

**THE ROLE OF ABUJA ENVIRONMENTAL  
PROTECTION BOARD IN URBAN WASTE  
MANAGEMENT**

**By**

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## CERTIFICATION

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## DEDICATION

This research work is dedicated to my beloved wife Amina Abu Gidado and my Son Sadiq Ibrahim Abubakar.

## ACKNOWLEDGMENT

First and foremost, my Gratitude goes to Allah (S.W. A). For spearing my life throughout my period of study.

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## ABSTRACT

This research work try to examine the role of Public Authorities handing the ask of Waste Management in Nigerian cities.

Abuja Environmental Protection Board (A.E.P.B), was chosen for the process of conducting the research.

In the study, attempts were made to took at some specific waste problems and various policy that were formulated to handle them. The methods of data collection for the research includes field observations, personal interview, questionnaire and use of Library.

The data presentation was done in a way that the state of waste management in Abuja city can be appreciated.

Some of the observations made were absence of regulated Dump site, uncollected heaps of refuse and shortages of dustbins.

At the end of the research, suggestion and recommendation were made in order to improve the conditions of Waste Management and Environmental Protection in General.

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# CHAPTER ONE

## Introduction

Virtually all aspects of man's productive economic activities involves the generation of waste. In most cities in the world, the use of Goods and services generate waste. When domestic consumer products wear out or becomes outmoded, they are simply discarded and in this process, domestic waste is generated.

Managing the waste found in cities has been the problem in our country. Urban centers in Nigeria are characterized by indiscriminate disposal of waste, few Dustbins, Irregular collection of refuse and heaps of domestic waste in various parts of the cities. This indicates that many of the neighbour hoods have no access to sanitary waste disposal system.

Owing to these facts, the Federal Government of Nigeria established the Federal Environmental Protection Agency (F.E.P.A) through Decree 58 of 1988 to monitor waste disposal and ensure that there is proper Environmental protection in urban centers.

The minister of Housing and Environment was charged to encourage State and Local Government Councils to set up their own Environmental Protection Bodies for the purpose of maintaining odd environmental quality in the areas of related pollutants under their control Subject to the provision of this Decree, Abuja environmental Projection Board (A.E.P.B) was established through Decree 10 of 1989.

The Board is to Co-operate within the Federal Environmental Protection Agency (F.E.P.A) to keep the beauty of the Environment in the Federal Capital Territory.

The role of Abuja Environmental Protect Board (A.E.P.B.) is assessed in this study as it handles the task of waste management in the F.C.T.

### 1.1 STATEMENT OF PROBLEM

Despite proper planning of city and particularly regarding waste management, refuse and garbage are still the first things to notice when you enter the city. Some studies on the area shows that waste generated in some parts of the territory have not been properly and adequately managed.

Ogwuda (1995) observed about 20 illegal waste dumping sites in Nyanyan. This is because the Dumping sites are close to the various houses and there is no refuse ~~close~~ collection point in the neighbour hoods. The absence of regulation guiding the choice of collection points has also contributed to the increase in numbers of illegal dumping sites in the area. Oche (1999) show some evidence that solid wastes generated in karumu is not well disposed of. There is no containers for refused collection in some parts of the area, while some parts have few Dustbins which are not collected regularly.

In order not to destroy the beauty of environment in the territory, the master plan for the area made provision of waste in the area. According to the master-plan, there should be a co-ordinate collection system,

transportation of collected waste to the central disposal area, site Handling, storage and processing system. The master –plan proposed that collection of refused should be made at least twice a week and there should be special collection from special customers as required. Also the use of transfer station was recommended to service as major collection points for various collection routes and maintenance of equipment for storage yard.

With these provision in the master-plan and established of Abuja Environmental Protection Board (A.E.P.B) one would have expected not to see the problem of waste management in Abuja city like in the other town in Nigeria which where not planed before development started. But improper disposal of waste and accumulation of refuse are still found in various part of Abuja city. This called for a need to study the role of Abuja Environmental Protection Board (A.E.P.B).

## **1.2 AIM AND OBJECTIVES**

The aim of this research is to examine the functions of Abuja Environmental Protection Board (A.E.P.B) in urban waste management. In order achieved this, the study has the following objective.

- i. To determining the regularity of waste disposal and effective clean environment.
- ii. To know the methods of waste disposal in the city and examine the equipment been use by the Board.

- iii. To determine the means of transporting waste from collection point to area of disposal and method of distributing Dustbins in the city.
- iv. To reveal the materials that make up waste in the area.
- v. To determine the duration that make up waste in the area.
- vi. To identify problems militating against proper management of wastes by the Board.

