

WASTE MANAGEMENT CHARACTERISTICS OF SELECTED IDP CAMPS IN MAIDUGURI

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ABSTRACT

This study investigates waste generation and management system in Internally Displaced Persons (IDP) Camps in Maiduguri Urban City, Borno State. Records from Borno State Environmental Protection Agency (BOSEPA) provided the primary data for this study, with structured interviews with BOSEPA personnel and questionnaires administered in four selected IDP camps within the Maiduguri City Centre. Results show that religious and cultural backgrounds of IDPs stand as one of the major challenges to the proper disposal and management of waste. While security provisions for the IDP camps within the urban city while commendable still pose a challenge, particularly in the camps towards the outskirts where there have been security breaches. In conclusion the study shows that waste management in IDP camps is not effectively managed as the final refuse disposal in borrow pits on the city outskirts without further treatment is not in line with international best practices. The study further recommends that effective, efficient and sustainable waste management strategies such as waste minimization at source through reuse, recycle and energy recovery before final disposal should be introduced and adopted.

Keywords: Internally Displaced Persons (IDP) Camps, Sustainable Waste Management, Waste Minimisation

INTRODUCTION

This study dwells on waste disposal and management in IDP camps around Maiguduri Metropolis. For some time now, there has been a concentration of displaced people in camps established in the Maiduguri Township. This is due to the ongoing security challenges being faced in North Eastern Nigeria. Waste disposal in the camps for internally displaced persons is a challenge particularly with

security issues attached to waste disposal. There has been very poor intervention of health organisations in terms of sensitising the displaced people on the link between their own health and their poorly displaced waste. The waste in most IDP camps stands as destructive to human health, however avenues can be found in order to utilize this waste to the advantage of human beings. There have been outbreaks of disease like cholera, malaria, typhoid and worms in most IDP camps and sometimes medical intervention does not address the underlying causes of these diseases. Poor disposal of solid wastes, particularly human waste compounds the problems in temporary accommodation for people whose numbers increase in an unprecedented number daily (Edem, 2010; Ola-Adisa, Mangden, Sati, and Adisa, 2015). Hence it is necessary to examine avenues for positive utilization of the waste produced in IDP camps.

In an era faced with climate problem due to excessive pollution caused by among others poor waste disposal, there is need to think of appropriate measures in connection to waste disposal and management so as to contribute to the reduction of increment of the temperature on earth and other climatic problems. Buildings have a lot to answer for in terms of the amount of natural resources consumed, the amount of pollution created, the amount of energy wasted and the amount of wastes generated. It is important therefore to recognize that decisions which affect the environment cannot be divorced from every day decision-making processes of the makers and users of buildings (Edem, 2010; Ola-Adisa, Mangden, Sati, and Adisa, 2015). In recent times, an adoption of an environmentally responsible approach to buildings design and construction known as “Sustainable Architecture”, a concept that is basically people and earth care with a view to minimizing the impacts of buildings on the environment (Ola-Adisa, Sati and Ojonugwa, 2015). This study aims at addressing sustainable waste management as part of the restoration and renewal of Maiduguri Township with specific emphasis to the IDP camps through the employment of Green Architecture practices (Attmann, 2009). The internally displaced persons (IDP) numbering about 1.5 million mostly children, women and men are temporarily being accommodated in tents, classrooms, and other structures within the

25 IDP camps established around the Maiduguri township and other LGs across Borno State. The IDPs were the victims of insurgency, the very indigenous people of Borno State from the various local governments, towns and villages that were settled in the 25 IDP camps according to their ethnic background where they come from for the simple reason of easy identification and social groupings as illustrated in plate i (National Emergency Management Agency, (NEMA) ,2016). The IDPs have been sustained through the relief materials coming from the Government agency like National Emergency Management Agency, NEMA, State Emergency Management Agency, SEMA and assistance from the Non-Governmental Organization (NGO) and other civil society volunteers (National Emergency Management Agency, (NEMA), 2016).

The tents accommodate up to 500-700 IDPs, made of long lasting polythene materials and others were housed in classroom structures in same sizes (see plate ii). Two square meals are provided for feeding daily at each IDP camps, with adequate water supply provisions made from drilled boreholes, sufficient toiletry conveniences and adequate sanitation provision made by the BOSEPA Management and staffs on shift duties daily. There are also other vital provision made for the IDPs like healthcare and security needs for the camps (Borno State Water Board (BOSWB), 2015).

