Influence of wastes management and viable improvement in Nigeria: case study of Kubwa, Abuja in Northern Nigeria.

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Abstract. The paper investigate waste management and viable improvement in Nigeria with specific reference to Kubwa, F.C.T, Abuja. The region was divided into three districts namely: District A (south-north), District B (west - east) and District C (central zone). Survey research stratagem was implemented with questionnaire as main tools applied for data gathering which were dispensed to twenty households carefully picked randomly making total of 60families that were studied. Illiteracy and income level was discovered has main cause of waste management difficult, equally city waste characterization for the Kubwa – Abuja reveals paper, food leftovers and water sachets as the highest waste created, while delivery bag and flexible bag are consistently utilized to dispose waste since bags are stress-free in disposing and low-priced. The waste storage frequency is between 12 – 24 hours whereas waste throwing frequency follows regularly once and bi-weekly gatherings. Some respondents have open dumps within their locality where waste is stock before thrown away. Nevertheless, there is great recycling event for metal and bottles since they are recycle at home and 15 % sell. Mutual solid waste management practice in Kubwa - Abuja are storage and highway or canal waste discarding whereas recycling and waste reduction which are waste minimization implements in the trio pyramid system which is the strength of most waste administration systems is weakly practiced.

1. Introduction
Solid wastes are the unfunctional and undesirable goods in the solid form resulting from the society activities [8]. The term public solid discarded (PSD) regularly presumed to contain all discarded created in community with the eradication of manufacturing process and agricultural waste, even though main PSD sources encompasses of housing, construction, institutional and commercial [1,10]. Viable development have three features: social development, financial development and protection of
the environmental [11]. Viable development guarantees an advanced world with safety and healthy
environment for plants, animals as well human beings [2]. Main purpose of solid waste management is
to guarantee public health protection alongside environmental quality and viable development thus,
national and local authorities must implement viable solid waste administration systems in strong
partnership with both the public and private sector. The structure and features of metropolitan solid
waste is disposed thru certain matters, which comprises of the housing, commercial, the income level,
etcetera [3]. Poor waste disposal practice of the populaces, weak government by-law, bad work
approach, corruption, fund deficient, insufficient facilities for instance plants and equipment amongst
others are factors stimulating against operative waste management towards viable development in
developing nations. High- income districts usually produce more inorganic materials for instance
plastics and paper whereas low - salary zones generate diminutive organic unwanted that were
unsuitably located besides open dumpsites which introduce health exposures and mutilation of the
aesthetic magnificence of many cities in Nigeria [4-6]. Hence, landfill availability, sufficient resources
(Human, capital, plant, equipment and other tools) must be readily accessible for viable development
in developing countries because there is need to safeguard future for the next generation through
cleaning up of our environment from various kinds of waste and take into consideration physical and
population growth of the nation [7,9,12]. The Public solid waste management problem in Nigeria
metropolises has fascinating the researchers attention such as [8,9,13-15] and their research outcomes
point to the need for allowable and a resourceful solution to solid waste nuisance in Nigerian cities.
Additionally, it has been advocated that resourceful recycling and composting can save 15.5%waste
management prices and 62.5% landfill costs, likewise applaud recycling approval as a footstep
towards stimulating an unified solid waste management method besides, when diverse waste
classifications are not considered during collecting and disposal, operative solid waste administration
becomes problematical [8,12,15].
This research work will cover solid waste administration in three zones within Kubwa, Abuja Bwari
Area Council, Abuja. The research boundaries would embraces scheme features of the unified solid
waste administration method through joint solid waste management (JSWM) as a valuation device.