### 1.3 **SCOPE AND LIMITATION**

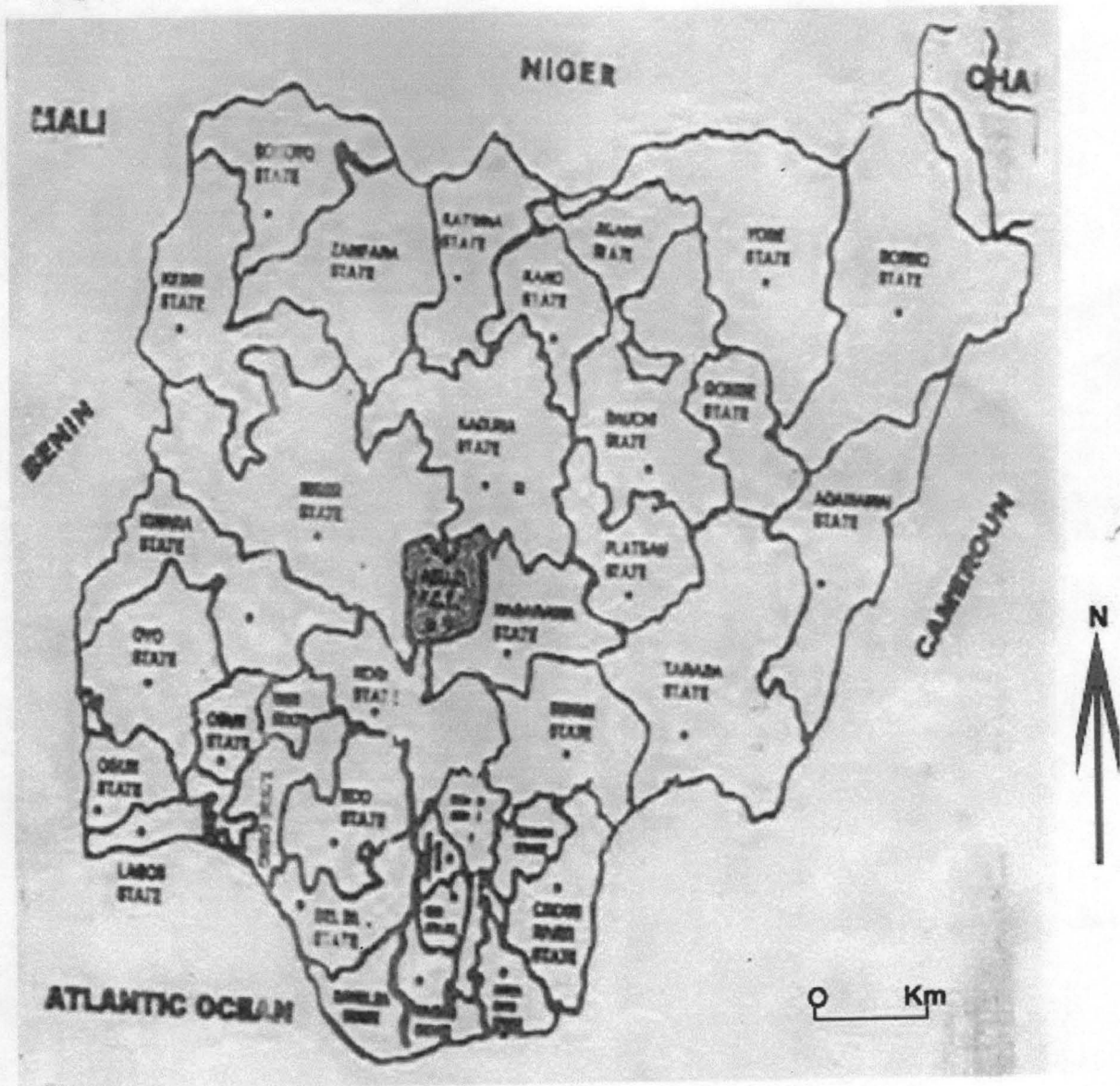
The study is limited to Wuse and Maitama District area which are parts of the Federal Capital city. This is because of the time and resources available. Also they possess both high and low density residential area that are characterized by waste accumulation and management problems.

### 1.4 **SIGNIFICANCE OF THE STUDY**

The demand for positive and realistic planning of cities to meet human need as we enter into the 21<sup>st</sup> century is an issue of major concern. It is for this reason that environmental problem such as waste management have come into sharp focus. This study will help to improve the performance of Abuja Environmental Protection Board (A.E.P.B) and will serve as re-orientation programme for urban

## Map of Nigeria Showing The Location of Abuja

Fig: 1.1



dwellers and waste managers. It will help to improve the level of refuse collect in the study area. The study is an assessment that would improve waste management and Environmental Problems in general.

## 1.5 **ORGANISATION OF THE STUDY**

This study is divided into five chapters. Introductory chapters include introduction, problem conceptualization, Aim and objectives, scope of study, definitions of some terms and organization of the work..

In chapter two, attempts are made on the review of existing literatures and publications about the activities of public authorities handling urban waste management.

Chapter three centers on the methodology applied, which includes the method data collection, personal interviewing, questionnaire, field observation and the other methods of acquiring research data like use of libraries, journals and newspapers.

Chapter four takes care of data presentation and analysis.

Chapter five takes care of summary and conclusion as well as recommendations.

## 1.6 **LOCATION OF THE STUDY**

Geographically, Abuja is located in the center of the country. It is bounded on the North by Kaduna State, on the west by Niger State, on the South East by Nasarawa State, on the South West by Kogi

State. If fall within latitude  $7^{\circ} 25$  and  $9^{\circ} 20$  N and longitude  $6^{\circ} 45$  W and  $7^{\circ} 39$  W. it is about  $8000\text{km}^2$  in size. The Federal Capital Development Authority (A.C.D.A) was charged with the responsibility of planning and developing the territory.

## 1.7 DEFINITIONS OF TERMS

### 1.7.1 WASTE

Waste are substance and materials which are disposed of or are required to be disposed of according to the provision of national law.

### 1.7.2 MANAGEMENT

The management of wastes includes the collection, transportation, storage, treatment and disposal of waste including the after care of the disposal site.

### 1.7.3 DISPOSAL

Disposal means the treatment of waste including it's storage, tipping or depositing on or bellow the ground as well as the transformation operations utilize for recovery reuse or recycling.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

Environment is today the most topical issue on the Agenda of many Nations in the world. This is particularly so because of the environment problem mankind is facing. Globally, the problems are alarming, with emerging frightening consequences for mankind. Environment problem does not stop at national Borders (Hilger, 1983).

Careful identification of present and future environment problems such as waste management is necessary to establish the objectives of proper management, be it at local, regional or country level. According to Oyediran (1995), one of the development challenges for the 20<sup>th</sup> century was how to achieve cost-effective and environmentally pleasant strategies to deal with the global waste crisis confronting mankind in both the development and developing countries.

