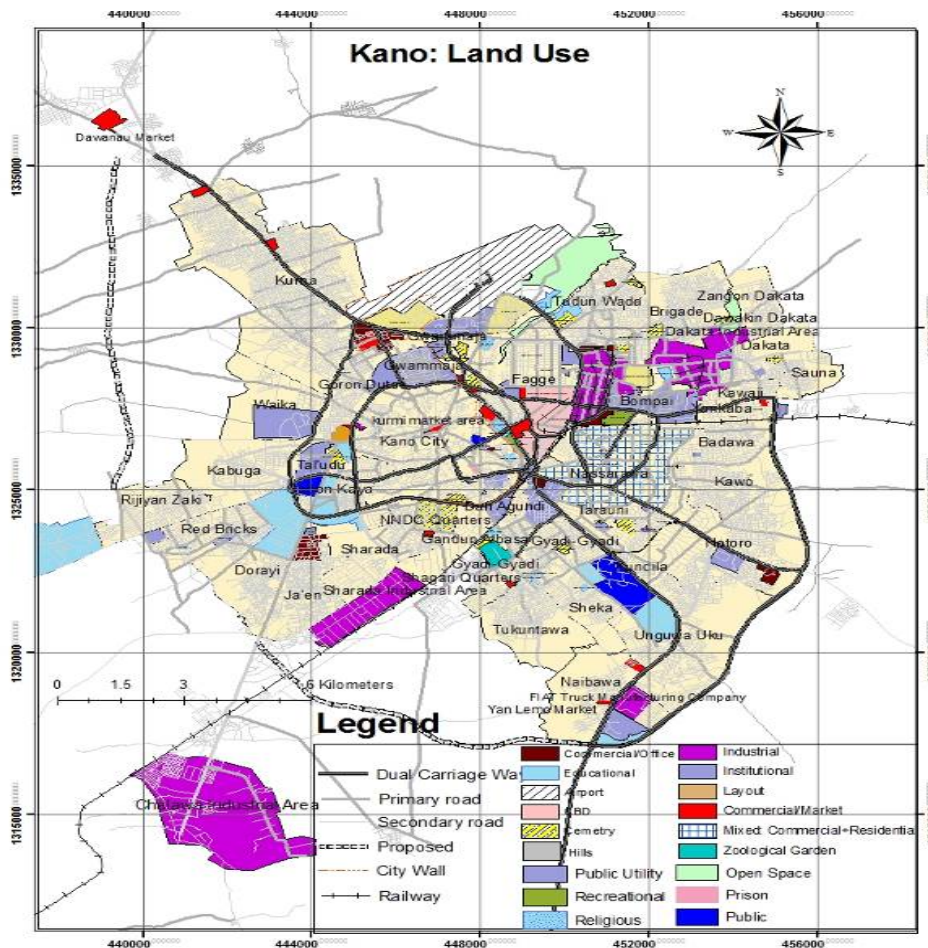


Figure 3. Kano City landuse Map

With a population density of about 1,000 inhabitants per km² within the Kano close-settled zone (compared to the national average of 267 inhabitants per km²), the city is considered among the fastest growing cities in Nigeria. Kano city comprises 8 LGAs. In population terms, Kano is the largest city in the north, the second largest in Nigeria (and the 6th largest Muslim city in the world), the economic growth of which would significantly impact on the entire Northern region of Nigeria. The current population of Kano State is estimated to be around 12 million (the 2006 National Population and Housing Census recorded a population of about 9.4 million) with around 30% (4 million) living in Kano city (NIAF, 2013a).

The rapidly rising population of the city is not accompanied by a commensurate expansion of city infrastructure, which is reflected in the inadequacy of service coverage and quality of delivery. The case is even most prominent for solid waste. Kano city applied to join the last batch of cities to be admitted into the Rockefeller Foundation’s 100 Resilient Cities. The application appears to have been unsuccessful.

2.2 Enugu City (*Capital of the “Coal City State”*)

Enugu city (Figure 4) is a tri-LGA city consisting of Enugu North, Enugu South and Enugu East. According to Adinna et al. (2009), Enugu began as a traditional settlement, but came to prominence following the discovery of coal at the foot of the Udi escarpment. Enugu’s economy in the early 20th century depended on coal mining in the Udi plateau; this industry was the driving force behind the city’s growth. The Nigerian Coal Corporation has been based in Enugu since its creation in 1950 where it controlled coal mining. With the creation of the Eastern Line, Enugu was connected with the sea via Port Harcourt to its south and later connected to the city of Kaduna in Northern Nigeria. The Biafran war brought widespread devastation that led to a decline in coal production from damage or destruction of equipment.

Although as from 2005, coal mining is no longer active in Enugu, the city continues to grow due to its status first as the capital of the former Eastern Region during the regional Government structure in Nigeria immediately after Independence in 1960; secondly, as the current capital of Enugu State; and thirdly as a centre for economic (especially informal), social and cultural activities in addition to the relative security the city enjoys when compared to other cities within the South-east region. Enugu also hosts an international airport from where direct flights are taken daily to other parts of the world; home to the only indigenous Motor vehicle manufacturing plant in Nigeria; and about half a dozen higher institutions of learning (Universities, Polytechnics & Colleges of Education).

The city is believed to have one of the first master plans in the country, prepared by the British colonial administration in 1917 (Ogbazi, 2013; Adinna et al., 2009). Despite successive master plans, the rapid growth of Enugu has resulted in informal and sprawl development which have affected the quality of service delivery including roads/accessibility and MSWM services. In January 2015, Enugu city joined the 100 Resilient Cities platform under the Rockefeller Foundation which was expected to run for two years. However, the city, among several others elsewhere, was delisted from the 100 Resilient Cities programme due to what the Programme officials termed “inaction” (Note 1).

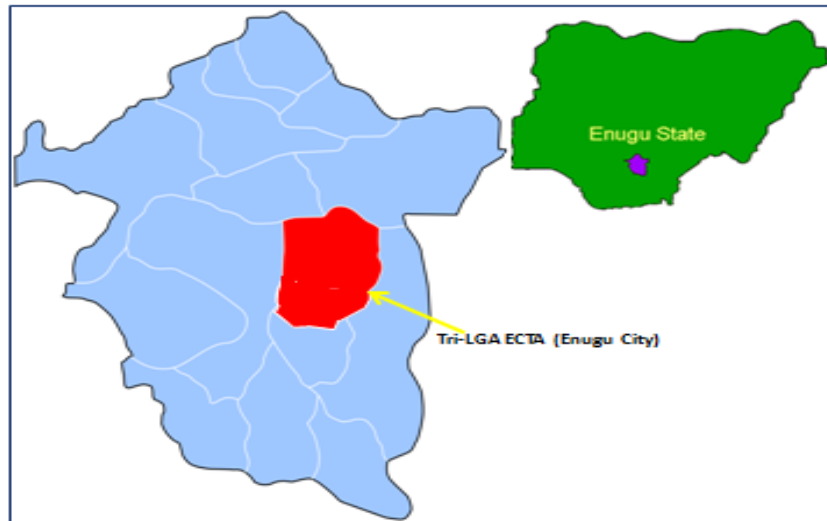


Figure 4. Enugu City

Rapid urbanization has increased the population of the city from 63,000 in 1953, to about 138,500 in 1963, to 482,977 in 1991. Currently, the tri-LGA city has a combined population of 722,664 according to estimates derived from the 2006 census, representing about 22% of the total population of Enugu State. Within the wider boundaries of the larger administrative unit, which contains scattered outlying settlements and low-density development, the urban area of Enugu city occupies about 106 km² of land area with an estimated population of 377,911 in 2010 (NIAF, 2013b).

3. Methodology

3.1 Data Collection and Analysis

The study categorised and prioritized data collection by focusing on contextual approaches on the basis of a largely qualitative assessment of the available evidence. Additionally, other aspects of the study dwelt on more substantive and detailed analysis of data collected from field observations, key stakeholder interviews and a structured question checklist administration (in line with the GUG assessment methodology), which collectively offer better clarity and deeper understanding of MSWM policy and financing approaches in Enugu and Kano cities. A total of 138 (69 per city) questionnaire checklists were administered to key stakeholders within the MSWM sub-sector in Enugu and Kano cities, while site visits and observations were also carried out to locations of interest such as dumpsites, markets, abattoirs, informal waste recycling centres, etc. Key stakeholder interviews were also conducted as part of the data collection process. The data collection process ran between March and December 2016.

3.2 Research Limitations

The main limitations are in terms of data availability especially concerning budgetary allocations, transaction details for SWM procurements, revenue generated and payments made to contractors

engaged in the SWM service delivery. Another challenge was lack of access to many of the households in Kano (due to religious restrictions) to interview women who, in actual sense, handle waste on a daily basis at the household level. Permission must be granted by the husband who must be present and also serve as the interpreter during the interview process. Time and budget allocated for the study were also major constraining factors accounting for the small sample size of 138 stakeholders who were administered the structured checklist of questions. The sample size determination was therefore, not in any way based on a robust scientific methodology, as it was arbitrarily determined based on budget and time considerations.

4. Findings and Discussions

4.1 Institutional & Management Choices and SWM Outcomes in Kano & Enugu Cities

4.1.1 Similarities

On the basis of field work throughout the project period, a summary of the key institutional and operational arrangements for MSWM in both cities is presented on Table 1 with further details in sub-sections 4.3.1 and 4.1.2. The main MSWM arrangements in operation within Nigerian cities are the private sector based and public sector based service provision (Uwadiogwu & Chukwu, 2013). The private system is a contractual arrangement between waste generator(s) and a person or group of persons who undertake carting away of solid waste as a business pursuit, while the public system involves a situation where government sets up a public Agency with the mandate to collect solid waste from generators and dispose them at designated urban dumpsites. In many Nigerian cities, both systems function side by side particularly where the public system becomes so inefficient that it has to be complimented by the private system. This hybrid arrangement exists in Kaduna, Port Harcourt, Lagos, Aba, Owerri, Ibadan and Kano (FMHE, 1998; NIAF, 2014a; NIAF, 2014b; NIAF, 2016). While the public system is under the control, funding and supervision of the State government, the private system prospers by striving to offer satisfactory services so as to win more customers and as such ensures that efficiency is maintained (Omuta, 1988).

Table 1. Summary of Key Differences in MSWM Practices between Enugu & Kano Cities

SWM activities	Enugu City	Kano City
Key description	SWM in Enugu is part of a <u>State-wide</u> service, principally undertaken by a State public agency with no formally recognisable private sector involvement in terms of service provision.	SWM in Kano is <u>City-specific</u> service, principally undertaken by a State public Agency but with a significant private sector involvement(franchisees) in terms of service provision.

