

**ASSESSMENT OF DEFORESTATION IN FEDERAL CAPITAL
TERRITORY, ABUJA NIGERIA.**

BY

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**TOPIC: ASSESSMENT OF DEFORESTATION IN FEDERAL
CAPITAL TERRITORY, ABUJA NIGERIA.**

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**A THESIS SUBMITTED TO PG SCHOOL,
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA IN PARTIAL
FULFILLMENT OF MASTER OF TECHNOLOGY (M.TECH)
IN GEOGRAPHY WITH ENVIRONMENTAL MANAGEMENT
(NATURAL RESOURCES MANAGEMENT)**

DEDICATION

This piece of work is dedicated to my beloved father late Alhaji Rabi Almasuya who did not live to reap the fruit of his labour, may his gentle soul rest in Aijannat firdaus, Amin. And to my mum Hajiya Binta Rabi Alimasuya, thanks for your support ceaseless care and love.

DECLARATION

I hereby declare that this research project has been conducted by me under the guidance of **DR. AKINYEYE** of the department of geography, federal university of technology, Minna and have neither copied someone's work nor have someone else done it for me .

credit has been given to writers whose works have been referred to in the project.



RABIU HADIZA

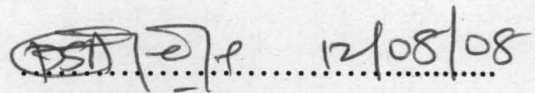
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CERTIFICATION

This thesis titled: **Assessment of Deforestation in Federal Capital Territory, Abuja, Nigeria** by: **Rabiu, Hadiza (M.Tech/SSSE/2005/1382)** meets the regulations governing the award of the degree of M.Tech. of the Federal University of Technology, Minna and is approved for its contribution to scientific knowledge and literary presentation.

Dr. P.S. Akinyeye

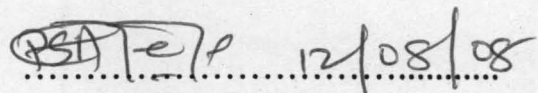
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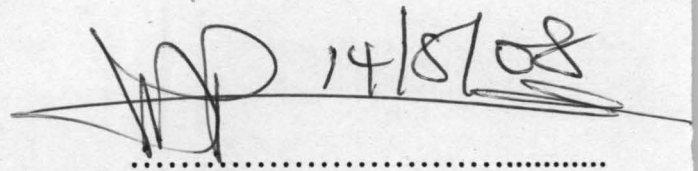
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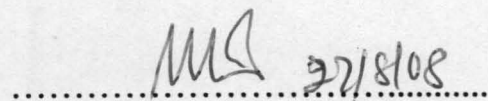
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ABSTRACT

The problem of deforestation locally, nationally and globally poses a serious threat to our survival on the earth surface.

The theme of this research work is to carefully analyze in precise and concise form the causes and effects of deforestation in the Federal Capital City with the sole aim of providing realistic and practicable solutions to them.

The sources of data for this research work include questionnaires, reconnaissance surveys, in- depth study of research works of reputable authors and official documents i.e. maps from Federal Capital Authority (FCDA) and Abuja Municipal Area Council (AMAC).

Through my investigations and analysis, I was able to deduce to that the major causes of deforestation in Federal Capital City include provision of houses, infrastructures, population pressure, urbanization, sourcing for and cultivation of land.

Possible and practicable solutions such as reclamation programmes were proffered in an attempt to reduce the trend and scenario of this threatening deforestation in the study area i.e. Federal Capital City.

TABLE OF CONTENTS

| | |
|------------------------|-----|
| Dedication ----- | i |
| Declaration ----- | ii |
| Certification ----- | iii |
| Acknowledgement ----- | iv |
| Table of Content ----- | v |
| Abstract ----- | vi |

CHAPTER ONE

| | |
|---------------------------------|-------|
| 1.0 Introduction ----- | 1 |
| 1.1 Background ----- | 1 |
| 1.2 Problem Statement ----- | 2 - 3 |
| 1.3 Aims and Objectives ----- | 3-4 |
| 1.4 Justification ----- | 4 |
| 1.5 Study Area ----- | 5 |
| 1.5.1 Geology ----- | 5 |
| 1.5.2 Climate ----- | 5 |
| 1.5.3. Vegetation ----- | 6 |
| 1.6 Scope and Limitation. ----- | 7 |