Bachman (1983) accepts that waste collection and disposal is an important part of environmental hygiene and needs to be integrated with environmental planning and policies. He observed that improper collection and disposal of waste can lead to serious environmental

damages and outbreaks of some disease. Historically waste producer and managers have relied on the cheapest means of disposal, such as open space system. This improper method of waste disposal have left a legacy of problems in waste management which is now creating a serious threat to the present environmental conditions. Waste problem are no longer a simple problem facing developing countries, but also the developed world which can lead to economic and environmental changes (Agwu, 1995). Although the level of environmental management especially that of waste problem is unsatisfactory in most of the developing countries, there is a need for both the developed and developing nations to be co-operating in terms of environmental protection.

## 2.2

### **WASTE MANAGEMENT IN NIGERIA**

Increase in population, uncontrolled urbanization and industrialization have contributed to the high rate of waste generation in the country. The amount of waste generated in Nigeria is approximately 2100kg per person monthly (Oyediran, 1995). This is due to the fact that most Nigerians practice the 'throw away' culture as a system of waste disposal. The level of waste management in Nigeria is so low that the situation is now reaching a stage where its effects on the environmental conditions can no longer be ignored. A new dimension was added to the waste problems in the country in

1988 with the illegal dumping of about 4000 tones of toxic and hazardous wastes from Italy in Koko, Delta State (Oyediran 1995). The Federal Government quickly reacted to this by banning the importation of toxic waste into the country through the promulgation of decree 42 of 1988.

The problem of waste management in Nigeria is a product of continued escalation in the rate of urbanizations and economic activities in the country (Oluwande, 1987). The poor disposal of waste in Nigeria is one of the major environmental problems. Faboya, (1997) observed that annually. This is as a result of the presence of textile industries and the oil refinery in the state. The effort of the state environment protection Agency to cushion the waste problem in the state has been hampered with the high rate at which these industries generate their wastes. In Rivers state, where the petroleum industry is the major industry, it is estimated that about 5,500 tones of hazardous waste are generated annually in the state, (Faboya, 1997). The National policy on environment and the hazardous and solid waste Regulation of 1991 was formulated to handle such problems, but the execution of such policy is affected by the dynamics in government. Efficient system of waste disposal is an important issues that need to be addressed as it affects the environmental quality of human settlement.

The condition of Nigerian environment is in a state that refuse and garbage are the first thing to notice when one enters any Nigerian city (Osuntokun, 1997), Adedibu, (1985) observed that Junk vehicles with Littered are the common features along some major Road in Ilorin. The Ministry of Housing and Environment in conjunction with the Local Government are the authority handling, controlling and guiding the use and management of waste in the city. These bodies are not performing up to expectation, because there are no organizational frame work defining the area of their coverage. Adedibu, (1985).

In some towns the volume of solid waste have attained a stage of creating heaps of refuse across streets. Mountains of uncleared refuse are a common occurrence on Nigeria streets. (Willians, 1982). This is because the volume o waste generated is higher than the capacity of dump site and collection rate, which now in turn result to spill over. Chukwura, (1993), observed that there was a breakdown in garage management in Owerri and Lagos in 1993. He added that the breakdown was as a result of disagreement between the authorities responsible for waste disposal in this towns in the Federal Capital Territory (F.C.T). Ogwuda (1995) and Bagudu (1998) (A.E.P.B) also observed severe problems of improper solid waste management. Even with the presence of Abuja Environmental Protection Board (A.E.P.B), most of the dumping site still remain uncleared.

In prescribing ways and means of coping with the problem of waste in the foreseeable future, the important fact that need to be appreciated is the great diversity of conditions that characterize the Nigerian environment. According to PAI associate international (1982), diversified nature of Nigerian environment should be considered in making simple choice of way in handling environmental problems. Wuse (1987) make it more clear that adequate disposal of refuse should not only involve the provision of dustbin but must also involve the active Co-operation of users. Agwu (1995) added that the uses of dustbins in Nigeria is normally in the form of open dumping, improper landfills, and incineration. Thus waste disposal in Nigeria has remained an environmental problem that becomes more complex each day (Anyakoha, 1995). There is a need to address this problem for survival of the Nigerian environment. Due to this, the challenge of waste management in the country calls for meaningful co-operation between individuals and the government authority. Okpula, (1995) observed that the institutional framework for waste management in Nigeria is very weak. This is because most of the authorities handling waste problems lack the capacity and appropriate resources to cope with the problem. The waste management problems in Nigeria can be reduced by proper waste disposal and resource recovery system.

### 2.3 NATURE OF WASTES IN URBAN AREA

There are wide variety of materials classified as urban waste. They include typical components such as paper, metals, glass, wood, plastic, polythene bags, cartons, waste food items and other solid miscellaneous materials that are no more in use. The composition varies from place to place depending on the culture and way of life of the people. Okpala, (1995) classified waste as biodegradable. The biodegradable according to him are those that can easily be decomposed, while the non biodegradable are materials like cellophane and bottles that can not undergo decomposition. In most cities in Nigeria, leaves form a large component of these waste (Adegoke, 1989). All of these waste whether intrinsically highly hazardous or not are potentially damaging the environment. Habitat, (1986) observed the refuse from affluent communities contains large proportion of paper plastic, metals and glass while waste in low income communities are predominantly organic in nature. In Nigeria enormous volumes of waste are produced in our society but the problem of how to dispose them in an environmentally safe manner is our concerned.

### 2.4 WASTE MANAGEMENT IN ABUJA (F.C.T)

In February 1976, the Federal Government of Nigeria decided to build a new administrative capital to ease the pressure on Lagos.

Based on consideration of several geographical, historical and strategic factors, the present Abuja was recommended.