The educational facilities that will take care of the children in the camps were equally provided by the Government and UNICEF, while the enterprising IDPs were allowed to market and trade their simple business of washing/ironing, sewing/knitting, cooking/frying, and simple food provisions to make life going. The IDP camps continue to stay as long as there will be continued displacement of people from their villages and towns by the Boko Haram terrorist causing insignificant collateral losses and displacement of poor people's lives and properties in millions (National Emergency Management Agency (NEMA) ,2016).



Plate i: Dalori IDP Camp

Source: UNICEF (2015)

Plate ii: Dalori IDP Camp

Source: UNICEF (2015)

The underlying volumes of unattended solid wastes with the associated risk to human health within the internally displaced person (IDP) camps in Maiduguri capital is a source of concern to many. There is a steady increase in the cost and logistical difficulties of municipal solid waste management (Morrissey and Browne, 2004; Morris, 2009). This has put increasing pressures on the infrastructure and authorities responsible for the management of solid waste. It was observed that waste disposal in most internally displaced persons (IDP) camps was not properly organized and managed. Existing data does not provide evidence of public or private sector waste disposal and management plans in Maiduguri IDP camps.

Internally displaced person (IDP) camps are the temporarily designated camps established within a safe environment of cities and towns with organized sets of living infrastructures. The concept was developed specifically in order to provide a temporary safe camping accommodations and well-being to those displaced population within a geographical location (National Emergency Management Agency, (NEMA) ,2016a).

There are two (2) types of structures observed Temporary Built tent Structure Camp(plate iii) which is Simple polythene/tarpaulin canopies, tent structures constructions put placed on a designated safe/confined Government Institutional Environment for the

provision of IDP shelter; and Existing Government Institution Building Structure Camp or Government institutions existing free standing building structures (plate iv) can be utilized to provide accommodation for the wellbeing of group of IDPs.

IDP Camps in Borno State

There are 19 IDP camps in Borno State to cater to the teeming victims of the Boko Haram insurgency (Table 1). Most of the camps are situated around Maiduguri Township where the military presence and urban resources make administration of the camps more efficient. The camps selected are as contained in Plates iii to v.



Plate iii: Bakassi IDP Camp
Source: Google Earth (2017)



Plate iv: Dalori IDP Camp
Source: Google Earth (2017)



Plate v: WTC IDP/GGC IDP Camps
Source: Google Earth (2017)

Table 1: Population of the IDP Camps in Borno State

S/N	NAME OF CAMP	POPULATION	LOCATION	GENDER
1	Hajj Camp	1, 700	Maiduguri	Mixed
2	NYSC Camp	4, 575	Maiduguri	Mixed
3	WTC Camp	6, 648	Maiduguri	Female/Children
4	Dalori Camp	18, 943	Maiduguri	Mixed
5	Gofa Camp	5, 922	Maiduguri	Mixed
6	BGC Camp	N/A	Maiduguri	Male
7	GGC Camp	4, 983	Maiduguri	Female/Children
8	Yerwa Camp	5, 010	Maiduguri	Male
9	ATC Camp	13, 930	Maiduguri	Mixed
10	Bakassi Camp	N/A	Maiduguri	N/A
11	Teachers House	N/A	Maiduguri	Mixed
12	Farm Centre	N/A	Maiduguri	N/A
13	Garba Buzu	N/A	Maiduguri	N/A
14	Gubio Camp	N/A	Maiduguri	N/A
15	Dikwa Camp	N/A	Dikwa town	Mixed
16	Konduga Camp	N/A	Konduga town	Mixed
17	Bama Camp	23, 180	Bama town	Mixed
18	Damboa Camp	N/A	Damboa town	N/A
19	Ngala Camp	20, 467	Gamboru Ngala	Mixed