Service coverage	Low density residential areas, markets, businesses & public collection centres are served regularly;	Low density residential areas, markets and businesses appear to be served more regularly by Govt appointed Franchisees or non-regulated PSPs;
Principal public sector agency	Medium & High density residential areas served less regularly.	High density residential areas not serviced but depend on evacuation from a communal point by State Agency.
Legal framework	ESWAMA with offices in all major urban areas of Enugu State.	REMASAB with Zonal Offices in some LGAs that comprise Kano city.
Other service delivery agencies or partners	ESWAMA Law (2004)	REMASAB Law (2003)
Waste collection	Transport rental companies on contract to ESWAMA.	Franchised private sector contractors for waste collection from specific Zones/Lots.
Waste disposal	<p><u>All areas:</u></p> <p>Households and businesses dispose of solid waste in nearby ESWAMA dumpsters (or skips)</p> <p>ESWAMA vehicles and labourers collect waste from dumpsters (or skips) and transport to Enugu city dumpsite.</p>	<p><u>Franchised areas:</u></p> <p>Private sector contractors collect waste from households and businesses and transport it to one of several official dumpsites within the city.</p> <p><u>Non-franchised areas:</u></p> <p>Households and businesses dispose of solid waste in nearby REMASAB designated collection points.</p> <p>REMASAB vehicles and labourers collect waste from factories, markets or other large waste generators and transport it to one of several official dumpsites within the city.</p> <p>REMASAB vehicles and labourers collect waste from designated collection points and transport it to one of several official dumpsites within the city.</p>
Waste disposal	One Enugu city open dumpsite (not a sanitary landfill)	Several open dumpsites (usually old borrow-pits) located within Kano city. No sanitary landfill sites.

Financing	<u>Service charges:</u>	<u>Service charges:</u>
	ESWAMA directly bills all medium & low density households, and businesses on a monthly or annual basis (via PoS) using private contractors. ESWAMA collects waste (irregularly) at high density areas. Waste fee is not strictly enforced at these locations. State government pays ESWAMA staff salaries and equipment procurement.	REMASAB only bills major clients, collects a % of charges collected by franchised contractors, and does not charge households in non-franchised areas. Franchised contractors charge households and businesses. State government pays for REMASAB operational costs and staff salaries.
City expanse (No. Of LGAs)	3 LGAs	8 LGAs
Technical Capacity (Equipment)	Limited equipment capacity given that collection is solely carried out by ESWAMA. Last procurement was in 2012.	Relatively large equipment base with recent procurement by State Government in 2015, 2017 & 2018.
Enforcement	Established Environmental Court on ESWAMA premises that sits daily; Enforcement is relatively strict.	Absence of an Environmental Court; Cases referred to Magistrate Court; Enforcement is very weak.
Willingness to pay (WTP)	There is an exhibited high level of WTP given that service is provided by ESWAMA not PSPs, yet payment rate is considered high.	There is very low WTP among residents.

Enugu and Kano cities share a number of features. Firstly, both Enugu and Kano are the capitals of their eponymous States—and are thus the headquarters for most State government MDAs and the place of residence for a large number of State Government civil servants. Secondly, Federal Government

Agencies in the two States are located in both cities. Thirdly, both Kano and Enugu are the largest cities in their respective States and geo-political regions. Both cities also have an international airport, although the Kano airport is way older than Enugu's.

However, specific similarities between the 2 cities in terms of MSWM services are discussed below:

- i. **Waste characteristics:** Basically, waste characteristics in Nigerian cities share more similarities than differences. Although no waste characterisation study was conducted in the course of this study, the literature searches tend to confirm this notion. Furthermore, critical waste operation of sorting is not found in both cities.
- ii. **Governance:** On the whole, Kano and Enugu are Nigerian States, operating in the same overall institutional framework (limited Federal authority, strong State Governments, weak/emasculated/ineffective LGAs) with responsibility to handle MSWM. In view of the overall governance framework, there appears to be similarity rather than difference, given that each State has the same powers to organise its institutional and financing frameworks to define the capacity to provide MSWM infrastructure and quality/coverage of service delivery.
- iii. **Corruption:** Although this appears to be a delicate matter requiring deeper investigation, it is unlikely that any significant difference would be recorded in terms of the level of corruption recorded between the 2 States. The structure is basically the same, and generally does not emphasize accountability.
- iv. **General Economic Conditions:** Both States (within which the study cities are located) are affected by the general economic conditions of Nigeria as a country. This includes fluctuating exchange rate, import dependency, mono-economy, recent economic depression experience, high unemployment rate, poor power supply, etc.
- v. **Lack of Profitable SWM Business Model:** There appear to be a general lack of a profitable framework to guarantee cost recovery and return on investments into the MSWM sub-sector. It is still largely seen (especially in Kano) as a social responsibility to be freely provided by Government to its citizens.
- vi. **Absence of a Full Value Chain Framework:** There is no holistic and integrated framework covering the full value chain for MSWM in both cities. This explains the absence of guiding regulations for waste recycling activities; absence of a sustainable financing framework for SWM infrastructure, equipment and service provision; etc.

4.1.3 Dissimilarities

The main dissimilarities observed between the 2 cities that appear to be capable of affecting MSWM operations are shown on Table 2.

Table 2. Basic Dissimilarities in City Characteristics between Enugu and Kano Cities

Characteristics	Enugu City	Kano City
Total population (2006 estimates)	717,291 10 th largest in Nigeria	2,826,307 2 nd largest in Nigeria
City population as % of total State population	22%	30%
Total area size (km ²)	564.4	502.7
Population density (people/ km ²)	1,271	5,622
No. of constituent local government areas	3	8
Historical Economy	Coal dependent	Commerce
Predominant Religion	Christianity	Islam (Sharia Law applies)
Geographical Location	South-Eastern Nigeria	North-Western Nigeria
Absolute Poverty Level	62.5%	65.6%
Historical Background	Early 20 th Century	Centuries old
Literacy level in English Language	64.6%	27.8%

Source: National Bureau of Statistics (2010 & 2012).

For Kano, the city is clearly large in size and covers the jurisdictions of 8 LGAs, as against 3 in Enugu city. Enugu city, unlike Kano city, has no organ of government responsible for city-wide waste service provision. Instead, there are a number of MDAs responsible for specific service provision across the State, including the urban centres. This structure also creates the problems of role conflict between specific Agencies (such as ESWAMA for waste management) and the larger State-level Ministries (say Kano State Ministry of Environment for environment and sanitation policy) and the Departments of Sanitation and Waste Management of all LGAs within which the major towns are located in the State. Enugu city, unlike Kano city, has an enabling law vesting responsibility of city management to ECTDA. Although the legislative framework for ECTDA exists in Enugu city, there is still the problem of role conflict because the ECTDA Law is vague as it provides for the ECTDA to “cooperate” with other relevant MDAs in executing city-based services including MSWM. Yet, ECTDA is not involved in MSWM in Enugu city. It is against this background that the institutional and financing arrangements for the provision of MSWM infrastructure and service delivery in Kano and Enugu cities are reviewed

4.2 SWOT Analysis for Kano and Enugu Cities

The quest to build a MSWM platform with a viable business model, a self-sustaining, cost-recovery capacity and revenue generation potential for both Kano and Enugu cities would require that the study highlight and analyse areas of Strengths, Weaknesses, Opportunities and Threats (SWOT) within the existing MSWM infrastructure financing and service delivery architecture across the value chain (Table 3).

Table 3. SWOT Analysis for both Kano and Enugu Cities*

<u>Strengths:</u>	<u>Weaknesses:</u>
<ul style="list-style-type: none"> • Both cities are leading cities within their respective regions, with strong Heritage and Pedigree; • SWM has a high level policy focus in both cities; • City population huge enough to deliver city-wide and strata-wise mass awareness for waste sorting; • Easily quantifiable IGR potential for both cities; • Capacity of MSWM service to self-sustain; • Huge potential for WtW (recycling or re-use, organic matter, etc.) and WtE (refuse-derived fuels, mass burn fuels, etc.); • Existing SWM PSP structure (Franchise) & M&E Framework could be enhanced in Kano city, while a similar system could be instituted in Enugu to expand both service coverage and private participation; • Strong Community Hierarchy and Social Capital potentials especially for Kano city & relatively high equipment plant for REMASAB. 	<ul style="list-style-type: none"> • Economic decline/deindustrialization in both cities as across Nigeria; • Parts of both cities (Old Kano city & Coal Camp) present challenges in availability of land for communal dumps & access to same. These locations are physically and socio-economically vulnerable; • Inadequate collection points within districts; • Inadequate dumpsites especially for Enugu; • Absence of sanitary landfill means no lining for soil & groundwater protection, & monitoring landfill gas processing; • Absence of billing database, waste evacuation routes & retribution process may slow a re-organised SWM process; • No data on ‘willingness-to-pay’ (WTP) for SWM especially at high-density household levels especially in Kano city; • Absence of a Special waste (medical, industrial, etc.) treatment facility.
<u>Opportunities:</u>	<u>Threats:</u>
<ul style="list-style-type: none"> • MSWM is a “Quickwin” as a policy and investment option which can be used as a yardstick to assess or rate urban governance performance; • Already established WTP (Note 2) by institutions, businesses (in both cities) and low-/medium-density 	<ul style="list-style-type: none"> • Conflicts in role definition between LGAs (Note 3), and State MDAs (Waste Agencies, Urban Devt Boards, Ministry of Environment, etc.); • Checking and changing deep-seated attitudes towards waste would require both enforcement of existing and enactment of

- neighbourhoods can be exploited for further PSP involvement;
- Existence of commercial, production and household wastes indicates a huge waste volume to support waste reduction, reuse or recycle business initiatives;
 - Possibility of accessing public funds or Govt support to acquire funding for infrastructure provision & improved service coverage and quality of delivery;
 - Sorting in place by waste pickers at the dumpsites can be planned & expanded;
 - Incentives can boost household waste practices e.g. separation, etc.
 - Existing market for sorted waste can be expanded, enhanced and established.
- new legislations and intensified awareness campaigns. This is especially for Kano city;
- Religious encumbrances to access certain stakeholders, and reputational security challenges particularly in Kano city;
 - Deep socio-economic divide (wide gap between rich and poor) in both cities but more entrenched in Kano;
 - Investor apathy is shown in Kano city. ESWAMA have not allowed an opportunity to evaluate same in Enugu city;
 - The problem of ‘commingled’ roles where same Agency is service provider & Regulator & M&E eliminates efficiency;
 - Unplanned and unchanged growth on-going, with increasing environmental vulnerability & lack of resilience.

Implication: Current status of MSWM at both locations indicates that:

- As both cities expand, the demand for waste services also increases, and failure to match service with demand would increase public health risks, seasonal floods, soil, water and air pollution potentials, loss of opportunities to create jobs and earn IGR for Government;
- Compromising the aesthetic beauty of both cities;
- An indication of failure to showcase ability to transform a “major problem” into a “major opportunity” that would support City Governance, and improved living environment and livelihood conditions.

*Except otherwise indicated, the SWOT applies to both cities.

4.3 MSWM Structures in Kano & Enugu Cities

4.3.1 MSWM Structures in Kano City

In Kano city, a total of 69 stakeholders were administered a questionnaire checklist which varied according to the category of stakeholder. The first category of interview was conducted for 3 Management level staff of REMASAB—the Managing Director, the Director, General Services & Administration/Finance, and the Director of Operations. The responses shed more light on the institutional, operational and financial arrangements of MSWM from the REMASAB perspective. Additional sub-sections provide insight into the SWM practices and financing of service delivery operations by other stakeholders which include Franchisee, non-franchisees, Medical Waste Generators,

Hoteliers, LGA Sanitation Departments, Households, Informal Recyclers and Waste Pickers; Market Stall-holders & Shop keepers. These stakeholders were sampled across the 8 LGAs comprising Kano city as shown on Figure 5.