F.C.T master plan (1979) show that the proposed amount of solid waste that would be generated in the residential area of the city is about 0.5kg per person in a day and that non-residential area is about 0.3kg per person in a day. Based on this, provision where made for waste management in the territory. With the ever-increasing influx of people into the Federal Capital Territory, the problem of waste management 100m large in the are (Ayileka, 1995). Due to this recent increase in population size, refuse accumulation and management problems are now a common feature in the territory. Oche, (1999) identified Karmo as of the area where the largest amounts of refuse is generated in the territory. He observed that leaves, condemned rubber, empty can, grasses, condemned clothes and groundnut shell are the common waste generated in this areas. According to (A.E.P.B) every street in the residential area is supposed to have at least five refuse collection points. Oguda (1995) observed that irregular collection of refuse in Nyanyan has resulted in a situation of accumulation of refuse and dumps on the street and on access road. The problem of waste management in Abuja (F.C.T) becomes more complex each day. As a result of this, there is a need for meaningful co-operation between

individuals in the area and the authority handling waste management problem.

## 2.5 MANDATE OF ABUJA ENVIRONMENTAL PROTECTION BOARD (A.E.P.B)

The Abuja Environmental Protection Board (A.E.P.B ) is charged with the following functions.

- To under take the removal of liquid and solid wastes in the Federal Capital Territory.
- To control industrial waste, burrow pits and quarry sites particularly to direct construction companies to refill burrow pit excavated.
- To control septic tank and sewage maintenance and other effluent discharge.
- To raise public awareness and promote understanding of essential linkages between environment and development.

Since its establishment in 1989, the efficiency of the Board in terms of waste management has not been encouraging.

Ogwuda, (1995) observed (A.E.P.B) has failed to provide the residents of Nyanyan with enough dustbins. Most of the residents acquired their private dustbins for disposing their waste. The performance level of the Board is hampered by inadequate facilities, staff and equipment. Oche, (1999) observed that lack of equipment

have really affected the performance of the board, especially the liquid and solid waste management departments. Although the board has made some effort by adopting the land fill approach in treating and disposing of waste, but there is a need for the board to increase the staff strength and purchase more dustbins and collection vehicles.

## 2.6 HOUSEHOLD STORAGE

Household waste are by – products of house keeping activities and consumption (Okpala, 1995). Waste problem in developing countries is as a result of mixed household waste.

In Nigeria, traditional household waste are normally biodegradable and non biodegradable. Disposal of household waste is a problem that must be tackled because of its implication on health and human activities. Domestic waste as other household refuse have continues to pose a serious problem in Nigeria (Gamawa, (1995).

PAI Associates international (1982), recommend the use of disposable household paper or plastic bags for household storage. This will help to reduce the cost of waste management at the house level. They also recommend that more sophisticated household equipment can be used in storing household waste. Some of these equipment include insink garbage grinders and compactors which can be used to reduce the volume of household waste.

According to Eniolorunda (1995), the genesis of accumulated refuse seen in Nigeria cities is as a result of poor household storage. In any socio-economic society, all refuse removed from the house should be taken to the central disposal area. Okpala (1995). Made it clear that household waste is not really disposed of in Nigeria, but is transferred from one location to another. The collection of Household refuse in Nigeria should be organised properly.

## 2.7 LANDFILLS METHODS OF WASTE DISPOSAL

This sanitary landfill system is an engineered method of disposing waste on land by spreading them in thin layers, compacting them to the smallest practical volume and cover them with soil each working day in a manner that protect the environment. Historically landfill system have been a convenient and relatively inexpensive method of waste disposal (Saigo, 1990). There are techniques for creating safe and secure landfills that are acceptable in the disposal of waste. PAI Associate International (1982), Argue that the selection, operation and designing of landfills should be based on systematic integrated study and evaluation of physical condition, economic and socio- political constraints. Agwu (1995) also observed that the Nigerian approach to sanitary landfill system is not environmentally sustainable. This is because most of the landfill arrears of heavy gull erosion point escarvation pits that are not refills. There is a need for the construction of original landfill in various parts of the country.

## 2.8 URBAN ENVIRONMENTAL EDUCATIONS

The dumping of waste in many cities proved the point of many environmentalist in Nigeria that the level of environmental awareness in most of the urban area is very low (Ahmad, 1986). The need to bring dwellers can not be over-emphasized. The Government Decree on Environmental education 1997, charge the education sector with the comprehensive system of environmental education and called on mass media and public organisation with special interest to participate in this programme. Despite the enlightenment and campaigns on how to keep environment clean, people still engaged in poor sanitary habit and improper use of dustbins (Adegoke, 1986). The collection and disposal of waste is a public health issue and a serious problem that is reducing the beauty and quality of the environment F.E.P.A (1990), look at environmental protection and waste management in particular as a problem of moral issue that concern each and everyone of us. There is a need for people to be committed to the issue of environmental protection. Okpula (1995), call for a comprehensive well planned programme to be backed up with legislation, environmental awareness and consumer education programmes. This would create awareness of waste type and it environment consequences. According to Agwu (1991), the survival of human being on this earth depends greatly on man's cautions attitude to

the world environment. This is because environmental issues are creating serious concern all over the world.

## **CHAPTER THREE**

### **3.0 RESEARCH METHODOLOGY**

This chapter cover the method of data collection types of data to be collected, questionnaire design and questionnaire administration. The chapter is further divided into different sub-heading for better understanding. A framework of data presentation and analysis is therefore established.

#### **3.1 METHODS OF DATA COLLECTION**

This involves both primary and secondary methods of data collection. The primary methods include the use of questionnaire, personal interviews and field observation. Secondary methods such as use of libraries, journals and newspaper.

#### **3.2 FIELD OBSERVATION**

The field observation include the visitation of some landfill sites and some refuse collection point. The duration of refuse collection is noted. This is because refuse collection is the first stage of management activities. The types of dustbins in the area of study are identified. It also include the physical counting of collection points. The observation will be use as an assessment of waste management in the study area as it affects the environmental conditions in the areas. It also serve as a check to the information from the questionnaire.