CHAPTER TWO

| | |
|--|--------|
| 2.0 Literature Review ----- | 8 - 13 |
| 2.1 Deforestation Globally ----- | 13 |
| 2.2 Deforestation in Nigeria ----- | 16-17 |
| 2.3 Deforestation in the Federal Capital City. ----- | 18-22 |

CHAPTER THREE

| | |
|--|----|
| 3.0 Research Methodology ----- | 25 |
| 3.1 Design of study ----- | 25 |
| 3.2 Sources of Data ----- | 25 |
| 3.2.1 Administration of Questionnaires ----- | 25 |
| 3.2.2. Reconnaissance Surveys ----- | 26 |
| 3.2.3 Personal Interviews ----- | 26 |
| 3.2.4 In-depth study of Research works ----- | 27 |
| 3.3 Presentation and Data Analysis ----- | 27 |

CHAPTER FOUR

| | |
|---|-------|
| 4.0 Causes of Deforestation in the Federal Capital City ----- | 43 |
| 4.0.1 Population Pressure and Urbanization ----- | 43 |
| 4.0.2 Provision of Accommodation and Infrastructural Facilities ----- | 43-44 |
| 4.0.3 Demand for fuel-wood/Firewood ----- | 45-46 |
| 4.0.4 Land Clearance for Cultivation and Bush Fire ----- | 46 |
| 4.0.5 High Demand for Timber and Lumbering Activities ----- | 47 |
| 4.0.6 Minor Causes ----- | 47 |
| 4.1 Effects of Deforestation in the Federal Capital City ----- | 47 |
| 4.1.1 Loss of Species, Bio-diversity and Forest Products ----- | 47 |
| 4.1.2 Increased Flooding and Soil Erosion ----- | 48 |
| 4.1.3 Desertification and Population ----- | 48 |

| | | |
|----------------------------|--|---------|
| 4.1.4 | Decline in Soil Fertility ----- | 49 |
| 4.1.5 | Distortion of Ecological Balance and Lowering of Water Table ----- | 49 |
| 4.1.6 | Other Effects ----- | 50 |
| 4.2 | Solution to Deforestation in the Federal Capital City ----- | 50 |
| 4.2.1 | Reclamation Programme ----- | 50-51 |
| 4.2.2 | Creation of New Forest and Maintenance of Existing Forest Reserves | 51 |
| 4.2.3 | Legislations----- | 51-52 |
| 4.2.4 | Awareness and Education ----- | 52 |
| 4.2.5 | Provision of Alternative Sources of Energy ----- | 52 |
| 4.2.6 | Improvement in Land Management Systems ----- | 53 |
| <u>CHAPTER FIVE</u> | | |
| | Summary, Conclusion and Recommendations ----- | 57 - 61 |
| References | | |
| Appendix | | |

Table of contents

List of Table

List of Figures

List of plates

List of Tables

- 2.1 Estimated Degradation of Agricultural Land in the World
- 2.2 Forest De-Reservation in some States in Nigeria
- 2.3 Land Use Analysis in Abuja
- 3.1 Questionnaires distribution and response collection
- 3.2 Forestland cleared for construction purposes
- 3.3 Hectares of Land cleared for construction
- 3.4 Types of construction activities
- 3.5 Engagement in any agricultural activity
- 3.6 Types of clearing methods adopted
- 3.7 Hectares of land cultivated
- 3.8 Types of grazing methods
- 3.9 Sources of energy at home
- 3.10 Awareness campaign against deforestation
- 3.11 Awareness of negative consequences of deforestation
- 3.12 Number of forest reserves
- 3.13 Estimate of fuel-wood sold monthly
- 3.14 Burning of vegetal cover
- 3.15 Monthly planting of trees
- 3.16 Increase in population
- 3.17 Urbanization effects on deforestation/de-vegetation
- 3.18 Purchase of fuel-wood/firewood and forest wood
- 3.19 Sources of wood for lumbering activities

List of figures

- 1 Map of Nigeria showing the 36 states and F.C.T
- 2 Map of F.C.T. showing Abuja Municipal Area Council
- 3 Map of Nigeria showing the various types of vegetation
- 1 The average percentage of closed forest cleared in selected tropical countries between 1981-1985.
- 2 Pressure extent of tropical & equatorial rain forest, affected and unaffected by deforestation and calculated extent of deforestation by 2000.
- 3 1978 map of Nigeria using remote sensing technique to show the various types of vegetation
- 4 1995 map of Nigeria using remote sensing techniques to show the effects of desertification
- 3.1 Illustration on types of grazing methods using histogram
- 3.2 Illustration on different sources of energy using histogram
- 3.3 Illustration showing the degree of awareness against deforestation using pie chart