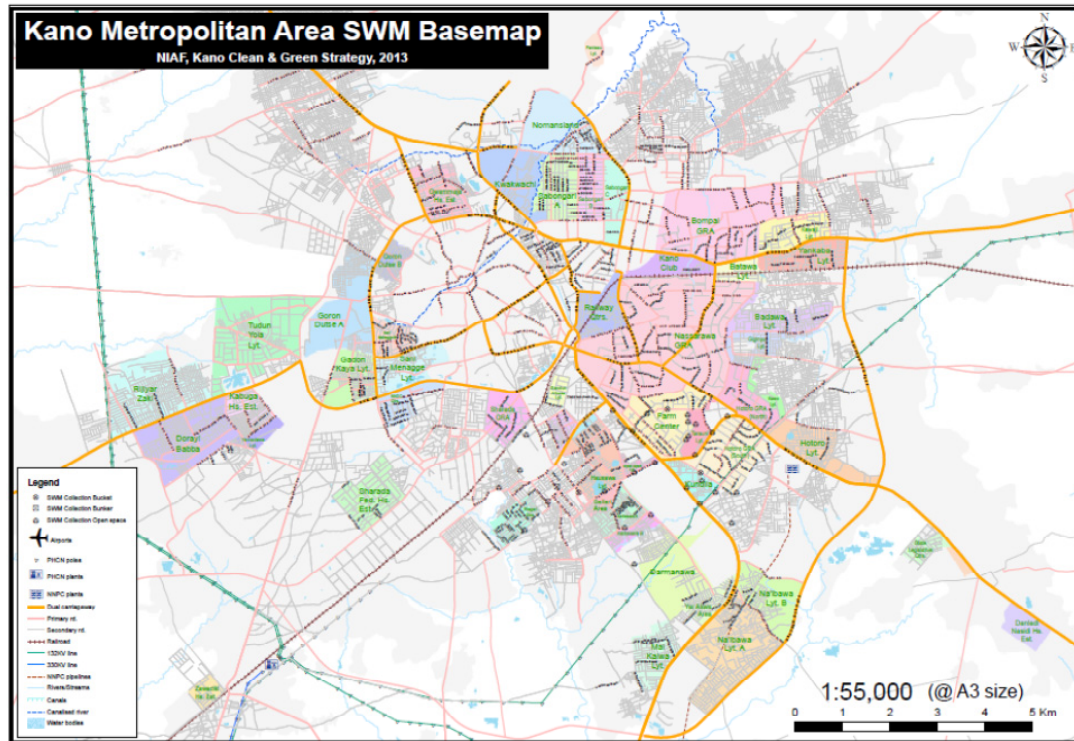


Figure 5. Kano MSWM Basemap (NIAF, 2014b)

4.3.1.1 Institutional Arrangement

It was gathered that the principal functions of REMASAB include a) refuse collection & disposal; b) management of refuse collection centres and dumpsites; c) Land reclamation; d) street sweeping & cleaning; e) vector control via fumigation; f) liaison with all LGAs for monthly sanitation services; g) Initiation of privatization & commercialization of sanitation programmes. While REMASAB operations are guided by the National Policy on Environmental Sanitation, the Board is accountable and reports to the Hon Commissioner, Ministry of Environment, Kano State Government.

Structurally, REMASAB is constituted by a Board comprising a) Chairman; b) Representative of each of the 8 Metropolitan LGAs in Kano city; c) 2 Representatives from 2 Senatorial Zones (North & South) within which the 8 LGAs are situated; d) a Representative of Hisbah Board; e) One Representative each from Ministry of Environment, Ministry of Health, Physical Planning Authority, Central Working Committee of Self-Help Group, one individual with unquestionable integrity; and, f) The MD of REMASAB. The REMASAB Senior Management Team include: a) the MD, Legal Secretary (not appointed at time of interview), Director of Administration & General Services, Director of Operations, Director of Engineering, and Director of Sanitation. REMASAB scope of work covers all 8

Metropolitan LGAs including Dala, Gwale, Fagge, Municipal, Nassarawa, Tarauni, Kunbotso and Ungogo LGAs. In addition to the Headquarters, REMASAB has five offices in Kano city located at: a) House of Assembly; b) Dorayi Composting Plant; c) Zarra Recycling & Composting Plant; d) Ministry of Environment; and, e) Court Road Dump site. The management staff agree that enforcement of REMASAB regulations is partially (not fully) done.

Figure 6 shows the current SWM practice in Kano city while Table 4 presents the critical stakeholders driving the waste system represented in Figure 6. The system is a multi-stakeholder one with different levels of participation at the public, private and community levels. By and large, the system lacks enforcement and is incapable of sustaining cost recovery.

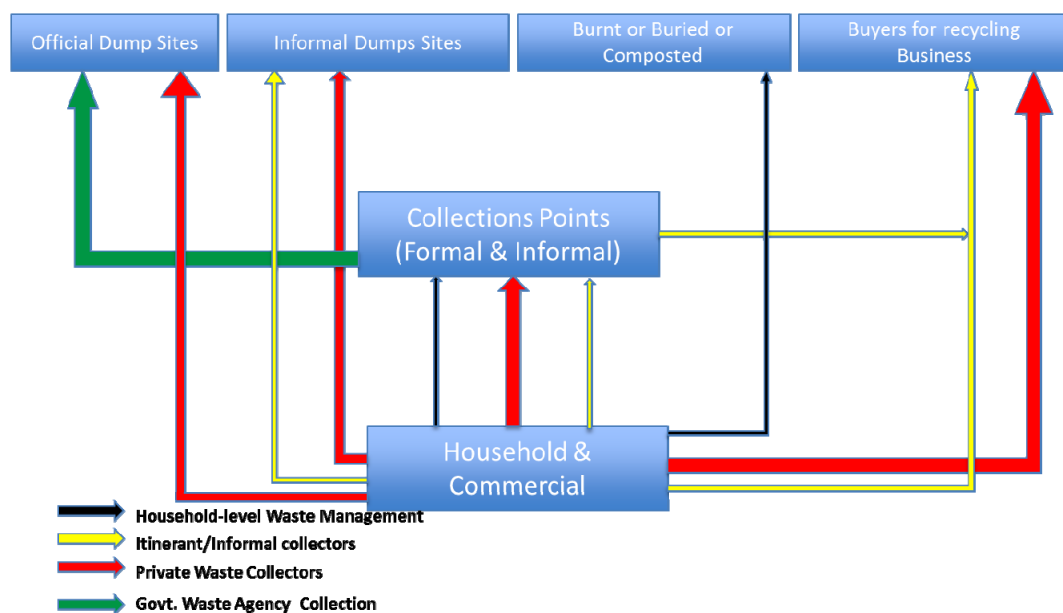


Figure 6. Existing SWM Practice in Kano City

4.3.1.2 Operational Arrangement

Generally, REMASAB's operations and activities are based on daily operational plans to collect the enormous volume of waste generated in Kano city recorded as 895 tonnes daily; 26,850 tonnes monthly. Operational activities/services include; a) Collection of waste; b) Landfilling; c) Composting; and, d) Recycling of plastics through its presence at the 2 composting and one recycling plants in Kano city.

REMASAB operations are run by the staff who are employed by KNSG directly: and also 2,490 short-term (casual) staff (out of which 850 or 34% are female). The casual staff work on a daily basis and undergo training and supervision. No training manual was retrieved from REMASAB.

Waste Collection from households is done through the services of Private Waste Collectors under Franchise Agreement (Figure 7), while waste collection from businesses and commercial centres in Kano is done partly by REMASAB staff and the use of some private waste companies. Waste collection

from public areas (Roads, Parks, Pavements, etc.) is done by REMASAB through the use of: a) payloaders; b) skip loaders; and, c) tractors. Waste collection from specialized institutions (hospitals and industries) is done by REMASAB through provision of closed buckets and containers placed at strategic locations.

REMASAB champions the monthly sanitation exercise which takes place on last Saturdays of every month. In MSWM operational terms, Kano city is divided into 4 collection zones (A,B,C&D). The inner city comprises Zones A&B while the outer city comprises Zones C&D. The total number of collection points are 138, distributed per zone as follows:

- Zone A = 54
- Zone B = 26
- Zone C = 18
- Zone D = 40.

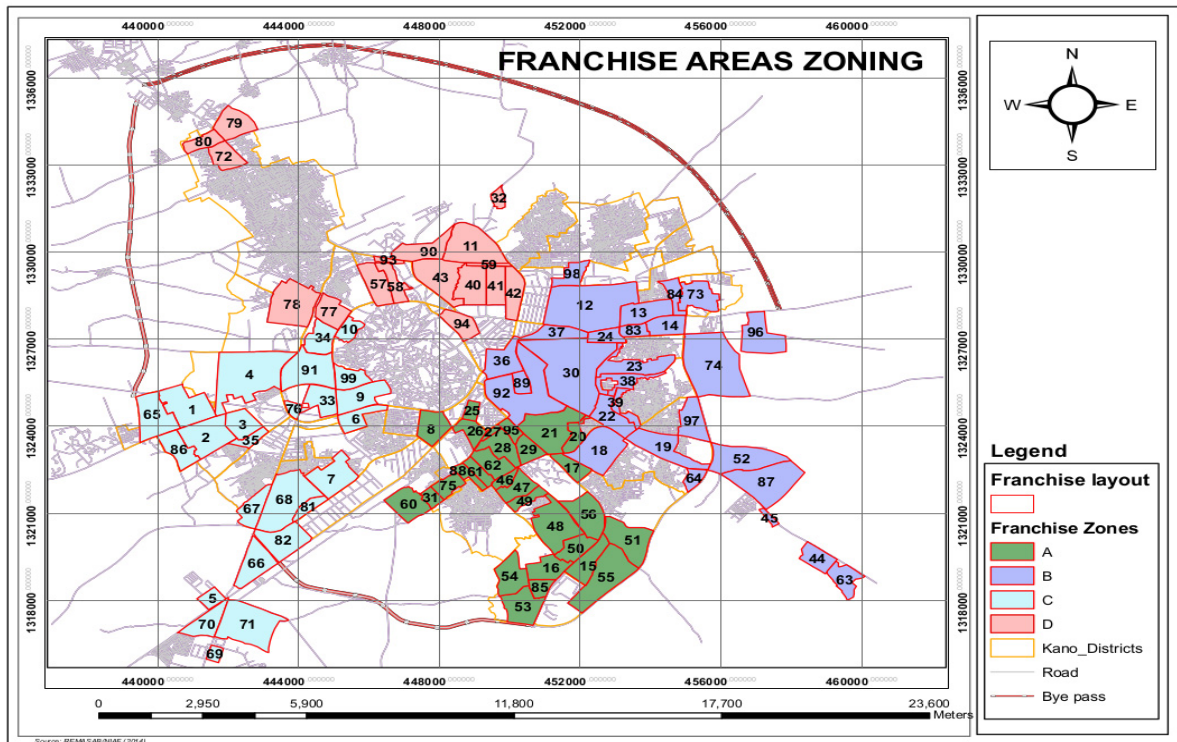


Figure 7. Franchise Zones in Kano City (NIAF, 2014b)

The frequency of waste collection varies with population density and commercial activities which translate into the amount of waste generated. Since REMASAB is richly endowed with waste evacuation machinery, no trucks are hired from private organisations for waste evacuation.