3.3

### **INTERVIEW**

The interview is in two patterns one with some staff of the Abuja environmental protection board (A.E.P.B) while the other is with some of the residences in the study area. The one with staff of the board examined the functions of the board and the problems militating against the performance of the board. The second interview was granted by some of the resident in the study area and it focused on the performance of the board, whether it has been effective or ineffective and what should be done to ensure an increase in the performance level of the board.

3.4

### **TYPES OF DATA TO BE COLLECTED**

The types of data collected are both secondary and primary data. They include the methods employed by board in disposing waste materials, the types of equipment used, the skills of the boards worker, the duration of refuse collection and the types of dustbins available in a given area. The main source of this data are field survey ministry environment and Abuja Environmental Protection Board (A.E.P.B).

3.5

### **QUESTIONNAIRE DESIGN**

The questionnaire is divided into three sections.

Section one contains the demographic economic and social characteristics of the respondents.

Section two is devoted to the way refuse is being handled at the city, while section three covers the effort of Abuja Environmental

Protection Board (A.E.P.B) in waste disposal and management and the possible ways to improve the level of waste management in the area (see appendix I).

### 3.6 QUESTIONNAIRE ADMINISTRATION

In administering the questionnaire, the stratified sampling technique was employed. The sampling technique is a system of selecting a portion of the population and use as a true representation of the whole population. This system is chosen because of it efficient way of analysis. The stratified sampling techniques will be used because waste disposal and management problem are targeted in specific area of the city. The questionnaire will be administered to the residents of the study area. In the Wuse district the researcher administered 20 questionnaire in each zone and there are seven zones in the district, which means that a total of one hundred and forty questionnaire were administered in Wuse district. The Maitama district is divided into three large strata and fourty questionnaire were administered in each strata, amounting of 120 questionnaire in Maitama district.

The discrepancy in number of respondents between the high and low density residential area is due to the high density residential area have high population than the low density residential area is large than the low density residential area.

A total of 280 questionnaires were administered in the process of conducting this research. One hundred and ninety six were returned. Out of this one hundred and thirty three representing 62.8% and were male, while sixty three representing 37.2% are female.

## CHAPTER FOUR

### DATA PRESENTATION AND ANALYSIS

This chapter is design to analyze the data collection from field observation, personal interview and questionnaire administration. The presentation is focused on methods of waste disposal, zones of refuse collection, staff strength of the Board and Nature of equipment.

#### 4.1 CHARACTERISTICS OF RESPONDENT

This section o9f concerned with the information about the various respondents. It is further divided into sub-headings, such as sex distribution, occupational status and educational qualification.

##### 4.1.1 SEX DISTRIBUTION

Respondents in the study area are both male and female. The table below shows the sex distribution pattern of the respondents.

**Table 1      SEX DISTRIBUTION PATTERN OF RESPONDENTS**

|              | WUSE       | MAITAMA   | PERCENTAGE  |
|--------------|------------|-----------|-------------|
| Male         | 87         | 36        | 62.8%       |
| Female       | 49         | 24        | 37.2%       |
| <b>Total</b> | <b>136</b> | <b>60</b> | <b>100%</b> |

**Source:**      Field Survey, (2004).

#### 4.1.2 OCCUPATION STATUS

The occupational status of the respondents reveal they are mostly civil servants, businessmen and women as well as others as shown in the table below.

**Table 2 OCCUPATIONAL STATUS OF RESPONDENTS**

| OCCUPATION               | WUSE | MAITAMA | TOTAL | PERCENTAGE |
|--------------------------|------|---------|-------|------------|
| Civil Servant            | 80   | 30      | 110   | 56%        |
| Businessmen<br>and women | 26   | 10      | 46    | 23.5%      |
| Others                   | 20   | 20      | 40    | 20.4%      |

**Source:** Field Survey, (2004)

From the above above, one hundred and ten, representing 56.1% of the respondents are civil servant, forty six of them representing 23.5% are Businessmen and women while forty of them which is 20.4% representing other occupations.

#### 4.1.3 EDUCATIONAL QUALIFICATION

The respondents in the study are mostly holders of higher degree from institutions and school certificate holders.

**Table 3 EDUCATIONAL QUALIFICATION OF RESPONDENTS**

|              | <b>PRIMARY<br/>SCHOOL</b> | <b>SCHOOL<br/>CERTIFICATE</b> | <b>HIGHER<br/>CERTIFICATE</b> | <b>DEGREE<br/>&amp; H.N.D</b> | <b>HIGHER<br/>DEGREE</b> |
|--------------|---------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------|
| use          | None                      | 38                            | 37                            | 49                            | 12                       |
| aitama       | None                      | 15                            | 16                            | 22                            | 7                        |
| <b>total</b> |                           | <b>53</b>                     | <b>53</b>                     | <b>71</b>                     | <b>19</b>                |

Source: Field Survey, (2001)

From table 7 above, fifty-three of the respondents (27%) has school certificate, higher qualification also account for fifty-three which is also 27%. Degree and Higher National Diploma account for seventy one, representing 36.3% while nine of them has Higher Degree which is a about 9.7% with this, it is expected that the respondents should be aware of the effect of waste on the environment.

#### **4.2 METHODS OF WASTE DISPOSAL**

The sanitary landfill system is the method employed in disposing the waste collected from the city.

There are five temporal landfill sites where the wastes are transported to after collection.

**Table 4 TEMPORAL LANDFILL SITES IN F.C.T**

| <b>LANDFILL SITES</b> | <b>LOCATION</b> |
|-----------------------|-----------------|
| Sites one             | Katampe Hill    |
| Site two              | Idu Area        |
| Site three            | Jukwai Area     |



**Plate 1: Katampe Landfill Site**

|           |             |
|-----------|-------------|
| Site four | Kubwa Area  |
| Site five | Durumi Area |

**Source:** Field Observation, (2004)

Among these five temporal sites, the Katampe hill site is mostly utilized. From the filed observation, the site was chosen in order to reclaim an excavation pit and its high patronage is due to its proximity to the city.