- 3.4 Illustration showing the degree of awareness against the negative consequences of deforestation using pie chart
- 5.1 The Circle of Poverty

List of plates

- 4.1 Kado Housing Estate, Abuja
- 4.2 Devegetated area in Gwarinpa District in quest for provision of infrastructures
- 4.3 Staking of fuel-wood at Jabi Village, Abuja
- 4.4 Lumbering activities at Dei-dei Plank Market, Abuja
- 4.5 Fuel-wood assembled at karmo, Abuja fro domestic use.
- 4.6 Soil erosion in Wuse District caused by deforestation.
- 4.7 A desertified land behind CBN Quarters, Mabushi District, Abuja.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND OF THE STUDY.

Man's inadvertent interaction with the environment particularly in the Federal Capital city presents an interesting paradox. While there is consciousness on the need to protect the environment, man's ever-expanding needs for survival as a component of the biotic environment have caused over-exploitation of the natural resources of the ecological environment in the Federal Capital city.

Today, as human populations increase in the Federal Capital city, interference with the environment becomes very complicated and having far-reaching effects. Infact, the Federal Capital City is approaching a biological collision whose consequences are bound to be disastrous. In a sense, the loss of diversity is the most important process of environmental change because it is wholly irreversible. Many flora and fauna species, which are found in the Federal Capital City are and have restricted ecological amplitude, disappear in the process of uncontrolled exploitation of the city's forestland. We worry about these losses stem from the fact that man is losing a vast proportion of his resources base, the true value of which he may never have known.

Therefore, there should be concerted efforts to check or reverse this negative trend of deforestation.

1.2 PROBLEM STATEMENT

The Federal Capital City biotic resources are being threatened by the following main problems namely: deforestation, displacement and loss of bio-diversity.

Deforestation or de-vegetation is a major global environmental problem and can be defined as the indiscriminate felling of trees, wanton exploitation and clearance of forests in a particular geographical location without any concrete effort to replace them. (by the Author)

Abuja prior to the pronouncement by government as Federal Capital by Decree No.6 of 1976 was a virgin land with a natural thick forest.

Construction work started in 1978 and since that time rate of deforestation has been on the increase in the Federal Capital and the adjoining local councils due to the need to provide accommodation and infrastructural facilities.

Deforestation in Federal Capital City has brought in its wake a host of other environmental problems such as desertification, accelerated soil erosion, pollution, declining soil fertility, loss of bio-diversity, loss of agricultural land, siltation of water bodies, and inability of the forest to regulate the city's climate by absorbing carbon dioxide and returning water to the atmosphere through transpiration (by the Author). It is worth mentioning that all the afforestation projects in federal Capital City and immediate environment started by the defunct Northern Nigeria Government have been abandoned by the successive governments.

The government aforestations project in Zube, Dei-dei, Gwagwa, Jiwa, Idu, Karmo Jabi, Gwarinpa and Katampe in city and Federal Capital Territory need urgent government attention. Infact, some of afforestation

projects have been turned into mechanic workshops in Idu, Jabi commercial outlets in Karmo, religion praying grounds and markets in gwagwa

Also, the lumbering activities in the Federal Capital City forestland are on the higher side. Some of logs of wood are mostly used as electricity poles and for domestic use due to population pressure in these areas occasioned by the sudden and mass movement of civil servants from Lagos to Abuja.

From the foregoing, there is an urgent need for drastic measures to be taken to address the problems of deforestation in the Federal Capital city so that the natural resources in the environment can be harnessed for a sustainable development.

1.3 AIMS AND OBJECTIVES.

The aim of this study is to achieve this aim, the and objectives of the project are:-

- 1 To analyse and assess critically the causes, effects of deforestation on human beings and the environment in the Federal Capital City.
- 2 To proffer adequate solutions to deforestation so that the natural resources in the Federal Capital City can be harnessed to allow for a sound environmental Management and a sustainable development.
- 3 To provide the necessary guidelines for maximum utilization of the natural resources in the Federal Capital City.
- 4 To create the awareness among the people in the federal capital city and alert the Federal government on the inherent dangers of deforestation to human beings and the environment.