2.0 Material and Method
2.1 Study Area
In this study Kubwa town in Abuja were selected as countryside settlement illustration, growing to
borough besides a major suburbia within the cosmopolitan area of Abuja. It is a residential region in
Bwari one of the area council in the Federal Capital Territory (F.C.T), Nigeria, existence since 1990 as
satellite city of Abuja. It is principally residential and compactly populated and approximately twenty
six kilometres from the Wuse market, Abuja. Exact drivers of economic sustainability are ascribed to
civil servants which are sixty percent (60%) of the residents who are staff of the Federal Government
of Nigeria while the remaining forty percent (40%) is various categories of businesses. Being among
the swiftest growing built-up centers in the FCT, the population over three point three million
populaces, the locations are presented in Fig. 1.
2.2 Research Methods and Sampling approaches

The sampling structure comprises of individuals living within case study areas, data was gathered through questionnaire and field analysis. The research equipment making is through JSWM which was exploited to framework the assessment areas survey content with closed housing questionnaire. The survey was circulated using simple random analyst within each status and distributed to people in open places and gardens in the cities. The questionnaire used was from previous studies but it was improved to suite this analysis purpose as well authenticated by three professionals and certified through trial study and reused after improved. Field survey comprises of visits to city and points collection within Kubwa, Abuja.

Figure 2: Open Garbage dump within a Housing Area

| Table 1: Questionaire format |
|-----------------------------|
| **Section** | **Description** | **Scale Type** | **No. Of Items** |
| A | Demographic Information | Categorical | 12 |
3. Results and Discussions

3.1 Demographic Analysis

A  Sex and Occupation

The demographic investigation (Gender and Profession) formed using the three regions Questionnaire that were dispensed to twenty households selected randomly making total of 60 families are presented in Figure 3.

Government workers (GW), Non-government workers (NGW) and Male (M) Female (F)

Figure 3: Gender and Profession of respondent in Kubwa, Abuja.

B  Age Group

The Age group formed using the three regions Questionnaire that were dispensed to twenty households selected randomly making total of 60 families are presented in Figure 4.

Figure 4: Age group for Kubwa Abuja Resident
C Education

The Education level formed using the three regions Questionnaire that were dispensed to twenty household’s selected randomly making total of 60 families are presented in Figure 5.

![Education Level Graph]

No education Qualification (NEQ), Secondary school education (SSE), College Education (CE) and University Education (UE)

Figure 5: Schooling Level of Kubwa Abuja Resident

D Salary

The salary formed using the three regions Questionnaire that were dispensed to twenty households selected randomly making total of 60 families are presented in Figure 6.

![Income Level Graph]

Figure 6: Income level of Kubwa Abuja respondents
E Size of Families

Families sizes formed using the three regions Questionnaire that were dispensed to twenty households selected randomly making total of 60 families are presented in Figure 7.

Figure 7: Household numbers of Kubwa Abuja Resident

Figure 1 – 7 shows that demographic figures (gender, profession, age, education, salary and households size) for each of the three zones, female discarded waste more than men, while Non-government employees discarded waste more than government staffs. These results indicate that income and education level of the populace regulate proper waste management.

3.2 Waste Administration

Municipal Waste Characterization

The civic waste characteristics quantities and percentages for the waste generated using the three regions in Kubwa, Abuja presented in Table 2 and graphically illustrated in Figure 8.

Table 2: Civic Waste Characterization for the Kubwa, Abuja

| Civic Waste Composition | Quantities (tons) | %  |
|-------------------------|------------------|----|
| Paper                   | 20567.75         | 24.03 |
| Textile                 | 2134.65          | 2.49  |
| Plastics                | 4678.56          | 5.47  |
| Water sachets           | 11234.45         | 13.12 |
| Glass                   | 2743.43          | 3.21  |
| Metals                  | 2689.34          | 3.14  |
| E-waste                 | 2087.24          | 2.44  |
Organic materials; food & garden waste | 35856.24  | 41.88  
Other organic materials | 3616.45  | 4.22  
**TOTAL** | **85,608.11**  | **100.0**  

**Source:** (BAC, 2017)

Figure 8 reveals the frequency shape based on the group of waste created. It can be absorbed from the pie chart that paper, food waste and water sachets have greatest percentages which is in agreement with paper work by [16].