#### 4.3 ZONES OF REFUSE COLLECTION

In the Federal Capital city (F.C.C) refuse collection is divided into three major zones and each is further sub-divided into sub-zones as 1 is shown in the table below:

**Table 5 ZONES OF REFUSE COLLECTION IN F.C.C**

| MAJOR      | AREA COVERED                   | SUB-ZONES |
|------------|--------------------------------|-----------|
| Zone one   | Garki & Asokoro                | 3         |
| Zone two   | Wuse & Maitama                 | 2         |
| Zone three | Central Area, Kado & Life Camp | 2         |

**Source:** A.E.P.B (2001)

From the personal interview granted by some staff of Abuja Environmental Protection Board (A.E.P.B), the Board is now embarking on house to house collection.

There is also a special collection exercise for public places like markets and shopping centers. This exercise also covers street litter, which involve the collection of waste from various streets in non residential areas.



**Plate 2: Waste accumulation in Wuse Market**

Filed observation and interview granted by some of the residents in the study area, also revealed that plastic drum is the major type of dustbin found in the residential areas, while metal bins are normally found at the market places and shopping centers.

During the field observation heaps of accumulated refuse was found at the two market centers in Wuse district. Some of the traders at both markets blame the Abuja Environmental Protection Board (A.E.P.B) for irregular collection of refuse. This irregular collection of refuse is due top the fact that the zones of refuse collection are no longer maintained by the Board. They also complained of shortage of dustbins.

In the residential areas, refuse collection in some areas is fair while some areas are characterized by accumulated wastes. Some staff of the board blame this on the few number of compacting trucks.

**Table 6      REGULARITY OF WASTE COLLECTION**

|              | Weekly    | Two       | Three<br>weeks | Monthly   | Seldom    | Not at all |
|--------------|-----------|-----------|----------------|-----------|-----------|------------|
| Wuse         | 39        | 45        | 24             | 9         | 11        | 8          |
| Maitama      | 16        | 22        | 10             | 6         | 5         | 1          |
| <b>Total</b> | <b>55</b> | <b>67</b> | <b>34</b>      | <b>15</b> | <b>16</b> | <b>9</b>   |

**Source:** field observation (2004)

From table 3 above, fifty-five of the respondents representing 29% of the total respondents were of the opinion that waste collection is done once a

week. Sixty-seven of them representing 34% and it is once in two weeks. Thirty-four representing 17% believed it is once in three weeks. Fifteen of them which is 8% said it is monthly, while nine of them which is 5% believed there is no collection at all.

According to Abuja Master plan, it is expected that refuse collection should be done at least twice a week by A.E.P.B and according the resident from this observation refuse collection is not regular in the area.

This poor collection is due to the breakdown of compacting trucks, which make it difficult for the drivers to maintain the zone they are attached to for the collection exercise.

#### 4.4 NUMBER OF STAFF IN THE DEPARTMENT OF WASTE MANAGEMENT

**Table 7**

| STAFF             | PRESENT NUMBER | EXPECTED NUMBER |
|-------------------|----------------|-----------------|
| Management        | 4              | 4               |
| Supervisors       | 6              | 10              |
| Zonal Supervisors | 25             | 40              |
| Drivers           | 20             | 80              |
| Labourers         | 50             | -               |
| Causal Worker     |                |                 |

**Source:** (A.E.P.B) 2004 .

From the above above, four management supervisor are required and there are four of them during the time of conducting this research. Ten zonal supervisors are required against the six that are working at the of conducting the research forty drivers are required against twenty-five employed

presently, while eighty labourers are needed but only twenty are presently employed. The casual workers are not many. Currently shortage of staff is one of the major problems facing the Board in its operations.

With the present number of staff in the board, there is a need to improve on the workforce in order to handle the problem of waste management in the city.

#### **4.5 NATURE OF WASTE GENERATED IN THE STUDY AREA**

The study area is a residential zone. The nature of wastes generated in the areas are mostly domestic waste, such as paper, polythene bags, condemned plastic rubbers and leather bags, food leftover like yam peel, vegetable and fruit. Some of these can be recycled for further use.

#### **4.6 VOLUME OF WASTE GENERATED**

Most of the residents in the study area do not actually measure the amount of wastes they generate. The respondents were asked to estimate how many basket of waste they generate in their house per day. The volume of a basket was estimated to be  $10\text{cm}^3$  and the result is presented in table below:

**Table 8 VOLUME OF WASTE GENERATED PER DAY**

| SIZE OF HOUSEHOLD | NO.OF HOUSES | TOTAL BASKET OF WASTE | VOLUME OF WASTE (CM <sup>3</sup> ) | AVERAGE VOLUME (CM <sup>3</sup> ) |
|-------------------|--------------|-----------------------|------------------------------------|-----------------------------------|
| 2                 | 31           | 42                    | 420                                | 13.5                              |
| 3                 | 17           | 23                    | 230                                | 13.5                              |
| 4                 | 29           | 61                    | 610                                | 21.0                              |
| 5                 | 31           | 49                    | 490                                | 15.8                              |
| 6                 | 36           | 68                    | 680                                | 18.9                              |
| 7                 | 18           | 34                    | 340                                | 18.9                              |
| 8                 | 19           | 40                    | 400                                | 21.1                              |
| 9                 | 4            | 11                    | 110                                | 27.5                              |
| 10                | 11           | 27                    | 270                                | 24.5                              |