N/A – Not Available

The management of about 20 IDP camps with approximately 1.5million people spread across the several Local Governments affected by the so-called Boko Haram terrorist activities in Borno State is quite a very difficult task and capital expensive. These displaced people who were driven out of their towns and villages were mostly handicapped women and children that were currently being temporarily accommodated in the various camps. The camps functions or survives through the assistance from the States/Federal Government, NEMA, SEMA, NGO and Civil Societies/Philanthropies' Welfare Packages/donations (SEMA, 2015). The IDPs lifestyle inside the camps is fairly conducive, some IDPs live inside tarpaulin canopy shelter and polythene tent structures (plate v) while some live inside school hostels,

classrooms and dining hall structures (plate vi). The IDPs are provided with mattresses, blankets, bed-sheets and mats for sleeping. Other necessary items like plastic buckets, kettles, feeding dishes have been provided by the governmental agencies, NEMA, SEMA, and NGOs (UNICEF, 2015).

The National Emergency Management Agency (NEMA), and State Emergency Management Agency (SEMA) were responsible for the feeding of the IDPs. They provided almost all the foodstuffs such as rice, maize, millet, yams, cow meat, vegetable oil and condiments. The State Government provides the fire-woods for cooking to all the various camps in temporary cooking sheds as illustrated in plate viii (SEMA, 2015). The sources of water in the camp are from drilled boreholes which is quite clean and safe for drinking/cooking. There are boreholes water provisions in almost all the IDP camps with standby generators daily fueled by the State Government to provide fresh water supply to the IDPs (plate vii) (BOSWB, 2015). Almost all the camps were provided with simple pit toilet units for both male and female IDPs (plate x). Most of the toilets are not clean, while the responsibility of taking proper care and monitoring rest on the shoulders of BOSEPA, more is expected even though efforts though commendable are hard to appreciate. Due to the over population of the IDP camps the toilets condition are always untidy (UNICEF personal communication, 2015).

The sanitation of the camps is directly carried out by BOSEPA Youth Vanguard and staff assigned to all the camps working daily on shift basis. Refuse collection and disposal is done weekly. UNICEF directly inspects the camps and report any faulty things to the high authorities. Household sanitary dustbins and disposable refuse bags were provided for collection and storage of household wastes. Even though the recycling of waste is negligible, and the collection, transportation methods are alright, but the final refuse disposal system is quite unsatisfactory. Waste disposed into nearby dumpsites (plate xiii) still has the risk of environmental pollution and harm to human health along with the security risk of been a hiding place for IEDs (BOSEPA, 2015). This shows poor waste management on the part of the Agency in charge of Waste

Management System. All the IDP camps were provided with very tight Security Network and Vigilance by combined joint force of the Nigerian Military and Police and the Civilian JTF boys.

Behavioural Patterns and Activities in IDP Camps

The IDPs within the confinement of their various camps enjoy cordial relationship with their fellow inmates who are all victims of the insurgency displacement and now temporarily resettled in various camps established across the state. No doubt the Camp life is somehow restricted, with less freedom of movement at certain hours, there is checking, signing in/out while going out/coming into the camp. The camps were zoned along ethnic and social groupings for easy identification and management by the State Government. There are few cases of insecurity, vandalism, theft and other forms of immorality recorded. The major problems identified in the camps are in the area of feeding, stipends, health and education for the children. Children's feeding is a major concern with an exclusive kitchen dedicated to children.

The activities in the IDP camps generally revolve around Education, Health, Income Generation/ Petty Trading and Recreation. Most IDP camps were provided with one or two classrooms made of polythene canopies structure provided by the UNICEF and State Government. UNICEF provides almost 85% of the IDPs learning/teaching materials such as school bags, exercise/textbooks, pens and pencils. Some materials like blackboards/chalks were provided by LEA of various Local Governments. Teachers were posted by the Local Education Authority (LEA) to teach, the inspections, monitoring, evaluations and teachers welfares were handled by the LGEAs. Also UNICEF has posted volunteer teachers, who are given a token stipend to various camps (Local Education Authority (LEA) 2015).

Most of the health care needs of the IDPs in the camps were satisfactorily taken care of by UNICEF/Local Government Health Care Units (plate xii). Very serious health related cases were referred to the hospitals. Some IDPs do engage themselves inside the camps with different kinds of enterprising activities like cap-

making, petty trading, tailoring, barbing saloon, handset battery charging and hair dressing (plate xiii). Evening activities performed include football, sports and traditional dances under the supervision of the military personnel attached to the camps.