**Waste Storage Techniques**

The storage techniques gathered using the three provinces of Questionnaire that were assigned to twenty households selected randomly making total of 60 families are presented in Figure 9.
Waste storage style shows that storing by using sack and plastic bag are frequently since bags are easy to dispose and economical.

**Storage Frequency**

The storage frequency formed using the three regions Questionnaire that were dispensed to twenty households selected randomly making total of 60 families are presented in Figure 10.

![Figure 10: Waste Frequency by Residents of Kubwa Abuja](image)

Figure 10 demonstrates the waste storage frequency style for the three regions in Kubwa Abuja, 12 – 24 hours storage is generally used.

**3.3 Waste Disposal method and frequency**

The Collecting and Disposal Frequency formed using the three regions Questionnaire that were dispensed to twenty households selected randomly making total of 60 families are presented in Figure 11.

![Figure 11: Waste Frequency by Residents of Kubwa Abuja](image)
The waste disposing frequency style follows regularly once and twice weekly, some respondents have open garbage dump within their locality where waste is stock and thrown away through burning or recycling which is in agreement with paper work by (Ogwereka, 2013).

3.4 Waste minimization (Frequency of Items Recycling)

The recycling frequency formed using the three regions Questionnaire that were dispensed to twenty households selected randomly making total of 60 families are presented in Figure 12.

![Figure 12: Items recycling frequency by Residents of Kubwa Abuja](image)

There is a high recycling frequency for bottles and metal because they are reuse at home and 15 % sell which is in agreement with paper work by [17].

3.5 Solid Waste Management Practices (SWMP)

The solid waste practices among resident formed using the three regions Questionnaire that were dispensed to twenty households selected randomly making total of 60 families are presented in Figure 13.

![Figure 13: Solid waste practices for Kubwa Abuja](image)
The trend demonstrates high frequency of storage and waste dumping either highway side or canal as waste management normally practice in Kubwa, Abuja. Recycling and reduction which are waste minimization performs in the trio hierarchy structure, which also form waste administration backbone is faintly practiced which is in agreement with research work made by [19].

**Conclusion**

This study examined the effect of wastes management and viable improvement in kubwa, Abuja Northern Nigeria. Demographic figures of the three regions shows illiteracy and income level, has cause of waste management problems likewise metropolitan waste characterization for the Kubwa Abuja reveals paper, food waste and water sachets as the highest waste created, meanwhile sack and plastic bag are frequently used to throw away waste since bags are easy to dispose besides cost-effective. The waste storage frequency is between 12 – 24 hours whereas waste discarding frequency follows classically once and twice weekly gatherings. Some respondents have open dumps within their locality where waste is stock and discarded. Nevertheless, there is great recycling rate for bottles and metal because they are reused at home and 15 % sell. Public solid waste administration practice in Kubwa-Abuja are storage and waste disposal on highway or canal while recycling and reduction which are waste minimization implements in the trio hierarchy structure that also form backbone of most waste administration methods is slightly practiced.

For success to be achieve in this subject matter, constant and periodic environmental awareness programmes by means of miscellaneous communication mediums is obligatory so as to change the resident’s waste management approach. Waste reduction need to be earnestly addressed in Kubwa-Abuja and stratagems need to be initiated to intensificate the recycling rate, waste minimizing and composting. Furthermore, Indiscriminate littering necessitates an upgrading collection points to miniscule transfer stations, intensifying municipal bin number in closely populous districts with daily evacuations during office hours to dodge traffic jams by haulage truck. Conclusively, institutional body must incorporate decrees and policies about environmental matters, perceptibly stated guideline for workforce and populaces to follow as well instigated, or formulated and enhanced for each portion of waste administration processes besides unified the institutions answerable for waste administration under singular body with the applicable tool put in place to expedite its appropriate function.
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