There are 4 REMASAB designated dumpsites: a) Court Road, b) Hajj Camp, c) Maimalari, and, d) Uba-Gama. It is unlikely that waste from other cities are transported to the 4 dumpsites for Kano city.

Two of the dumpsites belong to KNSG while two belong to private individuals, and are all accessible, all year round. To ensure some form of control, REMASAB Staff are posted at the dumpsites to direct waste tipping activities at the dumpsites. The dumpsites do not have any waste treatment/processing facilities (non-sanitary landfills), while the only waste sorting or recycling activity at the dumpsites is done by waste pickers.

4.3.1.3 Financial Arrangement

Generally, REMASAB is required to decide its fee/charges on the basis of nature and scope of work to be delivered. This is usually for industrial and large business concerns. In reality, however no significant revenue had been generated between 2013, 2014 and 2015 from waste fees.

Revenue

REMASAB's revenue generation for years 2013, 2014 and 2015 are N1,240,000; N1,860,000; and N2,400,000, respectively mainly sourced through a) waste collection buckets for refuse evacuation; and b) Registration fees from Private Waste Collectors. Within the 3 years analysed (2013, 2014 and 2015), no cash was paid to REMASAB by Households and Businesses for waste services offered by the Board. In essence, no amount was billed/invoiced to Households and Businesses by REMASAB. The current practice is to allow Private Businesses to bill households and businesses for services directly provided, while REMASAB offers limited services as Social Responsibility.

REMASAB does not monitor/verify the amount billed to households and businesses by private waste service providers. This means there is no knowledge of the actual worth of the refuse evacuation business in Kano city. However, REMASAB collects payments from franchise operators through; a) 10% of all collections by contracted Franchisees; b) Registration of Franchisees; c) Annual renewal of registration; and, d) Quarterly payment of tipping fees.

Expenditure

The sum total of REMASAB expenditure for years 2013, 2014 and 2015 are N105,341,910.76; N102,888,382.50; and, N88,546,471.94, respectively. This is basically operational costs for providing waste services across the city while REMASAB Staff salaries and procurement of vehicles and other MSWM equipment and related infrastructure are paid directly by the KNSG (detailed information was not provided). It was also learnt that between 2013, 2014 and 2015, there was no payment directly made to private sector waste collectors by REMASAB.

Financial Management

REMASAB operates an account which is used for operational purpose. The KNSG makes direct payments on behalf of REMASAB for "upkeep" and "maintenance" of its operations therefore, REMASAB does not keep revenues and expenditures accounts. Annually, REMASAB operational account is audited by; a) KNSG State Government Audit Department; and, b) an External Auditor approved by KNSG.

4.3.1.4 Local Government Areas within Kano City

At the LGA level, the Heads of Health and Sanitation Department of 2 LGAs (Fagge and Nasarawa) were interviewed. Even though there are some waste evacuation equipment procured by Fagge LGA, the LGA has nothing to do with SWM in Kano city even as REMASAB does not cover all parts of the LGA, leaving out northern parts like Karma, Rijiyar-Lemo, & Bachirawa unserved. The respondent for Fagge LGA believes that REMASAB does a good job of managing SWM in the LGA, and there are no conflicts between REMASAB and other LGA units regarding SWM service provision in Fagge. Fagge LGA does not receive waste related fees or revenues. The role of Environmental Health Officers (EHOs) in Fagge LGA involves sanitation, mosquito spraying (vector control), etc.

For Nasarawa LGA, the LGA assists REMASAB in collecting waste within the LGA. The areas of challenge are those with traditional/religious inaccessibility. REMASAB is not doing its job properly, and they need to improve in the area of increasing the frequency of evacuation of waste from collection points and properly handling of waste at dumpsites. However, no conflict between REMASAB and other MDAs within the LGA. The LGA receives waste-related fees/revenues for services rendered to commercial entities using the waste management equipment procured by LGA funds. The EHOs in the LGA help in sensitizing people to cater for their immediate environment. The major challenge is lack of funds to re-train EHOs and to procure additional equipment.

4.3.1.5 Franchisees & Non-Franchisees Service Providers

Out of the 3 Franchisees (registered/regulated and allotted waste evacuation lots) and 2 non-franchisees (unregistered/unregulated service providers) interviewed, it was gathered that the clients requiring waste services are households, businesses, and industries. Each service provider services between 300 and 500 clients monthly. The standard fee is N1,000 per household/month (paid directly to the Private waste service providers) whereas charges for servicing industries and businesses are not fixed but negotiated on a case-by-case basis. The interviewed service providers have been in the waste service business ranging from 2 to 12 years. The franchisees seem to concentrate their services within the lot allocated to them by REMASAB, however they complained of lack of compliance/inadequate patronage from within their lots due to the activities of the un-registered non-franchisees.

The franchisees are regulated and monitored in terms of area of coverage and waste delivery to the designated dumpsites, whereas the non-franchisees are not regulated since they are below the REMASAB radar. Consequently, while the franchisees pay annual registration fees to REMASAB, the case is not same with the non-franchisees.

On a whole, the major problems encountered by service providers are: a) non-payment for services rendered; b) re-surface of refuse immediately after evacuation; c) low patronage; d) arbitrary dumping at undesignated collection points (e.g., Jakara River Road construction site); and e) Inadequate working materials.

4.3.1.6 Medical Waste Generators

Two medical waste generators were assessed in Kano city: the Aminu Kano Teaching Hospital (AKTH, a Federal owned tertiary public healthcare facility), and WSG Hospitals (a secondary privately owned hospital).

Waste from the AKTH is disposed of in a large pond while some are taken to the REMASAB skip located in a central location within the staff quarters, and not far from the REMASAB collection point. Waste pickers do pick some waste and recyclables from within the hospital waste skip. No waste is bagged before taken to the skip/collection point. Evacuation by REMASAB is done a little over a week cycles. The AKTH receives bills from both REMASAB and a Private contractor. REMASAB evacuates from hospital and receive payment on an annual basis (every month of March), while the private service providers manage collection points within the hospital and are paid on a monthly basis.

At the WSG Hospital, medical waste is incinerated while other non-medical waste is taken to REMASAB containers/bins. Waste pickers also pick the useful materials including plastics and paper, etc. REMASAB point of evacuation is within the hospital premises. Waste is not bagged but is evacuated once to twice weekly by REMASAB while payment is made on an annual basis by the hospital directly to REMASAB.

4.3.1.7 Hotels

Two large hotels were assessed in Kano city. The two hotels bag their wastes before transporting to the nearest REMASAB collection point. One of the hotels does not allow waste pickers or informal recyclers into the hotel premises while the other allows evacuation by waste pickers or informal recyclers. Evacuation of the collection point by REMASAB is done daily or once in every 2 days. While one of the hotels interviewed does not receive any bill from REMASAB or private contractors (implying free services), the other receives a monthly bill (by hand) of N5,000 and payment is made in cash.

4.3.1.8 Informal Recyclers & Waste Pickers

A total of 5 waste pickers and informal recyclers were interviewed at various dumpsites in Kano city. Their interest varied and included bottles, glass, empty cartons, PP, HDPE & LDPE.

All interviewees do not live at the dumpsite but have been engaged in the trade ranging from 5 to 15 years. All but one of the interviewees are self employed, working 7 days a week to sort items of interest for sale to local traders who transport out of Kano to Onitsha (East) and Lagos (South-west) parts of Nigeria. They are not registered with REMASAB, but 2 belong to a Cooperative known as Kwalema Sewage & Recycling Association. The purpose of the membership is to ease liaison with Government and NGOs (when and where the need arises) to develop and improve the waste recycling sub-sector in Kano.

4.3.1.9 Households

A total of 30 Households across 3 LGAs were sampled during the questionnaire administration process. Although a number of respondents with-held their names, about 15% of respondents were women. It was learnt that for some households, part of household waste is burnt and part is disposed of at the nearest collection point through the engagement of itinerant collectors. Waste from many household is bagged before transportation to collection points which are evacuated during the monthly Sanitation exercise. For all households in Gwale LGA, no bill is received from REMASAB or private contractors, while 40% and 20% of households in Kano Municipal LGA and Nasarawa LGAs, respectively are billed between N500 and N1,000 monthly by private service providers. Also, household waste is bagged in all responses from Gwale LGA, 70% from Nasarawa LGA while the reverse is the case in Kano Municipal LGA where no respondent bags waste. It also appears that REMASAB dumpsites in Nasarawa and Kano Municipal LGAs are closer to respondents (generally below 100 metres), while most households in Gwale do not use a REMASAB collection point as there is none close to them (the closest ones are between 7km and 9 km away).

4.3.1.10 Market Stall-Holders & ShopKeepers

A total of 20 stall-holders spread across Kano city were interviewed under this category. A majority of the respondents (80%) informed that waste is largely bagged and disposed of at the nearest collection point by itinerant waste collectors for a small fee. Average distance to the collection point ranges from a few meters to about 4km. Waste evacuation from collection points by REMASAB is done on a daily basis in some areas, a weekly basis in some locations and a monthly basis in some cases. All respondents do not receive any bill from REMASAB. Those who receive any bill are serviced by Private Service providers with a monthly fee ranging from a minimum of N500 to a maximum of N1,000.

4.3.1.11 Observations from MSWM Practices in Kano City

- The prominent MSWM initiatives in Kano are: a) Franchising of SWM services; b) Dorayi Pilot Composting Facility; and, c) Procurement of Waste Evacuation Equipment.
- Generally, standards of waste collection in low-income communities (without franchise coverage) are unacceptably poor;
- Franchising of services in higher income communities is positive but issues bordering on compliance and enforcement, among others, need to be addressed to build sustainability;
- Financial sustainability—it is reported that as many as half of all contractors have gone out of business in first year due to very low levels of compliance from householders—in many cases as low as 10%. This may be because franchise areas are too small? Or perhaps due to low level of compliance as mentioned above? REMASAB must give greater support to contractors through concentrated educational and enforcement campaigns;
- REMASAB's yard is full of numerous "off-road" vehicles. Typically, this is due to a number of reasons, including insufficient operational budget; unavailability of spare parts; finance and

procurement procedures which inhibit efficiency. REMASAB may need to give consideration to selling/auctioning/outsourcing obsolete vehicles to private sector service providers;

- Regarding informal recycling within the city, large numbers, possibly a few thousands, are earning a living through informal waste recycling activities. There is therefore, the need for enhanced management of waste pickers' activities at waste disposal sites to minimise environmental and health issues; and greater attention to H&S and PPE—possibility of facilitating training through the Pickers' Association.



Figure 8. Composting at Dorayi Plant in Kano



Figure 9. Broken Waste Evacuation Trucks at REMASAB Yard in Kano



Figure 10. Poorly Disposed Medical Waste Constitute Health Hazards to Waste Pickers at Kano Dumpsites



Figure 11. Functional Waste Evacuation Trucks Owned by REMASAB

4.3.1.12 Suggestions for Kano

a) Capacity Building for REMASAB:

Supervisors:

- Contractor monitoring and Supervision.
- Communications / engagement/ supervision
- HS&E

Managers & Planners:

- Options for managing HH/CW.
 - Low cost disposal site management.
 - Comprehensive enforcement & education mechanisms & options.
 - Developing a 5-Year SWM Strategy for 2018-2022
- b) Capacity Building for Private Contractors & CBOs:
- Preparing bid submissions.
 - Vehicle and equipment options & specifications.
 - Finance & budget management.
 - HS&E.
- c) Reinforcing and strengthening the Franchise approach.