The growth of internally displaced population coupled with the increased economic activities in the IDP camps and Maiduguri Township has resulted in the high rate of solid waste generation. Despite huge investments in the sector of waste management by the Borno State Government through the creation of BOSEPA, waste is poorly managed and has continued to provide environmental sanitation challenges (Federal Ministry of Environment (FME), 2005a). In parts of the metropolis, IDP camps do not benefit from the organized waste management services. Waste is unattended to, buried, burnt or disposed of haphazardly, even in areas where the BOSEPA and sporadic recycling of waste is negligible and methods used for collection, transportation and final disposal are very unsatisfactory (Federal Ministry of Environment (FME), 2005b). Waste is left unattended for a long time constituting serious health hazards, causes offensive odour, pollutes underground water sources and decreases environmental aesthetic qualities. These volumes of waste generation still require a careful planning and adequate resource allocation to solve the rates of waste generation, collection and disposals (Ola-Adisa, Mangden, Sati, and Adisa, 2015). Waste can be effectively managed categorically through proper sensitization and education of the IDPs and adoption of environmentally friendly waste management mechanisms that will contribute positively to the realization of a sustainable environment and further intervention from the government through the establishment of recycling plants to convert the increasing waste generation in Maiduguri to positive use and that the restoration and the renewal of Maiduguri metropolis is only possible with the right attitude and necessary machines in place (Lawanson, 2006; Gueye, 2010; Gbadegesin, Oladokun and Ayorinde, 2011).



Plate vi: Temporary Tent Camp



Plate vii: Government Institution Camp



Plate viii: Temporary Built Cooking Area



Plate ix: Source of Water Supply



Plate x: Temporary Toilets



Plate xi: Waste disposal Site



Plate xii: Temporary Health Facility



Plate xiii: Petty Trading Facility

METHOD

In conducting this study, questionnaires, structured interviews and direct field observations served as the research instruments. A total

of one hundred and twenty (120) questionnaires were issued out to the four selected IDP camps, (30 questionnaires each per camp) Structured interviews were held with staff of The Borno State Environmental Protection Agency (BOSEPA). The vision of the agency as enshrined in the Borno State Environmental Protection agency (BOSEPA) Act of 1997 is to achieve a sustainable, clean, healthy and beautiful environment in the state and its mission is to secure the quality of environment adequate for the health and well-being of the residents of the state.

STUDY AREA AND DATA BASE

Borno is a state in North Eastern Nigeria with Maiduguri and its capital. The city is situated in the Sahel Savanah and arid – zone areas around the Lake Chad Basin. It has a rich historical and cultural heritage with many ethnic groups that have about 30 languages spoken across its 27 local government areas. Maiduguri Township is divided into Maiduguri metropolitan council (MMC) the largest and Jere Local Government Council and the entire city is being surrounded by Konduga Local Government Area (plate xvi). However the 1967 master plan of Maiduguri Township has not been updated to accommodate the influx of IDPs into the city and with the increased waste generation and the numerous problems of solid waste management (Petts, 2000; UNDESA, 2004).

WASTE MANAGEMENT CHARACTERISTICS

For an efficient solid waste management service delivery at the IDP camps within Maiduguri township, certain strategies were adopted for all the camps that relates to the culture, land use types, economic base, climatic conditions and the existing institutional arrangement of each camp but still, volumes of waste are laying unattended to all over the IDP camps within Maiduguri's urban cities. House hold sanitary dust bins or disposable refuse bags for collection and storage of house hold wastes were provided at each camp, provided at each camp, placed around each house hold side. The sanitary dustbins plastic of about 20 kg capacities fitted with two handles and a well-fitting cover to prevent fly infestation and odour nuisance (Ola-Adisa, Mangden, Sati, and Adisa, 2015). When filled up, the dustbins shall be emptied into designated solid waste depots

located at strategic locations in front of the camps area (UNDESA, 2004).