- 5 To proffer adequate solutions for the preservation and conservation of flora and fauna in the Federal Capital City for this generation and generations yet unborn.
- 6 To suggest guidelines for improved environmental aesthetics and preservation of areas of unique natural beauty and scenery, for historical or scientific interest.

1.4 JUSTIFICATION

Biological resources are renewable resources, but they are being exploited at the rates that exceed their replacement in the city.

The clearing of land for construction of roads, houses, agriculture, grazing cutting and burning of forests unsustainable logging and fuel-wood collection, urbanization and provision of infrastructural facilities such as telecommunications, drainage have contributed immensely to the problems of deforestation in Federal Capital City.

Due to the other environmental problems created by the deforestation in Federal Capital City, it therefore becomes imperative to critically analyse the causes and proffer adequate solutions or remedies to this globally acclaimed environmental problem.

Therefore, this project apart from proffering adequate solutions to deforestation will also provide guidelines for Abuja to maintain her scenery natural landscape, conservation of the natural environment for the present and future generations.

1.5 STUDY AREA

The study area is the land within the federal capital city consisting of phase one (1) to phase three (3). (fig 1.2)

Phase one consists of Garki 1&II, Wuse I &II, Maitama, Asokoro and Central Business District.

Phase two include Gudu, Durumi, Wuye, Utako, Mabushi, Katampe, Kuku Aba, Jahi and Jabi while phase three consists of Gwarinpa, Karmo (Residential and Industrial) and Idu (Industrial).

1.5.1 GEOLOGY

The study area is underlain by the rocks out crops of Precambrian Basement complex. The complex is mainly of granite oldest, meta-sediments biotic granitic and granodiorites. The biotic granites and granodiorites are introduced into the older rocks. These rocks types are therefore found interwoven.

1.5.2 CLIMATE

The temperature of the study area varies from season to season. The mean annual temperature ranges between 24°C to 27°C and the relative humidity varies between 65% to 85% in July and 25% to 45% in January respectively. Rainfalls normally occur between the month of April to October, which ranges between 1000mm to 2000mm and between November to March, which ranges between 50mm to 250mm.

1.5.3 VEGETATION

The Federal Capital City lies within the guinea tropical Afzelig savanna woodland/deciduous forest consisting of orchard bush. The vegetation is believed to have been derived from forest through prolonged cultivation and annual burning.

The major vegetal cover types are trees, shrubs and grasses. Some of the trees include shea butter, isobalina and baobabs trees. They form covers and attain heights of about 8.15 meters. The grasses are mostly in the class of Rhizomes, which have long roots that enable them survive drought conditions during the dry season.

During the wet season, the grasses sprout and grow rapidly especially the elephant grasses which grow to about 2.5 to 3.2 meters.

1.6 SCOPE AND LMITATION

The scope of this project is limited to the Federal Capital Territory (consisting of phases one to three) though inference was drawn from the project abut similar environmental hazards within the same geo-environmental area. The dearth or unavailability of data maps affected the gathering of materials and data for this project and therefore prevented spatial extension of this research effort.

CHAPTER TWO

2.0

LITERATURE REVIEW

From time immemorial scientists, scholars and academicians of high repute have been making scientific and theoretical statements concerning the interaction of man with the environment.

Human history is said to be “largely written in terms of the struggle between man and nature over the terms of man’s existence” (Barkley and seckler 1972).

According to Ehrlich et al (1970): while the intelligent application of technology fosters human well being directly, a reducible but not removable burden of environmental disruption by the technology undermines well being. This negative burden includes the direct effects of technology’s accidents and effluents on human life and health.

Since deforestation is a globally acclaimed problem, Clerk and Holling (1985) in a historical analysis of environment change since the 2nd World War also made the incisive and gloomy statement: “we are moving into a period of chronic, global and extremely complex syndromes of ecological and economy interdependence. These emerging syndromes hearten to constrain and even reverse progress in human development. They will be manageable- if at all- only with a commitment of resources and consistency of purpose that transcends normal cycles and boundaries of scientific research and political action”.

Also in the word of Ehrlich, et al (1977) “Humanity shares the physical vehicle of earth with an enormous diversity of their living things- plants, animals and micro- organisms”, which constitute a

living web (biological community) encased in a finite physical environment (a biotic element). To survive, member of this living web(including man) must interact with one another, and also with the physical (a biotic) elements and thus creating a state of interdependence.