4.3.1.13 Key SWM Sector Institutions and Stakeholders in Kano City

The SWM value chain in Nigerian cities generally exhibits a wide range, of multi-level and complex structure of stakeholders who directly or indirectly influence the upstream and downstream waste management processes. It is therefore, often common to find obvious differences in the composition of SWM stakeholders between Nigerian cities most likely due to two factors: first is the ambiguous State-level legislation which does not clearly outline and properly ascribe functions, roles and responsibilities of the related MDAs within States; and, second, the absence of an over-arching and detailed Federal (and States in many cases) SWM framework.

Broadly speaking, the critical SWM stakeholders for Kano are categorised under three main groups based on sectoral orientation as discussed below. Table 3 below presents a summary of the identified stakeholders of the SWM system in Kano city, and a summary of their role and level of involvement in the SWM value chain. For the purpose of this research, three levels of involvement are discussed to include Primary (those directly responsible for a specific SWM activity), Secondary (those indirectly playing a role in the SWM process), and External (those playing a remote role that results in some crucial outcomes in the SWM process).

i. Public and Institutional Stakeholders including REMASAB

The Public stakeholders include institutions of government responsible in various capacities for a range of activities (service provision, policy formulation, enforcement, funding and procurement) in the waste management system within the city. At the primary level is REMASAB, the government-established institution responsible for waste evacuation, transportation, and disposal as well as recycling/reuse. In addition to the Kano State Government which does the procurement of equipment for REMASAB, and recruitment and payment of permanent staff for REMASAB operations, other government MDAs involved in SWM include the Ministry of Justice (handling the Mobile Environmental Court for trial of offenders), Kano State Urban Planning & Development Authority—KNUPDA (involved in planning for waste infrastructure planning), Bureau of Land Management (responsible for the provision of land titles for developing waste infrastructure such as

landfill sites, transfer stations, etc.), Ministry of Agriculture (which is essentially concerned with the role of composting in support agricultural activities) and the Ministry of Environment (which is the supervising Ministry in-charge of REMASAB). The Ministry of Women Affairs did launch a Waste Collection initiative entitled “*Kano Kal-Kal*” which focused on engaging Women in waste evacuation from high density neighbourhoods using tricycles. The eight LGAs comprising Kano city recently procured and donated land to REMASAB which is expected to be used as waste collection point and/or for transfer stations. Collectively, these MDAs and LGAs play a strategic role in SWM services within Kano city.

i. Private Sector Operators

The Private Sector stakeholders include those individuals, businesses and associations that make some form of investments into an activity within the SWM value chain to earn a profit, some of whom are formally registered and their operations somewhat regulated by REMASAB, while others are unregistered and therefore their activities are unregulated given that REMASAB is aware of, but does not manage or regulate their operations. The franchisees are mandated to register with REMASAB as a pre-condition for applying for a franchise lot, and subsequent annual registration to keep their lots. Generally, those who fail to acquire a lot do not re-register as there is basically no form of enforcement to ensure compliance.

Private sector involvement ranges from waste evacuation and transportation, to recycling and reuse. Commercial centres, businesses and industries constitute high volume waste generating units in Kano City. These entities are listed in Table 4. Essentially, their activities create employment and value for the waste sub-sector, and are therefore are, profit-driven entities. At the other end of the spectrum there are thousands of informal scavengers and recyclers, many working in informal groups led by a scavenger-master, and many of whom are children.

ii. Community and People-based Stakeholders

The Community and People-based stakeholder category refers to citizens, households and community- and religious-based and non-governmental bodies who play a role in the form of waste generation as well as influence on where neighbourhood waste is deposited before eventual evacuation to the dumpsites. Their role is neither tied to profit making nor policy making. The vast population/residents of Kano city (found within low-, medium- and high-income neighbourhoods) collectively constitute the waste generation stakeholder group. Also, a number of the existing dumpsites are owned by private individuals who willingly solicit REMASAB’s use of the burrow pits for waste dumping as a land recovery measure.

The host of existing structures of community/traditional/religious institutions and self-help groups currently play or do have capacity to play some critical supportive roles in the SWM processes in Kano City. For instance, the Kano Emirate Council headed by the Emir of Kano is supported by several traditional aides including the *Wakilin Tsafa*, who is the “Minister of Sanitation & Cleanliness” within the Kano Emirate Council. While the current effectiveness of these institutions may be lowly rated,

they hold the potential to support a SWM model that conscious of and integrative of multi-stakeholders.

Table 4. SWM Stakeholders in Kano City

Stakeholder Category	Public (Government Institutions)	Private (Businesses)	People-based (Households, CSOs, NGOs, etc.)
Primary			
Directly involved in SWM policy & operations, waste generation, evacuation or recycling.	REMASAB; Kano State Government; Ministry of Environment	Franchise Operators; Non-Franchise Operators; Itinerant Waste Collectors; Shop-keepers; Market Stall-holders; Industries	Households Citizens
Secondary			
Indirectly involved in SWM policy & operations, and waste generation or evacuation	Bureau of Land Management KNUPDA Ministry of Justice Ministry of Agriculture Ministry of Women Affairs	Kano State Indigenous Waste Management Association (KWIMA) Kwalema Scrap Crushers and Recycling Association Kano State Scavengers' Association Market Associations Farmers' Association in Kano	Civil Society Organisations NGOs Self Help Groups Kano Emirate Traditional Council (+ Structures) Religious Leaders (+ Structures)
External			
Involved in & may influence SWM operations & policy, and waste generation, evacuation or recycling	The 8 LGAs comprising Kano Metropolis	Scavengers Itinerant Waste Buyers Waste Crushers Middle men in solid waste recycling trade Waste Re-processors	Residents of sub-urban area (UGG and KBT LGAs); The farming population.

4.3.2 MSWM Structures in Enugu City

In the recent past, SWM in Enugu State was characterized by thoughtless dumping of commingled waste at open spaces and other un-authorised places known as “no-man’s land”. Incomplete collection of municipal solid waste was a significant problem with uncollected piles of waste causing health and environmental problems. There have been institutional changes (Note 4) from Enugu State Environmental Protection Agency (ENSEPA) to Enugu State Solid Waste Management Agency (ESWAMA) with the statutory functions outlined on Table 5.

Table 5. Statutory Functions of ESWAMA

S/N	Functions
A	To collect, remove, process, treat and safe dispose of domestic, hospital, commercial, institutional and industrial waste,
B	To recycle waste,
C	To design blue prints for the establishment of sewage disposal system and clearing sewage,
D	To advise and make recommendation to the ministry for improvements in collection, removal, processing, treatment and safe disposal of wastes,
E	To clean streets,
F	To remove and dispose abandoned vehicles,
G	To remove and dispose of carcasses of dead animals from public places,
H	To monitor the clearing, cleaning and maintenance of drainage facilities within the state,
I	To design, operate and maintain waste disposal facilities,
J	To prepare and update from time to time master plans for waste collection and disposal in the cities, towns and villages within the state and the control of the resultant waste system within the state,
K	To approve and close watch on all waste disposal systems in the state,
L	To do all such acts as appears to it to be requisite advantageous, convenient for or in connection with the carrying out of its functions or incidental to their proper discharge,
M	To enter into contract or partnership with any company, firm or person which in opinion of the Authority will facilitate discharge of its functions,
N	To train managerial, technical and such other staff for the purpose of the running of its operations and for waste management in general.

Source: Enugu State Law, No 8 (2004).

ESWAMA was established through Enugu State Law (ENSL) No 8 and 12 of 2004 which also dissolved the Enugu State Environmental Protection Agency. On establishment, ESWAMA was given the mandate to take the responsibility of the general cleanliness of the urban areas within the State including major cities and towns such as Enugu, Nsukka, 9th Mile Corner, Oji River, Obolo-Affor, Awgu and any other settlement as may be designated as urban by the state Government from time to time (Uwadiogwu & Iyi, 2014). In order to ensure thoroughness and high efficiency of service over the years, ESWAMA had attempted several service delivery approaches including community participation, and micro-licensing in SWM in Enugu city, all of which failed to produce successful outcomes.

Results from a study conducted by Chukwuemeka et al. (2012) summarized the SWM profile of Enugu as at 2011 as follows:

- Available resources for SWM are much less to make any significant impact. This has made it hard for the procurement of sufficient pay loaders, bulldozers, tippers, compactors, incinerators, waste bins, refuse vans, etc. This explains ESWAMA's approach to rent trucks from private individuals for waste evacuation;
- Waste contractors prefer public and private planning participation in refuse collection, treatment and disposal.
- There is a relative high level of ignorance regarding SWM governance and operations in Enugu;
- Lack of enforcement of Waste regulations;
- Burning of waste was the order of the day with the attendant hazards associated with it;
- Most waste management staff were poorly trained and no plan for capacity building.

Another study conducted by NIAF (2012) (Note 5) did a status report on MSWM in Enugu city with a particular focus on Ogbete Main Market (OMM) located on Michael Okpara Avenue in the heart of Enugu city. The study revealed that evacuation of waste was infrequent, ranging from weekly at some times to fortnightly (or even beyond) at others; there was no system whatsoever, in place to manage and dispose waste and sludge from the abattoir within the market (see Figure 12 below).