IDPs tents and classroom accommodation structures were systematically arranged according to the IDPs social, cultural, religious status, ethnic and local government background within the designated camps located within the Maiduguri capital city. Waste collection equipment, methods and frequencies as well as tradition were followed in the camps, refuse were picked by the BOSEPA Youth Vanguarders on duty and emptied in the refuse truck/vehicle on weekly basis.

Solid Waste Management in Maiduguri

Maiduguri Township and the entire city Centre falls under the state capital Borno state Environmental Protection Agency jurisdiction of waste management. The interview conducted at the office of the BOSEPA revealed that the BOSEPA is in charge of waste collection in both Maiduguri metropolis and Jere including the IDP camps within the Maiduguri Township, but inquiries from the residents however showed that selected residents and private individuals were provided with BOSEPA's waste receptacles of different sizes for waste disposal/collection. In recent times, owing to the influx of people and IDPs into the city, Maiduguri has witnessed rapid growth of residential and business areas including slums offshoots and private IDP camps that imposes considerable challenges on waste collection and disposal requirements. Personal observation recorded at some residential areas within the township and outskirts periphery reveals that no government agency comes around for the waste collection at all, except popular local waste collector contracts called "Mai Bola" seen in several parts of Maiduguri (Plate xiv). "Mai Bola" waste contractors usually move from Maiduguri township house to house collecting wastes/refuse for disposal at various amounts of money depending on the quantity being generated every week. This has in turn created a form of employment for some of the young boys in the locality who would hitherto have turned to crime and idleness. The method of final disposal employed by these local contractors "Mai Bolas" is questionable though. The waste is often times dumped into drainage channels, gutters, rivers and secluded

environs instead of taking to the refuse dumps sites and borrows pits, as seen in plate xv. Drainage channels are often completely filled up by the refuse generated by consistent dumping by the local contractors and other wrongful attitude of nearby residents to waste disposal, obstructing free flow of water in the town causing annual occurrence of flooding, erosion and other forms of land degradation.



Plate xiv: “Mai Bola” with his waste collection pickup truck

Plate xv: Final waste disposal destination of “Mai Bola”

Solid Waste Management in Maiduguri IDP Camps

An efficient solid waste management service delivery at the IDP camps within the Maiduguri Township has adopted certain strategies for all the camps that relates to the culture, land use types, economic base, climatic conditions and existing institutional arrangement of each camp. Household sanitary dustbins or disposable refuse bags for collection and storage of household waste have been provided at each camp, placed around each household side. The sanitary plastics dustbins of 20 kg capacity fitted with 2 handles and well fitted cover to prevent fly infestation and odour nuisance. When filled up the dustbins are emptied into designated solid waste depots located at strategic locations in front of the camps area.

IDPs settled and accommodated in the tents and classrooms structures have been taught waste disposal and collection tradition. Waste collection equipment, method and frequencies as well as tradition were followed in the camps, refuse is picked by the BOSEPA youth vanguards on duty, emptied in the refuse

truck/vehicle on a weekly basis. Apart from the problems of waste disposal, the waste generated, there attendant security risks. Waste disposal sites are potential bomb planting sites. Fortunately, the insurgent's ingenuity does not include waste disposal sites so far, and the high level of security in the urban IDP camps in Maiduguri makes it prohibitive for the insurgents. The rural and suburban camps albeit do not enjoy the same level of surveillance, as one of the suburban camps surveyed (Dikwa) had an unfortunate incidence of bomb blast with fatalities.

RESULTS AND DISCUSSION

The services of the BOSEPA include solid waste management, liquid waste management, environmental conservation, Environmental monitoring and public health services. The Department at the agency directly responsible for the solid waste management is the focus in this study is the Department of Waste Management and Sanitation with its area of jurisdiction being the entire city centre and IDP camps within the MMC and Jere Local Government. The basic services rendered by the Department include:

1. Procurement and distribution of waste to tenement government agencies, IDP camps
2. Prompt and efficient refuse collection, storage, disposal weekly
3. Borrow pit reclamation
4. Management of (Hospital/Hazardous Waste)
5. Street cleaning and litter control daily.