Di Castri (quoted in price 1990) attempted a historical analysis of the globalization of anthropogenic environmental change and identify four stages namely:

- i) From around A.D. 1500, characterized by biological invasions, the disruption of bio- geographical realms, changing food habits and progressive homogenization of agricultural practices.....”, all of which arose from the migration of Europeans and associated organisms to other continents of the World.
- ii) The period starting from the Industrial Revolution of the second half of the 19th century when “ most of the world’s ecosystems started to experience long distance impacts from increasing industrial and urban societies.
- iii) The period of the 20th century which has been characterized by “the interdependence of market economies, internationally based decision making for resource exploitation, transnational and global transport pollution.
- iv) Contemporary times characterized by changes in the global atmospheric system through man-induced climatic changes in the troposphere ozone layers.

Government, non- governmental and world renowned organizations including some world leaders such as Presidents of

developing and developed countries have also been alerting the entire people of this planet on the dangers inherent in deforestation.

In the United Nations and President Clinton of USA warned on environmental crises especially on the adverse effects of destruction of tropical rain forests.

In the report, the United Nations Environmental Programme, Global Environment outlook 2000 (GEO-2000) stated that the continued poverty of the majority of the planet inhabitants and excessive consumption by the minority are the two major causes of environmental degradation such as deforestation.

The report also recommended that the developed world must cut its use of natural resources by 90% to give the rest of the world a chance to emerge from poverty. The United Nations Food & Agricultural Organization (FAO) according to N/N (03/03/2000) also reported that more than 500 million acres of land in the developing countries were lost to deforestation from 1980 to 1985. This United Nations report also stated that most of the forests cleared for agriculture use cannot sustain agriculture for very long time because the nutrients reside in the vegetation and not in the soil,

N/N (09/03/200) reported that President Olusegun Obasanjo planted a tree to commemorate his visit to India. This is part of the efforts to create awareness and tackle deforestation globally.

Ambassador Hassan Adamu, Nigeria's Minister of Environment was quoted that N2 billion has been earmarked for afforestation projects this year. According to him, the ministry of Environment will focus on the integration of environment into

economic development, reviewing and strengthening existing laws carrying out campaigns for environmental awareness.

Some non- governmental organization such as Nigeria Conservation Foundation (NCF), Environmental Right Action (EAR), Oodua for Nature Conservation (ONAC) have also contributed in creating the necessary awareness on deforestation.

Punch (17/01/2000) reported that Mr. Rotimi Obadofin, Executive Director of ONAC said the Nigeria's policy on afforestation and nature conservation was inconsistent, bias and politicized because there was no uniform environmental policy in the country.

The Examiner (19/03/2000) reported that ERA raise alarm over the level of environmental violation at Odagbo village of Okaba District in Ankpa Local Government, Kogi State due to thee massive destruction of the landmasses resulting to dust pollution caused by the activities of construction companies and depriving the villagers of the use of their farmlands.

All state governments in Nigeria also the annual tree planting exercises to create awareness on afforestation. For example, Punch (26/08/2000) reported that Enugu State Governor, Dr Chimaroke Nnamani planted a tree at Akegbe Ugwu, Nkanu Local Government area of Enugu State to commemorate the tree planted exercise awareness on afforestation.

Punch (03/02/2000) also reported that youth corps member in Niger State, Miss Grace Umoh decried the non-challant attitude of most Nigerians to afforestation and beautification programmes of the government. She urged Nigerians to imbibe the culture of planting

trees and beautifying their environment with flowers to protect the environment against hazards and degradation.

This –day (06/03/2000) reported that the Department Meteorological Services (DMS) of Federal Ministry of Aviation in collaboration with the Nigerian Meteorological Society (NMS) are not lacking behind in advising the Government on the need to fight deforestation and other environmental problems on the new millennium. 2000. at their conference with the theme “climate and Sustainable Development in the next millennium” they urged the Federal Government to strengthen its capability and increase collaboration with relevant institutions in the environmental monitoring. They equally called for the application of agro-meteorological knowledge which is increasingly being required to ensure sustainable agricultural development for food security and poverty alleviation.

The conference also recognized the need for a National Climate Committee as directed by United Nations whose objective of the committee is to develop a National Climate Programme. The conference urged the government to provide adequate funding, necessary legal framework to the agency for effective implementation of programmes and projects needed for carrying out the nation’s objectives of weather forecasting and prediction for public awareness campaign on the impact of climate change and environmental hazards such as deforestation.