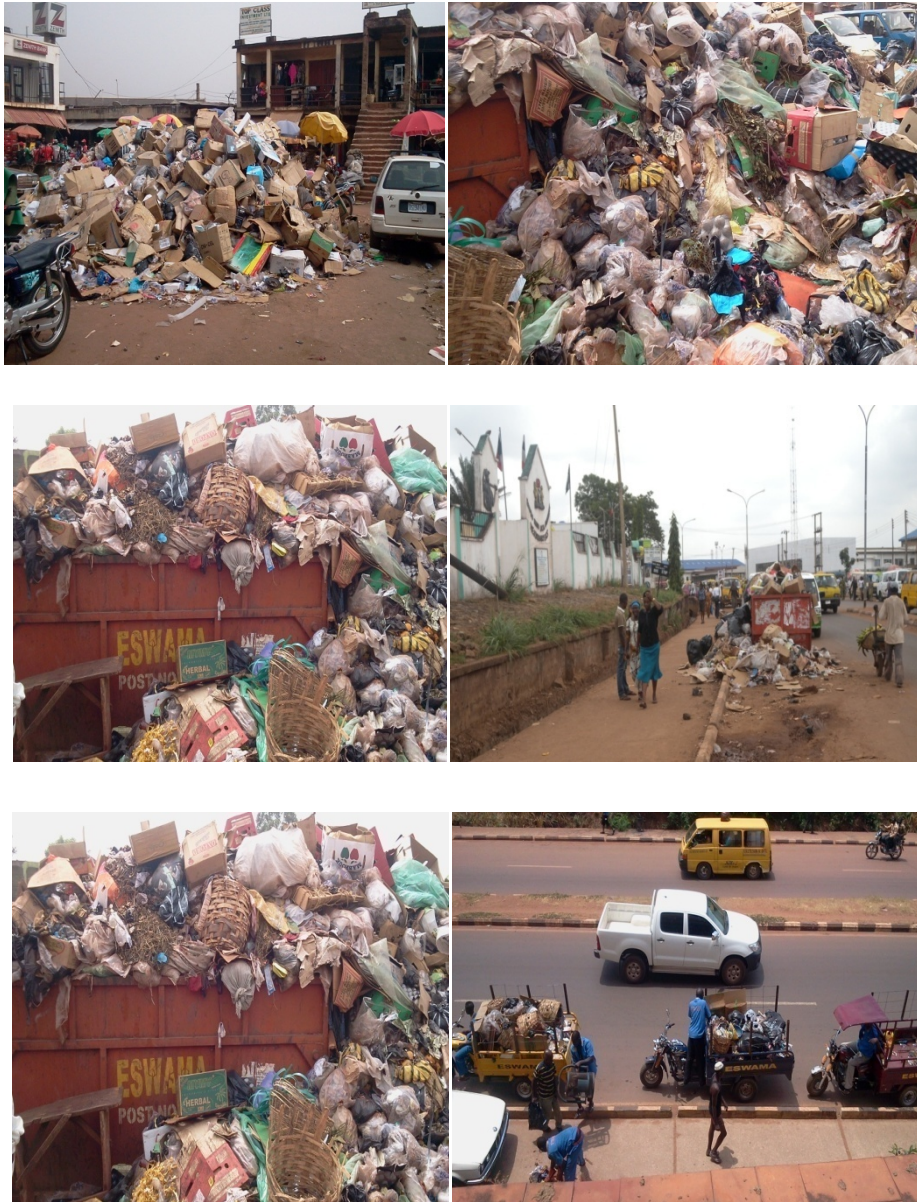


Figure 12. The Status of SWM in Most Parts of Enugu City as at 2012. Note Commingled Waste and Overfilled ESWAMA Dumpsters (Source: NIAF, 2012)



Figure 13. ESWAMA Plastic Waste Bin & Public Enlightenment Banner

Subsequent interventions (Note 6) offered quality Technical Advisory that set ESWAMA on the path of gainful reform which translated into improved MSWM service delivery beginning from late 2012. This assessment is expected to present a fresh perspective on the current status of MSWM service delivery in Enugu city following the reforms adopted from late 2012. Currently, ESWAMA is not in any partnership with the private sector in handling MSWM in Enugu City which involves the collection, transportation, processing, recycling or disposal of waste from households, commercial and industrial centres, and institutions.

Clearly, most of waste generated in Enugu city comes from residential land-use which accounts for about 54.3% of total urban area of Enugu city, covering 20 distinct neighborhoods that may be broadly categorize as low, medium and high-density areas (Ugwu, 2014). Also, Ugwu (2014) reveal that the average distance between households and waste collection centres ranges between 250m-450m and above. The study also established that the spatial distribution of dumpsters in Enugu metropolis is unplanned, random and maximally spaced.

Structured interviews with key ESWAMA management Staff and other stakeholders provide highlights on the institutional, financing and operational arrangements of MSWM in Enugu city specifically, and the State generally.

4.3.2.1 Institutional Arrangement

The MD of ESWAMA stated that the Agency's principal functions contained in ESWAMA Law 8 of 2014 also constitute its SWM framework. Broadly, these activities are: evacuation of waste; collection of waste management fees; wholly public-based (no private sector involvement) as shown in Figure 14. The Agency reports to Enugu State Governor through the Ministry of Environment & Mineral Resources. ESWAMA has a Board and 6 senior management team comprising the MD/CEO and 5 Heads of Department. The team decides on running the Agency, staff matters, steps towards keeping Enugu city (and the State at large) clean using a waste fee tariff approved by the Enugu State House of Assembly. ESWAMA's mandated service coverage area includes cities and towns within the State through its headquarters in Enugu City and 6 offices in other towns (9th Mile Zone, Nsukka Zone, Oji River Zone, Agbani Zone, Awgu Zone and Obollo-Affor Zone). Currently, ESWAMA does regulate and enforce SWM laws. Anyone caught contravening the SWM regulations is charged to the Environmental Court which seats daily at ESWAMA premises. Although the ECTDA Law mandates the Authority to "cooperate" with other relevant MDAs in service provision within the ECTA, the lack of clarity in terms of the extent of "cooperation" between ECTDA and MDAs in service provision within Enugu city often creates role conflicts and in-fighting among MDAs which impede quality of service delivery. Hence, ECTDA is not involved in MSWM system of Enugu city (its area of jurisdiction).

4.3.2.2 Operational Arrangement

In terms of SWM operational planning, Enugu city is divided into 13 SWM zones. Service is rendered on a daily basis, with waste evacuation done twice a day (mornings and evenings). The operations

Department of ESWAMA does not have data regarding the amount of regular and special wastes (in tonnes) generated and collected daily in Enugu metropolis by ESWAMA. However, as at 2003, more than 1,250 tonnes of refuse was generated daily; 37,500 tonnes weekly; and 475,000 tonnes annually (Note 7).

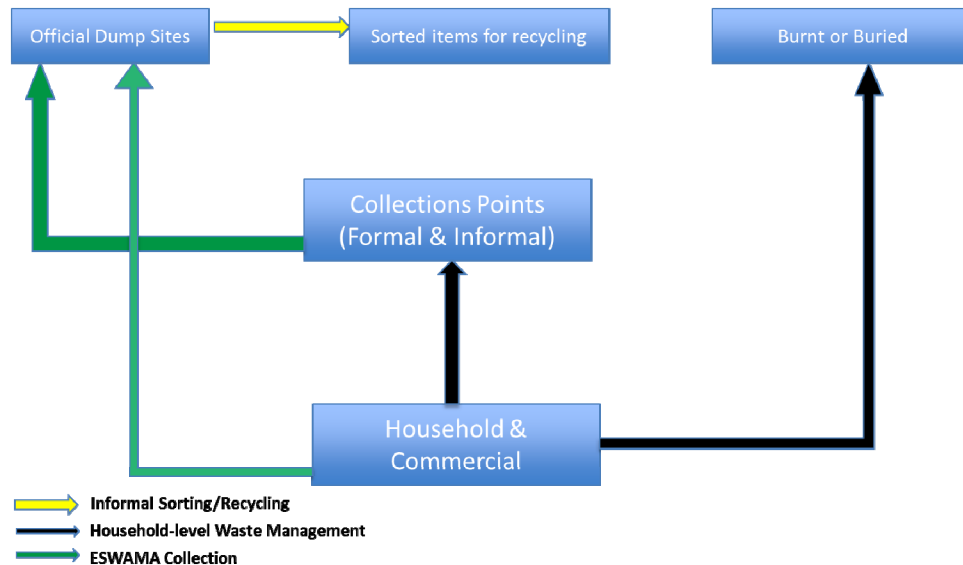


Figure 14. Existing SWM structure in Enugu City

ESWAMA provides waste services across Enugu city and the whole State. The operations planning allows household waste collection in two forms: households in high density neighbourhoods dump waste at designated collection points where ESWAMA evacuates on specific days of the week; and, ESWAMA does house-to-house waste collection at low density neighbourhoods. For shops and commercial centres, waste is collected through the evacuation of ESWAMA skips and dumpsters on a daily basis. For public areas, ESWAMA uses motorized sweepers for cleaning the roads and tricycles for evacuation of trash cans. Waste from special institutions (hospitals, etc.) and industries is collected through the use of ESWAMA dumpsters which are emptied into Compactor trucks. “Everyday is a sanitation day for ESWAMA as all dumpsters are emptied on a daily basis”, says the MD of ESWAMA.

Enugu city is divided into several waste collection zones and allotted dumpsters (which serve as collection points) on a need basis. As such, a total of 1,107 dumpsters are distributed between the following locations (as the need arises) in Enugu city: Industrial Layout, GRA, New-Haven, Uwani, Ogui, 9th Mile, Emene, Thinkers’ Corner, Agabi Road, Ijaw River, Trans-Ekulu, Achara Layout, Maryland, and Abakpa. Generally, collection of waste from dumpsters and collection points is done daily, but also twice daily at some high volume generation locations like the Ogbete Main Market, etc. ESWAMA currently have in its fleet 12 hired tippers (Mack Trucks) and 5 hired Compactor Trucks.

The hired equipment are used in the following parts of Enugu: Abakpa, Obollo-Affor, Emene, 9th Mile, Nsukka and Oji River. The rest of the SWM are serviced using ESWAMA-owned Compactor trucks, Tippers, Payloaders, Dumpsters, and Tricycles.

In terms of Waste Disposal, Enugu city has only one dumpsite located along NNPC MEGA Station Road, Ugwuanyi, and is strictly used by Enugu city only. The dumpsite was acquired by Enugu State Government but access road have not been develop so it is difficult to access the dumpsite during rainy season as the heavy trucks render the access road almost impassable. ESWAMA operates the dumpsite so some of its staff are stationed at the dumpsite to direct trucks for appropriate dumping and also oversee the activities of waste pickers. Waste at the dumpsite is neither treated nor processed, and waste recycling is not undertaken at the dumpsite by ESWAMA or organized private sector. In the absence of statutory requirements for the recovery of materials from refuse, recycling of waste remains squarely an informal waste sector activity in Enugu.

4.3.2.3 Financial Arrangement

Revenue

The total annual revenue generated from SWM by ESWAMA in the past 3 years is given as:

- i. Year 2013 = N135,007,170;
- ii. Year 2014 = N187,539,230; and,
- iii. Year 2015 = N154,225,790.

The main sources of revenue for ESWAMA are sanitation rates and waste service fees; fees from industrial parks for effluent control; debris/soil evacuation rates; and, fines. All households in Enugu are billed without exception, and based on the approved/gazetted rates for the State by the House of Assembly.

Expenditure

For years 2013, 2014 and 2015, no funds were released to ESWAMA by the State Government to cover the recurrent expenditure. However, staff salaries were paid by the Enugu State Government. It is also important to note that all capital expenditure for provision of waste infrastructure and procurement of waste equipment is handled directly by the Office of the Governor.

However, the budgeted annual recurrent expenditure of ESWAMA over the years 2013, 2014 and 2015 are N342,772,750; N450,278,921; and N233,659,695, respectively. No PSPs engaged by ESWAMA to evacuate waste so there is zero expenditure in this regard, except for payment for rented equipment.

Capital expenditure was not approved. No funds released to ESWAMA within the past 3 years.

Financing

Information retrieved from an interview with a senior official from the ENSG Ministry of Budget & Finance provides details of funding for ESWAMA as follows:

Table 6. ENSG Budget for ESWAMA Waste Services in Enugu

Year	Recurrent	Capital	Total
2013	N94,000,000	N112,500,000	N206,500,000
2014	N60,050,000	N707,500,000	N767,550,000
2015	N29,581,515	N650,000,000	N679,581,515

ESWAMA submits a planned budget annually to the ENSG on which basis a decision is reached as to funding for ESWAMA. The ENSG makes all payments (recurrent and capital) on behalf of ESWAMA. The MD of ESWAMA manages the revenue accruing to ESWAMA from billing for SWM services provided to households and other commercial and industrial entities.