**Source:** Field Survey, (2004)

#### 4.7 ILLEGAL DUMPING SITE

During the field observation, it was discovered that there are illegal dumping sites in the area. Measurements of some were taken and they are presented in the tables below:

**Table 9 SOME ILLEGAL DUMPING SITES AT WUSE DISTRICT**

| LOCATION        | WIDTH (M) | LENGTH (M) | HEIGHT (M) | VOLUME (M) |
|-----------------|-----------|------------|------------|------------|
| Wuse Old Market | 25        | 50         | 0.4        | 500        |
| Senegal Street  | 20        | 30         | 0.3        | 240        |
| Membolo Street  | 10        | 100        | 0.3        | 300        |
| Garouna Street  | 20        | 50         | 0.2        | 200        |
| Conakry Street  | 15        | 63         | 0.2        | 189        |

|                  |            |            |            |              |
|------------------|------------|------------|------------|--------------|
| Herbert Macaulay | 14         | 50         | 0.3        | 350          |
| Way              | 30         | 50         | 0.3        | 450          |
| Berger Junction  |            |            |            |              |
| <b>Total</b>     | <b>134</b> | <b>403</b> | <b>2.2</b> | <b>2,229</b> |

**Source:** Field Survey, (2004).

**Table 10 SOME ILLEGAL DUMPING SITES AT MAITAMA DISTRICT**

| <b>LOCATION</b> | <b>WIDTH<br/>(M)</b> | <b>LENGTH<br/>(M)</b> | <b>HEIGHT<br/>(M)</b> | <b>VOLUME<br/>(M<sup>3</sup>)</b> |
|-----------------|----------------------|-----------------------|-----------------------|-----------------------------------|
| Ontaro Crescent | 20                   | 25                    | 0.2                   | 100                               |
| Colorado Close  | 10                   | 15                    | 0.5                   | 75                                |
| Negro Crescent  | 5                    | 10                    | 0.6                   | 30                                |
| O.A.U Quarter   | 7                    | 20                    | 0.8                   | 112                               |
| F.C.D.A Quarter | 10                   | 16                    | 0.6                   | 96                                |
| Chalaw Crescent | 5                    | 10                    | 0.3                   | 15                                |
| Gana Street     | 8                    | 15                    | 0.9                   | 108                               |
| <b>Total</b>    | <b>65</b>            | <b>111</b>            | <b>3.9</b>            | <b>536</b>                        |

**Source:** Field Survey (2004).

#### **4.8 NUMBER OF EQUIPMENT**

There are three major types of equipment used by the board in the process of operation. They include the compacting trucks, pay-loaders and open back tippers.

**Table 11 NATURE OF EQUIPMENT IN WASTE MANAGEMENT DEPARTMENT**

| <b>EQUIPMENT<br/>TYPE</b> | <b>EXPECTED<br/>NOS.</b> | <b>PRESENT</b> | <b>FUNCTIONING<br/>NOS.</b> |
|---------------------------|--------------------------|----------------|-----------------------------|
| Compacting                | 20                       | 13             | 4                           |
| Trucks                    | 3                        | 3              | 1                           |
| Pay-loaders               | 10                       | 5              | 2                           |
| Open Back<br>Tippers      |                          |                |                             |

**Source:** A.E.P.B (2004).

From table above, it is shown that the board has thirteen compacting trucks against twenty that is required, and only four are functioning. About three pay-loader are needed, presently there are three pay-loaders but only one is functioning. Also ten open back tippers are required against five at present with only two functioning. Currently, inadequate equipment and lack of maintenance are the major problems facing the board.

This can be seen as one of the reasons why there are heaps of accumulated refuse in some parts of the city.

There is need for the board to acquire more equipment and repair those that are not functioning.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATION

#### 5.1 SUMMARY

The environment is the geographical and physical location in which we live, work and produce. According to Morvaridi (1996), the current concern in the environment stems from many evidence that natural processes are being disrupted by human activities to the quality of life is being threatened. The condition of Nigeria environment is not different from this situation.

In line with this observation, this research tried to look at the institutional framework of public authorities handling Urban Waste Management in Nigeria. Abuja Environmental Protection Board (A.E.P.B) was chosen and used as a case study for this research and can be related to other state Environmental Protection Agencies.

This study examined the functions and the performance of the Board as the problems facing the Board, in terms of waste management. Some of the problems include:

1. Shortage of staff
2. Inadequate equipment and facilities
3. Poor finance
4. Lack of maintenance of facilities

These are some of the problems that have really affected the performance of the Board, especially the department of Waste Management. Despite all these constraints, the Board has made some efforts towards maintaining a humane, livable and conducive environment in the city. Some of this effort includes

1. The reorganization and mobilization of the Board to improve Waste Management and general sanitation.
2. Relocation of artisans and street traders which are creating menace in the environment.

With this, there is a need for the Board to put more effort in order to achieve the ultimate aims which is clean environment.

## **5.2 CONCLUSION**

Waste generation is inevitable consequence. However, it is the Management of waste generation in order to have cleaned environment that is the concerned of most environmentalist and planners. Abuja as a city deserves to be environmentally safe and friendly. To achieve this, the following observations were made during the process of conducting this research.

1. That there is absence of regulated dump site in the area, despite that provision where made for this in the master plan it has not be implemented. Due to this most people in the city dump their waste in nearby places.

2. That there are uncollected heaps of refuse in most parts of the city especially at the shopping center and market places.
3. Shortages of dustbins in some residential area and other public places, which is a result of poor awareness and enlightenment.

The absence of properly constructed sanitary landfills has resulted in open space dumping which is now creating environmental nuisance and degradation in the city.

In conclusion, the Abuja Environmental Protection Board has been trying in discharging their role in term of waste management in the city, but they require more effort to perform better.

### **5.3 RECOMMENDATION**

The demand for positive and realistic planning of cities is an issue of major concern. It is with this reason that environmental problems such as waste management have come into sharp focus. To achieve the ultimate aims, which is environmental protection.