The Nigeria Conservation Foundation which pioneered national awareness in Nigeria on conservation, preservation of our natural resources and endangered species has played a major role in creating

awareness on dangers of deforestation to Nigerians and the environment. According to NCF official Newsletter (Vol. 1 No. 1 1999) many seminars, essay competitions were organized for Nigerian to create awareness and for them to imbibe the spirit of conservations.

N/N (09/03/2000) reported the initiative of Savannah Conservation Foundation (SCF) also a non-governmental organization in conserving scarce natural resources in some parts of Northern Nigeria.

According to Mr. Tim Adkin, SCF's Strategic Director, the organization believe in bottom's up approach. He said, "we believe that those who can take good care of the Savanna are those who live in it and are directly affected by the depletion of the ecosystem"

2.1 DEFORESTATION GLOBALLY

Forest covers only $\frac{1}{4}$ of the earth's land surface but research has shown that they contain virtually all living things on land. More than half of all flora and fauna on earth is known to exist in tropical forests. Presently, the greatest rates of deforestation are occurring in the humid tropical and equatorial regions of the world, where the last big forests exist. Infact, the tropical and equatorial rainforests are shrinking at alarming rates because of deforestation and there is little sign of a real slowdown in this destruction.

Humans have cleared forests throughout history. A few thousand years ago, rainforests covered about 14% of the land's surface, whereas today they cover only 7%. Major forests once covered most of central Europe, but during the 11th century a major phase of deforestation began which within 200 years almost cleared most of the forests in Europe. Similarly, in North America before the colonialists arrived, forests occupied

some 170 million hectares between Mississippi and the Atlantic seaboard and today only about 10 million hectares remain.

In 1981, the United Nations estimated that 1/5 of the rainforest then existing would be destroyed by the end of last century. Also in a study, the Food and Agricultural Organization of the United Nations (FAO) 1992, the most thorough to date and involving satellite and aerial photograph reconnaissance in 88 countries, it was estimated that the rain forests are disappearing at the rates of one acres per second, equivalent to the combined size of England and Wales being lost annually.

This annual rate of destruction is running at 50% more than a decade ago, half of which is taking place in Africa and Latin America where more than 20 million acres of rainforest are devastated annually. Increasing human demand on forests via agricultural expansion, construction of houses, roads, ranching, logging and over-exploitation for fuel wood (source of energy for half of the world's population) is however, destroying areas nearly the size of the United Kingdom every year.

In tropics generally, ten(10) trees are being cut for every one(1) planted, in Africa this rate is twenty-nine(29) to one (1). About a decade ago, Ethiopia had a 30% forest cover, 20 years ago it was down to 4% and today it is less than 1%.

Last century, India's forests covered more than half of the country but today there are a mere 10% and are disappearing fast. From 1974-1994, it was estimated that 1,600 million people will be added to the world's population while about 960 million will be added within 1990-2000 (N/N 08/03/2000) .Thus, while there is a massive decline in resources and world's production there is an upsurge in the world's population. These rich

and complex ecosystems their unique biological compounds often of great medical value.

There are many interwoven complex local issues involved in deforestation of the tropical rain forests. Land owners and others involved in exploiting the rainforests for a quick profit have concern for the environment. For example in Columbia, S/America large amount of tropical rainforests are cleared by drug barons to grow coca which produce cocaine and crack to harvest poppies for heroin. The short-term profit is simply enormous, with profit mark- up of around 4,000% between Columbia and London. One of the problems in trying to slow the rate of deforestation in the rainforests are in less-developed countries, many of which are in conflicts or at war with adjacent countries.

Fig. 2.1 shows average percentage of closed forest (i.e. without open spaces cleared in selected tropical countries between 1981-1985).

Unfortunately, the economy of most of these countries is dependent to a large degree on the exploitation of the rainforests. For example, one of the destructive projects in Brazil which decimated over 2,000km² of her rain forest is the construction of a reservoir and hydro-electric power at Tucuruí in the Amazon. Brazil believes this will help reduce its expenditure and dependence on fossil fuels needed to produce electricity, which constitutes a major part of Brazil's budget. The Brazilians government plans larger projects for the future which will devastate even more of their rainforests.

In fact, Brazil alone may be losing more than eight (8) million hectares of rainforests and part of the problems globally is that little or no effort is invested in reforesting cleared portions. Deforestation has also destroyed most of the unique trees and shrubs on St. Helena and tiny Island in the south Atlantic.