4.3.2.4 Local Government Areas within Enugu City

Two out of the three LGAs comprising Enugu city were assessed. The Enugu North (ENLGA) is involved in SWM services by provision of waste bins, and occasional evacuation of wastes, and some form of indirect regulation of SWM services within the LGA. Perhaps because the LGA is urban, service coverage is full. The LGA Sanitation Unit believes their efforts are modest but they need improvement in terms of manpower. In terms of waste evacuation equipment, the ENLGA own tippers. There are no reports of conflict between ESWAMA and any ENLGA MDA in the area of SWM service delivery. The EHOs coordinate SWM services in the LGA. The LGA does not receive any waste service fees.

The case is dramatically different for Enugu East (EELGA) where the LGA is not directly involved in SWM, does not receive waste related fees, does not own waste evacuation equipment, and so there are no areas of conflict. The LGA poorly rates the quality of waste service delivery within the LGA by ESWAMA. The EELGA however uses its EHOs to supervise and monitor Sanitation services within Abakpa area (Note 8).

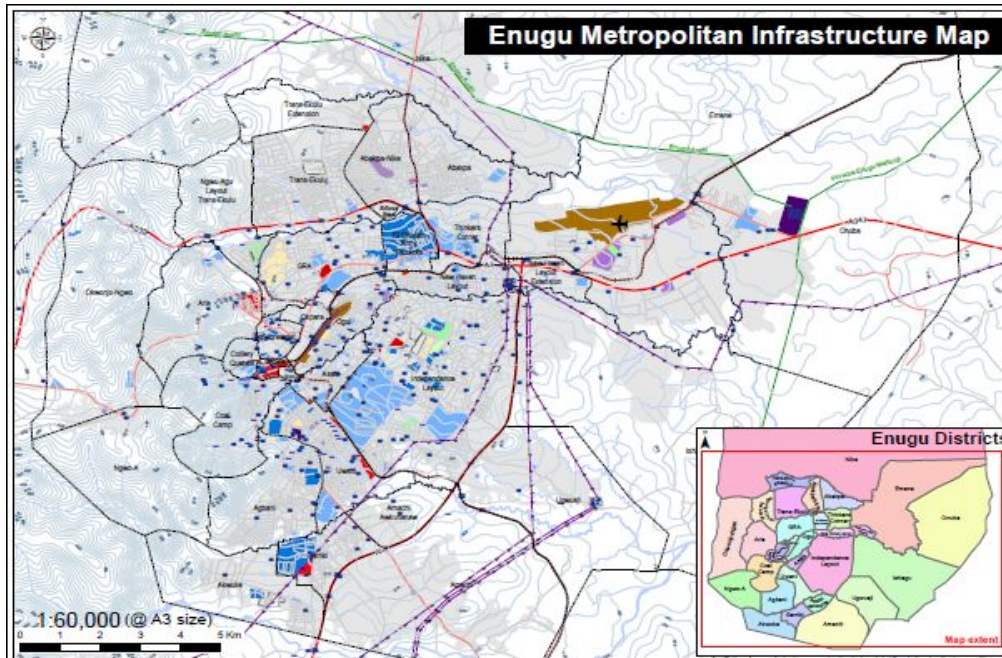


Figure 15. An Infrastructure Map of Enugu City (Source: NIAF, 2013b)

4.3.2.5 Enugu Capital Territory Development Authority (ECTDA)

At the ECTDA Operations Department, it was gathered that ECTDA does not intervene in SWM services in Enugu City and does not monitor ESWAMA waste services and other related activities. It was not clear whether this is borne out of the efficient service delivery to the extent that ECTDA's "cooperation" is not needed.

4.3.2.6 Hotels

Two hotels (one each in New-Haven and Trans-Ekulu) were surveyed on solid waste practices. The responses indicate that hotels dump their solid waste at ESWAMA dumpsters which are located closeby and evacuated 2-3 times a week. Hotels use cleaners (not waste pickers) to move waste to dumpsters. Usually, hotels buy waste bags from ESWAMA. The monthly waste bills of N2,400 is hand delivered to hotels by ESWAMA staff, but payment is done directly into ESWAMA Bank Account.

4.3.2.7 Medical Waste Generators (Hospitals)

Two major healthcare facilities (University of Nigeria Teaching Hospital UNTH, and St. Theresa's Hospital, Abakpa-Nike) that generate large amounts of medical waste in Enugu city were also assessed. It is important to note that the UNTH is a Federal tertiary medical institution whereas the other facility is owned by Missionaries. The Missionary hospital collects, bags and disposes its waste in near-by ESWAMA dumpster which is evacuated daily. Scavengers are not allowed to remove waste from the hospital. The hospital is billed N30,000 monthly through hand-delivered bill by ESWAMA staff, while bill payment is made directly into ESWAMA Bank Account.

For the UNTH, waste handling services is outsourced to a private sector service provider, and deliberate efforts are made to ensure that medical waste is not collected by scavengers. The respondent

did not provide answers to the other questions such as amount paid to the PSP. This perhaps is due to the fact that the UNTH is a Federal Institution located in Enugu though and also in addition to the fact that its waste services is outsourced to a PSP who may (or may not) be paying tipping fees to ESWAMA. Usually, the outsourcing is done by Federal Authorities, beyond the control of State Government MDAs.

4.3.2.8 Contractors

Contractors refer to those from whom ESWAMA hires trucks for waste evacuation (note that there are no independent SWM contractors operating in Enugu). Two from this category were interviewed. The contract for hire of trucks is renewed on an annual basis. Each contractor's trucks are assigned to specific neighbourhoods to provide waste evacuation services as directed and supervised by ESWAMA. It was gathered that ESWAMA can hire as many vehicles from a single contractor provided they are sound and fit for purpose. ESWAMA provides labourers for loading and offloading of waste, and also station staff at dumpsite to direct waste dumping. The major challenge encountered by the contractors is the bad condition of the access road to the dumpsite during the rainy season.

4.3.2.9 Households

A total of 30 households were sampled across low-, medium-, and high-density neighbourhoods in Enugu city. The results indicate that there is no common waste disposal method that applies to households even within the same neighbourhood. For instance, about 76.60% of the households interviewed said they "dispose of their waste by themselves", meaning they transport waste to dump at any "convenient" point which may include dumpster located in other neighbourhoods or any other authorised or unauthorised points. Outright illegal disposal is practiced by 10% of households sampled, while a little over 3% each goes to ESWAMA house-to-house collection; ESWAMA dumpsters/collection point; private paid collector; or waste burning. This signifies a general poor coverage of service delivery by ESWAMA, especially at the house-to-house waste evacuation levels.

Interestingly, all households bag their waste before disposal. This can be built upon to instill the culture of waste bagging. Also, every household receives ESWAMA annual bill (by hand delivery, or town crier, or post on home entrance) ranging from N1,200, N1,600, N1,800, N2,400, N2,800, N3,600 and N4,800 depending on neighbourhood type (high-, medium- and low density) and size of property. About 90% of households make payments, which is through ESWAMA account. Not all households have ESWAMA dumpsters located close to them which perhaps encourages illegal dumping of waste especially as house-to-house collection is not yet efficient. While low density neighbourhoods have their dumpster evacuated on a daily or 3 times a week basis, those in high density neighbourhoods do not enjoy this level of efficiency.

4.3.2.10 Market Stall Holders

A total of 10 Market Stall-holders were interviewed in different markets within Enugu city. All stall-holders bag their waste and dispose either at ESWAMA dumpster within or close to the market, or they use itinerant waste collectors to remove waste and dump wherever "convenient" to them.

ESWAMA bill is delivered through Market Authorities and payment made via same channel. For the markets with ESWAMA dumpsters, evacuation is done weekly or fortnightly. The bill ranges between N100 and N200 monthly.

4.3.2.11 Shop Keepers

A total of 11 shop keepers were also interviewed in various parts of Enugu city. Shop keepers refer to shops randomly located at mixed use buildings to provide services (fashion design shops, building material shops, restaurants, bars, barber shops, grocery stores, etc.) within neighbourhoods.

In general, waste is bagged by all shop keepers then dumped at ESWAMA collection point (where one is available) or given to itinerant waste collectors to transport to a dumpsters located far away. Annual bill ranges from N1,200 to N6,000, depending on the size of business and presumed volume of waste generation. Payment is made via ESWAMA Bank Account by every member of this category.

4.3.2.12 Informal Recyclers & Waste Pickers

The basic work location of this category of stakeholders is the only dumpsite in Enugu city. The interviews were conducted at the dumpsite with 5 (four male and 1 female) waste pickers/informal recyclers.

The basic materials of interest are plastic, metal containers, brass and aluminium. None of them reside on the waste dumpsite, they are all self-employed (also employed others who work under them) and have put in between 3-14 years in the business, working 7 days a week.

Sorted waste is sold to local traders in Enugu city. They have a Union and ESWAMA knows they work at their dumpsite. They all belong to the Scrap Workers' Association (SWA) which is registered under the State Laws (annual renewal) and with ESWAMA but members are not required to pay ESWAMA any fees. Membership acquisition fee is negotiable, includes conditions as providing a surety, and one-off refreshments to existing members (cartons of beer/crates of soft drinks).

The female respondent (a married lady) explains the difficulty in selling their materials due to distance to city centre from the dumpsite, and poor access road which discourages potential buyers from coming to the dumpsite. So they lose up to 60% of the value of their collected materials.

4.3.2.13 Observations from MSWM Practices in Enugu City

- ESWAMA in Enugu City is found to be performing reasonably well especially when viewed from the poor level of service delivery as recent as 2012. However, there is room for improvement especially in incorporating PSPs into the MSWM process, and to also attract financing into the sub-sector;
- There is the absence of a monitoring & evaluation framework for MSWM service delivery in Enugu State. This is perhaps due to the fact that there is no institutional arrangement with direct responsibility for the M&E and supervision of ESWAMA services;
- Capacity building & training for ESWAMA staff appears lacking. This may not be glaring as there is no current M&E to expose this gap;

- Over the past 3-4 years, Enugu city has undergone commendable institutional reforms in terms of MSWM, the issue of waste recycling and waste pickers has not however been dealt with. This demonstrates a lack of SWM planning along the full value chain as reflected in the absence of any framework around waste recycling and waste pickers' activities at the only dumpsite receiving solid waste from Enugu city;

For a city like Enugu, a single dumpsite is likely not sufficient enough. Even if it is sufficient, the absence of an alternative dumpsite shows lack of commitment to planning MSWM for the city. In addition, building a viable business model for MSWM in Enugu city would require mapping of cost-effective routes from all parts of the city, hence it would only make economic sense if another landfill site is located in the general opposite direction of the current site.

5. Conclusion and Suggestions

5.1 Summary of Findings

The primary impediment towards efficient MSWM infrastructure and service provision is clearly the mutual reinforcing problems of institutional/policy, technical inadequacies and infrastructural financing inadequacies which manifest in various forms discussed below. In addition to these key inadequacies, attitudinal, and socio-economic issues also constitute a major challenge on the part of service recipients. In addition to the field discoveries presented under section 4, the key lessons learned during the course of this study are categorised and listed below:

5.1.1 Institutional & Policy Inadequacies

The lack of clarity around institutional and policy provisions, coupled with lack of an enforcement structure, creates a platform for a failed MSWM operations. This is the case with Kano city as it stands currently. However, the case for enforcement in Enugu city is brighter with the establishment of an active Environmental Court. Kano city would need to take a lesson or two from the Enugu MSWM enforcement architecture that has relatively improved service delivery in Enugu city.