1. There is a need for sound preventive programmes to be conceived as an integral part of waste management in Nigeria cities. Such programmes would require the establishment of maintenance department within the agency responsible for waste management. The

department would handle the repairs and maintenance of various equipment used for waste management.

2. Also modern scientific methods like recycling should be encouraged.

This would help to reduce the waste materials found in our cities. The sanitary landfill system would serve as the best method of waste disposal in the cities. Although there is provision for this in the master-plan, but it should be implemented. A properly constructed and operated sanitary landfill system will serve the city for many years. The construction and operation of sanitary landfill system should include clearing of refuse deposit and covering of waste by sand at the landfill site. This will help to control the odor that is released and vermin are also discouraged. The operation will also include the collection and transportation of waste from their source to the landfill site. The system is highly recommended along with it's proper operation and management.

3. There is also a need to review environmental laws and policy that have been existing especially those concerning waste management to make them suitable for the present situation. Involvement of private sector and other non-governmental organization who have interest in waste management should be encouraged in the area. Providing them with information on the appropriate methods for the treatment and disposal of wastes can do this.

4. In order to make sure that these policies are formally implemented, there is a need to create Waste Management Task Force at a local level. The main function of this task force is to determine how are waste been disposed, who provide the service and under what condition do they rendered this services. The member of this task force should be drawn from community associations, wastes managers, State Environmental Protection Agency (S.E.P.A) Sanitation Inspectors and Environmental Non-governmental organization.
5. Finally, there is a need for individuals who generate waste to be involved in any waste management programme.

## REFERENCES

- Adedotun O. Philips and Ajakaiye D. Olu, (1996), Population environment interaction in Nigeria, Nigerian institute of social and economic research (niser), Ibadan Nigeria.
- Austria Documentation, (1994), Environmental Protection in Austria, the Federal press service Vienna, Austria.
- Daniel B. Botkin and Edward A. Keller (1982), Environmental studies, Charles e. Merrill publishing company. Columbus U.S.A.
- Egbon P.C. and Bhrooz Morvaridi, (1996), Environment policy planning, National centre for Economic Management and Administration, Ibadan, Nigeria.
- Emman I.C.A., (1995), Environment Science, A Planner View. Mishbet Nigeria Limited, Lagos, Nigeria.
- F.C.D.A (1979). The Abuja Master-plan, IPA
- Federal Environmental Protection Agency (1990). The Environment and sustainable developmental protection Agency, (1991), Guidelines and standards for environmental pollution control in Nigeria.
- Kalgo M.S.U., (2001). The review of Abuja master plan, Ministry Federal Capital Territory. Fountain publication Ibadan., Nigeria.
- Oche E. (1999). The performance of Abuja Environmental Protection Board, Unpublished B.Sc. thesis, University of Abuja.
- Ogwuda A.N. (1995). Solid Waste Generation and Management in Nyanya F.C.T. Nigeria, unpublished B.Sc thesis University of Abuja.
- Okali D. et al, (19995). Perspective in Environmental Management, Nigeria Environmental study Team. Ibadan, Nigeria.

Osuntokun A. (1997). The Dimension of Environmental problem in Nigeria, Davidson Press University of Ibadan. Ibadan, Nigeiria.

Osuntokun A. (1998). Current Issues in Nigeria Environmental Davidson Press University of Ibadan, Ibadan, Nigeria.

PAI Associates International, (1982). A pilot study on Urban solid asters and Environmental Management in Nigeria.

## APPENDIX 1

### QUESTIONNAIRE

#### PROJECT TOPIC

#### THE ROLE OF ABUJA ENVIRONMENTAL PROTECTION BOARD IN URBAN WASTE MANAGEMENT

**ATTENTION:-** Please answer this question sincerely as the data collection from this questionnaire will be used only for the purpose of his research.

1. Sex: Male ( ) Female ( )
2. Age: 15-25 ( ) 25-35 ( ) 35-45 ( )  
45-55 ( ) 55-65 ( ) 65 above ( )
3. Marital Status: Married ( ) Single ( ) widowed ( )
4. Address: .....
5. Occupation:.....
6. What is your educational qualification:.....
7. What is your household size:.....
8. How long have you been staying in Abuja:
  - (a) One year ( ) (b) Two years ( )
  - (c) Three year ( ) (d) Four years ( )
  - (e) Above five years ( )
9. What are the common wastes generated from your house or business premises:.....

10. How do you dispose the waste from your house (a) Dump in on the site ( ) (b) Take it into the central collection points (c) throw it to nearby open space ( ) (d) Burn it ( )
11. What types of dustbin have you in the house or business premises? (a) Plastic drum ( ) (b) Carton ( ) (c) Metal bin ( ) (d) Bucket ( ) (e) None ( )
12. Can you estimate how many baskets of waste is generated in your household or business premises per day (a) one ( ) (b) Two ( ) (c) Three ( ) (d) Four ( ) (e) Five ( ) (f) Above five (specify).....
13. If central collection points are utilized, how far is the point from your house. (a) 100m ( ) (b) 200m ( ) (c) 300m (d) 400m ( ) (e) 500m ( ) (f) More than 500m ( )
14. How often is the waste cleared from the central collection points (a) Weekly ( ) (b) Once in two weeks ( ) (c) Once in three weeks (d) Monthly ( ) (e) Seldom ( ) (f) Not at all ( )
15. Who is responsible for the collection:.....
16. Are you aware of the existence of Abuja Environmental Protection Board (A.E.P.B) (a) Yes ( ) (b) No ( )
17. Do you think waste collection by Abuja Environmental Protection Board (A.E.P.B) is regular (a) Yes ( ) (b) No ( )
18. Suggest recommendation on the role of (A.E.P.B) in urban waste management

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