GRAPH

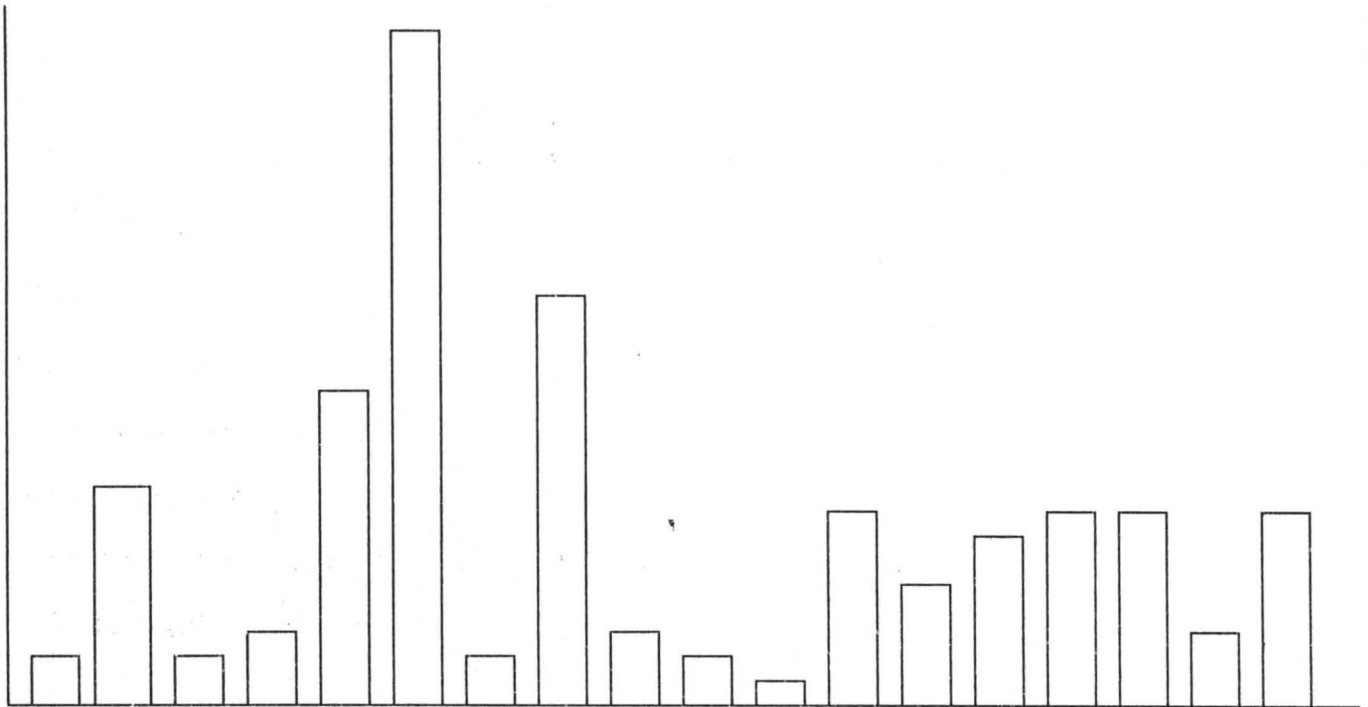


Fig. 2.1 the average percentage of closed forests (i.e. without open spaces) cleared in selected Tropical countries between 1981-1985 with data supplied for the most recent years.

Source: Field work 2007.

Table 2.1 Estimated Degradation of Agricultural Land in the World

| COUNTRIES | SLIGHT | MODERATE* | SEVERE** | TOTAL |
|---------------|--------|-----------|----------|-------|
| Africa | 60 | 23 | 17 | 100 |
| Asia | 56 | 28 | 16 | 100 |
| Australia | 38 | 55 | 7 | 100 |
| Europe | 69 | 25 | 6 | 100 |
| North America | 70 | 23 | 7 | 100 |
| South America | 73 | 17 | 10 | 100 |

Source: Field work, 2007

Source: World Watch Institute (1990) State of the world, Washington, DC in Salau, 1993