It is also fair to state that the absence of a clear institutional provision for a city-level governance structure saddled with the full responsibility (success and liability) of urban infrastructure and service provision in both cities is a major challenge. Although Enugu has the ECTDA Act in place, the ambiguous provision that mandates the Authority to "provide municipal services in full cooperation with relevant MDAs" is a bane. What is the extent of "cooperation"? This is not defined. So, ECTDA can (as is in the case of MSWM) be conveniently side-lined in Enugu city service provision.

Additionally, the "one-stop shop" structure of ESWAMA and REMASAB inhibits efficiency and impedes creativity in providing solutions to the MSWM problems in Enugu and Kano cities. It appears these Agencies are satisfied with the current status of waste services within their areas of influence.

Lastly, there is no holistic policy framework coverage for the SWM value chain. It is thus, not surprising to find that critical components such as waste recycling, dumpsite management, special (medical and hazardous) waste management, etc., do not have an operational guiding framework.

5.1.2 Financing Limitations

Clearly, infrastructure financing and technical/manpower capacity funding is a major challenge in these cities. Again, the policy framework does not create a platform for developing a viable SWM model that would attract/unlock the amount of long-term investments from the private sector required to significantly transform solid waste service quality and coverage in both locations. For instance, the waste Agencies are not mandated to directly make (nor to secure partnerships at the level of making large scale investments) procurements of waste management infrastructure and equipment. Staff are also provided and paid by the State Governments. Generally, the system is designed to operate on the basis of a social service provided free to city dwellers. There is no recourse to planning for return on investments. Irrespective, ESWAMA have exhibited more progress in terms of revenue generation from waste rates and service fees over the period of assessment (2013, 2014 & 2015).

5.1.3 Technical Incapacity

Again, technical incapacity is a major impediment to service quality and coverage. ESWAMA clearly lacks equipment capacity to support its choice for sole service provider, hence resorting to leasing trucks from private owners. Although REMASAB is relatively endowed with more equipment, this capacity is also compromised due to poor maintenance and in many cases, non-usage.

5.1.4 Infrastructural Inadequacies

The lack of key infrastructure such as sanitary landfills, medical waste treatment facilities, waste transfer stations, large waste dumpsters, etc., have contributed to poor waste management service delivery in both cities. These are expected to be provided within a planned framework supported by scientific studies such a suitability assessment for appropriate location of sanitary landfills, environmental and social impact studies for developing waste infrastructure, waste evacuation routes studies, etc. Kano has about 4 landfills with none meeting international best practices, while Enugu has only one landfill which is also poorly managed and way below international best practice standards. There are no transfer stations in any of the cities. However, there is a small waste composting plant at Dorayi in Kano which is currently inefficiently operated (below 30% installed capacity). No formal waste recycling facility is found in Enugu.

5.1.5 Socio-Economic and Attitudinal Barriers

Culturally, women (especially married) are forbidden to hold conversations with strangers. Also, strangers (especially male) are not allowed access to family compounds without express authorization and presence of the male head of household. These collectively constitute barriers to a seamless MSWM service delivery, given that in very many cases women are responsible for handling waste at the household level. This applies to Kano city.

Economic conditions especially poverty and the attitude that “waste is no one’s problem” together affect the ability of the city dwellers to effectively play their role in the MSWM overall system. Where the waste management Agency fails to provide a waste collection centre, many city dwellers simply dump waste at any point “convenient” for them.

5.2 Suggestions Going Forward

Principally, a host of interrelated activities should be activated towards an end goal of improving solid waste infrastructure provision, financing and service provision. To achieve this, some policy-specific, infrastructure-related and practice-based suggestions are made, drawing from the observed weaknesses of REMASAB and ESWAMA.

5.2.1 Policy-Specific Suggestions

- REMASAB should adopt the ESWAMA enforcement approach by establishing an Environmental Court to upscale compliance with waste management regulations;
- There is absolute need to review the ECTDA Law to provide absolute control over municipal service provision (including MSWM) within the ECTA. ESWAMA would then be responsible for M&E and supervision across Enugu State including the ECTA. Without this review, political struggles and intrigues among the “relevant” MDAs would continue to curtail, rather than complement collectively, efforts towards progressive and improved waste management services;
- The State Waste Management Agencies should be accorded full autonomy so they can engage investors on a long term basis for financing waste infrastructure such as transfer stations and sanitary landfill sites;
- Both REMASAB and ESWAMA require intensive and phased capacity building for its staff to upgrade their understanding, handling and management of waste operations within their respective jurisdictions.

5.2.2 Infrastructure-Related Suggestions

- Both Agencies need to develop a geospatial data infrastructure (to be updated periodically) for easy storage, access, retrieval, analysis, manipulation and presentation of waste related data for planning (e.g., lot mapping, customer billing, cost effective waste evacuation routes, etc.) to ensure improved service delivery;
- State Governments should finance (or at least provide security for relevant waste Agencies to access funds to finance) critical but seemingly “non-profitable” waste infrastructure that would not attract investor funds.

5.2.3 Practice-Based Suggestions

- A series of city-specific studies on waste management should be conducted to draw out data and information that would be used for planning efficient waste service systems through the design of holistic frameworks that cover the waste value chain including recycling and special wastes management;
- ESWAMA should incorporate PSPs in its waste service delivery framework to improve service coverage as more equipment would be provided by PSPs;
- There is absolute need to create an integrated SWM system that seeks to expand stakeholder participation as shown in Figure 16. The model is adapted from ISSOWAMA Consortium

(2009) but originally proposed by WASTE (2004). The model reflects the realities found in Nigerian cities including socio-cultural, environmental, technical, etc., as part of “enabling environment” for SWM services to thrive if the relevant “stakeholders (CBOs, NGOs, informal & formal PSPs) involvement” is promoted, harnessed and sustained through the promotion of micro-enterprises with the purpose of changing the current perception of SWM as a free public service to a viable business endeavour. This is in line with similar suggestions by Nzeadibe (2009).

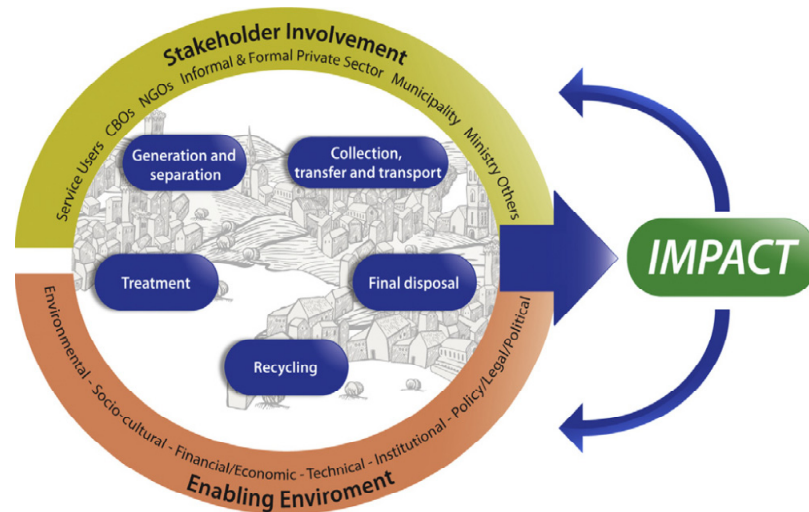


Figure 16. A proposed Integrated SWM System for Nigerian Cities

- Extensive SWM awareness and sensitization campaigns should be conducted using the national language and native dialect to enlighten the urban population on the importance of their role as participants in efficient waste management at the city level beginning with waste reduction/sorting from their homes, offices and businesses; payment of waste service fees, responsible waste handling (dumping at designated points only);
- Kano should review its waste management institutional arrangement to task the State Ministry of Environment to supervise and conduct M&E for MSWM services in Kano State including Kano city.

5.3 Conclusion

Generally, Nigerian cities are under immense pressure to accommodate daily additions to already over-stretched inadequate municipal services. In realization of the low funding capacity and poor maintenance culture, perhaps it is time to move away from sophisticated, expensive and delicate equipment, by considering the adoption of “appropriate” technologies that are sourced and fabricated using largely local materials, and maintained at lower costs. With adequate research, these “appropriate technologies” can be applied at each level/hierarchy in the waste management system. This would also

reduce the cases of grounded complex waste compactors, which are expensive to acquire and difficult to maintain as well.

Given the consistency and sustenance of efforts that MSWM requires, the seemingly high level of inconsistency in policy direction at the decision-making levels of government, and the consequent extended periods in policy-making need to be addressed to cut down the valuable time wasted on implementation of waste management policies. This is so important in waste management processes where 24hours could make a great impact, positive or otherwise.

The waste system has to no doubt out-live the usual short-lived and short-term political enthusiasm that accompanies the launch of new waste management systems and the realities of setting up structures for sustainably incremental service delivery. This is necessary to avert the risk of unannounced changes and replacement of office holders which upset well-planned structures and even derail or delay entire waste processes especially when the systems are built around individual office holders.

Furthermore, the inclusion of political patronage in waste management (appointment of heads of Waste Agencies and PSPs) holds the potential of impacting efficiency. For Kano city where waste user-service fee is not in practice, the risk of falling into a “political sinkhole” if the voting public considers the introduction of user-fees for waste collection as un-popular (and especially if services are not improved) would likely influence Government’s thinking and wrongly impact the final MSWM model for implementation.

Finally, the need to urgently plan municipal waste treatment (hazardous and non-hazardous) is emphasized in studies carried out in Kano and Enugu cites where ground water quality is highly susceptible to pollution due to extremely poor landfill practices (Ali, 2012; Umar et al., 2014; Ali & Young, 2014; & Bashir et al., 2014). These are in line with the SDGs, especially SDG numbers 6.3 and 11.6 which collectively target to, by 2030, “improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater, and increasing recycling and safe reuse globally”; and, “reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality, municipal and other waste management”, respectively.

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Notes

Note 1. <https://www.100resilientcities.org/cities/>

Note 2. Field interviews in both cities indicate that payment is being made for waste service provision; a) in Kano city under the inefficient system of Franchisee, and a largely unregulated PSP service provision system; and, b) in Enugu under the ESWAMA service provision scheme. WtP is found to be higher in Enugu where about 90% of interviewees pay for waste services, while a far lesser percentage pays for waste services in Kano city.

Note 3. This refers to the LGAs comprising Kano and Enugu metropolis.

Note 4. Legislative and institutional reform of the solid waste sector in Enugu State culminated in the passage in 2004 of Law No. 8 dissolving ENSEPA and creating a new regulatory body, the Enugu State Waste Management Authority (ESWAMA). This was funded by DFID.

Note 5. Nigeria Infrastructure Advisory Facility (2012). Project No. UG0001: Rapid Appraisals for Solid Waste Management For Enugu Capital Territory Development Authority, Government of Enugu State. Funded by DFID & implemented by Adam Smith International.

Note 6. Prominently from the DFID-funded Nigeria Infrastructure Advisory Facility for Enugu State Government through the ECTDA beginning 2012, in addition to the implementation of already prepared reports from previous DFID-funded Programme such as SLGP.

Note 7. Daily Times Newspapers, August 3, 2003, p. 15.

Note 8. Abakpa is a high density neighbourhood with the largest concentration of urban population in EELGA, and indeed Enugu city.