Waste receptacles of different sizes are provided to the resident, government agencies and private individuals on request. Communal bins are placed in strategic location such as markets, shopping centers, IDP camps and other areas with high human activities. These waste receptacles are serviced regularly and wastes generated and collected are transported to the dump site for disposal. The interviews revealed indices of waste management as regards the volume of waste material being processed since its inception were not available due to the following reasons:

- a. Attitude of residents to waste collection and disposal.
- b. Non-availability of standard borrow-pits.
- c. Non-availability of transfer stations.

The waste materials being managed, processed and disposed by the BOSEPA are illustrated in Figure 1 and Table 2. Before now, the agency has taken part in waste collection in the City Centre and beyond but today due to the increased intensity of the insurgency waste collection and compositing has remarkably slowed and narrow down to the designated places within the Maiduguri City Centre and IDP camps –only BOSEPA directs 2 – 3 trips of trucks loads of solid wastes collected at each IDP Camp to be disposed to the nearby borrow pits/dumpsites With no treatment, no burying, no burning and no composting at all as a final disposal at:

- a. CBN Quarters
- b. Bakassi
- c. Maimalari Barrack
- d. Munna Garage
- e. Damaturu Road
- f. Bulabulin
- g. vii Dajeni

BOSEPA faces challenges including:

1. Influx of IDPS into the city outstripping the service capacity of the agency.
2. Lack of proper layout of some communities
3. Ignorance of the public and poor response to waste reduction (reuse).
4. Finance.
5. Manpower.

BOSEPA also disclosed that despite the insurgency factor and difficult finances, the government of the day was able to procure a recycling plant that would convert the increasing waste generated in Maiduguri to positive use in the near future. The plant would help create wealth out of the huge refuse generated daily in the state capital. Using waste to wealth principles, the recycling plant would use scraps, recyclable materials that can be collected and turned to useful raw materials for immediate use or are feeds stock for the production of other materials.

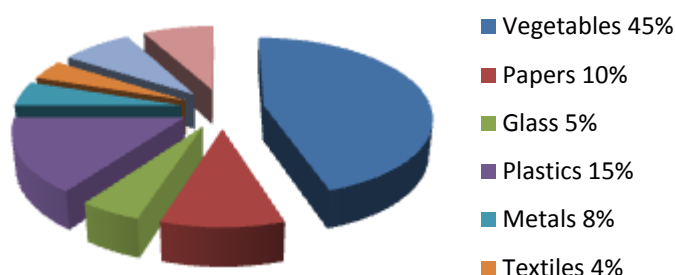


Figure 1: Waste composition in Borno State

Table 2: Waste Characterisation

S/N	WASTE CHARACTERISATION	QUANTITY (TONNES)
	Population @ 2006	4, 151, 193
As @ 2015	Population @ 3%	5, 416, 365
As@ 2015	Population @ 5%	6, 439, 931
	Kg/per/daily	0.5
	Per annum	365
1	Paper @ 10%	235, 054, 993
2	Plastic @ 15%	352, 582, 490
3	Metal @ 5%	117, 527, 497
4	Putrescible 8%	118, 043, 995
5	Textiles @ 4%	94, 021, 997
6	Vegetables 45%	1, 057,747, 470
7	Glass @ 5%	117, 527, 497
8	Fines @ 8%	188, 043, 995
	Subtotal	2, 350, 549, 933

Characteristics of Respondents

Figure 2 shows that the majority respondents that took part in the survey are within the age of 35 – 100 years. This indicates that these ages represent the greater majority of the residents in the IDP camps who were mostly women gender wise and greater number were married women and children affected by the insurgency that generates the waste per family per time (figure3). Figure 3 shows that the males who participated were very few indicating that they were mostly absent in the camps, out to look for daily bread or that their number is very limited in the camps, happen to be affected by the insurgency. Figure 4a indicates that the majority of the IDPs (68.4%) reported that their waste materials were stored in BOSEPA

plastic bins, while others stored in plastic bags and other forms of containers. Figure 4b affirms the fact that, the BOSEPA takes greater charge of the waste disposal at the IDP camps with (66.5%) record, while others forms of disposal like burning and burying is also employed in the camps by the IDPs as indicated on the chart. On the issue of waste minimization from source (Figure 4c), most of the respondents agreed that waste for disposal should be reduced through the following processes

- Reduction in use of plastic bags at purchase point of household goods.
- Sensitization of the IDPs on waste management.
- Compositing food and organic waste enrich plant growth, better crop yield.
- Attitudinal change on the part of the IDPs towards unnecessary waste generation in camps.

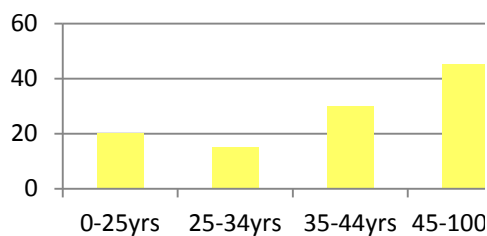


Figure 2: Age composition of IDPs

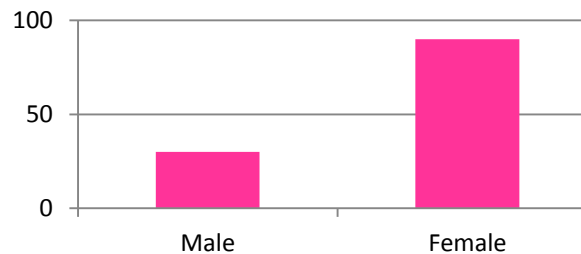


Figure 3: Gender composition of IDPs

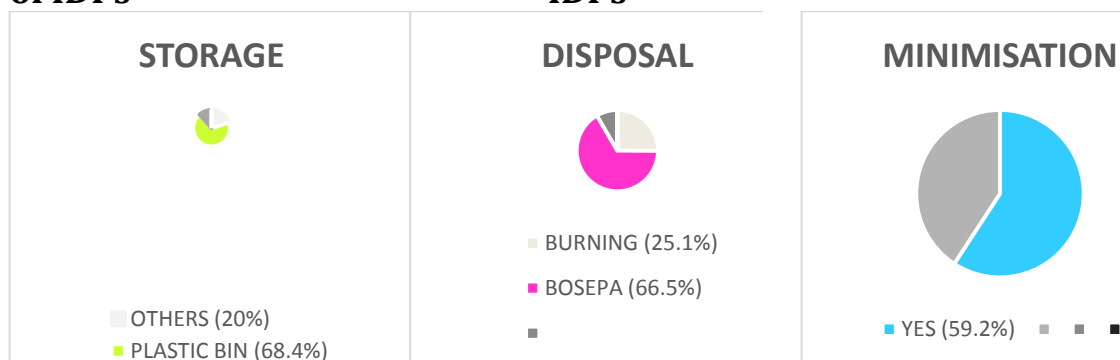


Figure 4 a-c: Solid waste management practices of IDPs

Concerns about Waste management

From Table 3 greater number of IDPs strongly agreed that burning of waste in the camps contribute to health problems, but yet about (2.2%) disagree that is why constant education of the IDPs are

ongoing in the camps to check mate any occurrence of out brake of disease due to their low level of classes.

Table 3: Concerns about Solid Waste Management

Issues of concern	SA %	A %	N %	D %	SD %
a) The burning of refuse causes health risk to residents	62.1	19.2	0	2.2	1.7
b) Dumping of waste into rivers and streams causes water pollution	64.0	19.2	0	4.1	0
c) Dumping of refuse into drains and gullies causes blockage/flooding	65.1	18.1	1.3	0	0
d) Diseases like diarrhea/malaria occur from improper storage and disposal of waste	61.5	17.2	1.1	0	0
e) IDPs education about proper waste management is one way to fix the garbage crisis.	59.4	23.1	1.2	0	0

Sustainable Waste Management Practices

Obviously, most of the IDPs are willing to participate in waste management practices that are sustainable and would improve the camp environment (table 6). They are of the opinion that even though the government agency is trying a lot to keep the camps clean, they will supplement the rest on their part, since they were staying idle on the camps. The IDPs put forward some suggestions for the improvement of waste management listed:-

- a. Waste collection together with the BOSEPA youth vanguards/IDPs in the camps is the best/should continue.
- b. Since the government provided the needed service, they are willing also to give their help hands for the overall good of the camps.
- c. Sensitization of the general IDPs is very important and positive step.
- d. Additional waste sorting bins introduced and IDPs rewarded for the separation program.

Table4: Sustainable Waste Management Practices

Questions	Yes (%)	No (%)	Don't Know (%)
a) Do you think that IDPs have role to play in assisting BOSEPA to manage waste in camps?	75.5	1.5	2.5
b) Do you support the idea of waste reduction?	83.4	2.8	2.8
c) Have you heard about composting?	61.2	20.0	1.6
d) Have you heard also about recycling?	45.5	32.1	0
e) If a recycling program is setup, would you separate waste materials like plastic, paper, metals into separate bags for collection purposes?	86.1	2.1	1.4
f) Would you be willing to pay for pickup of these recycling wastes from the camps?	44.9	40.1	0
g) Would you be willing to take part in a program to compost food and camp waste?	80.3	8.1	0.5
h) If you were paid for every plastic bottle returned to grocery store, would you take part to return it?	85.5	3.0	1.5
i) Would you like more information about how/what types of garbage to compost/reuse/recycle in order to reduce the amount of waste produced in camps.	85.0	0	4.0

Solid waste management remains one of the most disturbing environmental sanitation challenges facing the Borno state government today and has continually remained so despite huge investments in the sector. As a result of the rapid population growth recorded overtime within the Maiduguri city as a result of the insurgency situation in the IDP camps wastes are generated faster than they are collected, transported and disposed. The methods used for the final disposal to the borrow pits by the BOSEPA Authority are very unsatisfactory and further constitutes serious health hazard, causes offensive odour, pollutes underground water sources, nearby villages and decreases environmental problems and quality. The best way in tackling these environmental problems is to adopt environmental best practice to support government in ensuring a healthy and safe environment for all Nigerian through

use of innovative approaches in solid waste control source reduction, reuse, recover, repair and recycle.

CONCLUSION

Many of the internally displaced persons IDPS residing at the various camps within the Maiduguri Township are yet to understand the need to have a clean habitable environment that can sustain their well-being as victims of insurgency. The challenges of mass feeding come along with volumes of wastes generation, sickness and life threatening dangers that require constant government and public attention every day. However the concern for immediate waste collection, transportation and final refuse disposal is the prime focus in this research that was determined to be non-sustainable. Greater quantity of the refuse collected by BOSEPA trucks and transported out of the IDPS camps and city centre were finally disposed in designated borrow pits located on outskirts of the city near villages without further treatment. These borrow pits contain hazardous wastes that require further treatment. Non treatment of the waste constitutes air and water pollution, could generate or breed dangerous vectors and bring diseases to both villagers and city residents.

Similarly the results show that the inner city used to suffer the impact of poor waste disposal by the “mai- bolas” or local waste contractors that require proper reorientation and overall solution. By educating them also to properly disposed waste into dumpsites, safely incinerating waste would certainly reduce the waste heap up and will bring environmental cleanness and sanity rather than disposing refuse in the drain gutters which causes water pollution and blocks water flow bringing flooding to communities. The quick establishment of the newly procured waste recycling plant in the state would address the large volume of wastes generated from the concentrated population and also help in waste to wealth creation.

RECOMMENDATIONS

The socio-cultural, religious and topographical environmental problems and challenges of wastes generation and disposal militating within the Maiduguri IDP camps and city centre could be

properly addressed by a treatment of the final overall refuse disposal dumpsites (Nilsson-Djerf and McDougall 2006). These borrow pits would be treated at three day intervals using incineration and landfill methods.

- a. It is recommended that effective, efficient and sustainable waste management strategies such as waste minimisation at source through reuse, recycle and energy recovery before final disposal should be introduced and adopted.
- b. For an effective waste management system sustainability to flourish in Maiduguri city there must be total commitment from the side of waste managers (BOSEPA), the larger public (IDPS, residents), health workers, environmentalists that will bring total improvement and environmental renewal for the city landscape.
- c. It is also recommended that government should remove the administrative bottle neck attached to waste management and involve the private public partnership in waste collection and disposal management process that can be run on waste to wealth initiatives in IDP camps within Maiduguri Township.

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Reference to this paper should be made as follows: Onazi, O. O, et al., (2018), Waste Management Characteristics Of Selected IDP Camps In Maiduguri. *J. of Management and Corporate Governance*, Vol.10, No. 2, Pp 72-94