Key: * reduction in potential yield of 10%- 50%

** reduction in potential yield of more than 50%

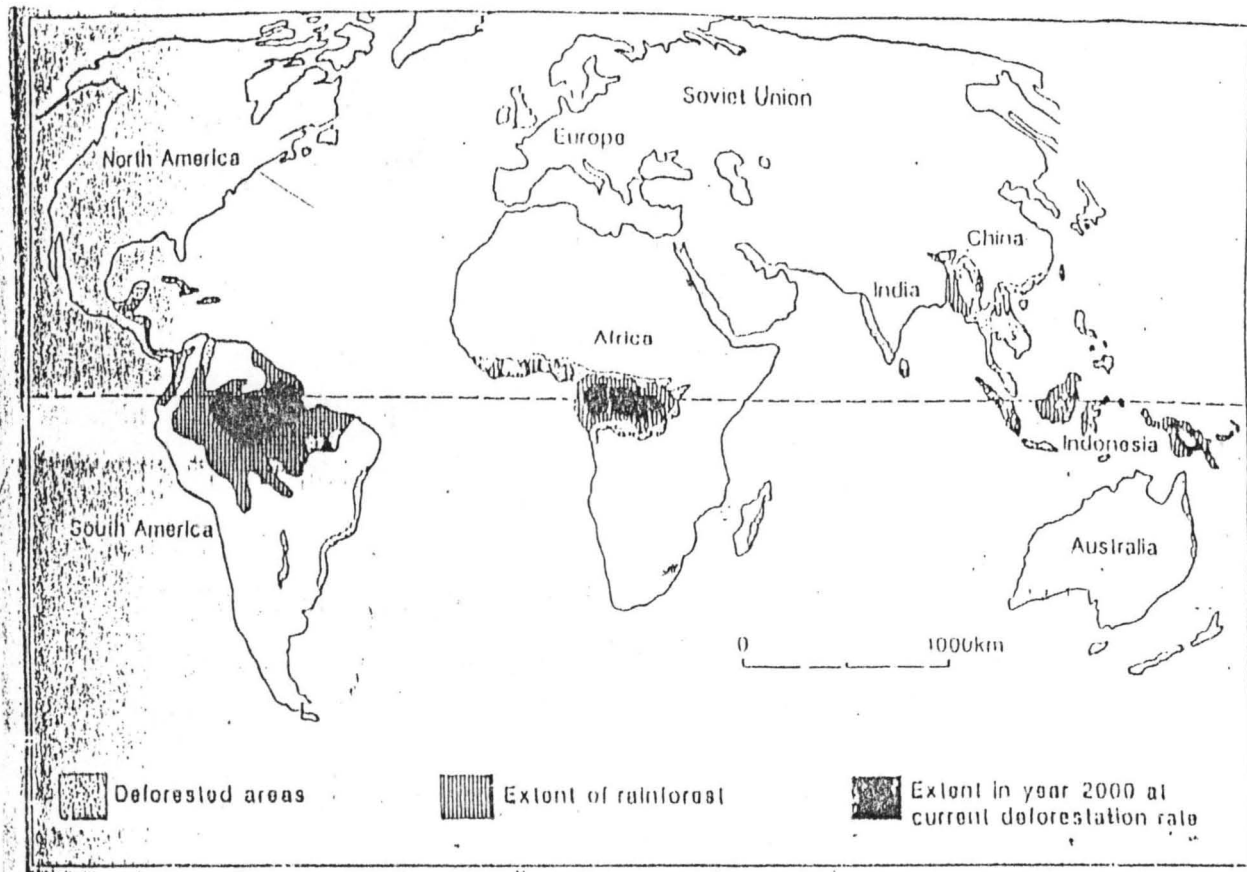


Fig. 2.2 The present extent of tropical and equatorial rainforests, affected and unaffected by deforestation and calculated extent of rainforests by the year 2000 if current levels of deforestation continues.

Source: by the author

2.2 DEFORESTATION IN NIGERIA

The area of the Republic in Nigeria is 913,072.64 sq. km. It's greatest length from East to West is over 1,120 km and North to South is 1,040 km.

Nigeria's environment is a major source of raw materials for our industrial and agricultural sectors. It is also responsible for absolving the negative production externalities from these sectors and serves various other functions, which support life in the atmosphere, bio-diversity, health, amenities and transportation.

The critical problem is that in most instances, the environment is assumed to be available at no cost with unlimited absorptive capacity and therefore can be degraded to very large extent without causing serious threats to it.

The Nigeria environment is passing through difficult periods. Our natural environment is being degraded to unsustainable levels. For instance, deforestation for expansion of our agricultural land causes problems of soil erosion, forest depletion, extinction of natural habitats of many of our wildlife species and so on.

In Nigeria, our resources exploitations to improve our welfare have also exacerbated the nation's environmental problems such as deforestation, infact, the twin problems of satisfying our environmental resources and using our resources to satisfy the needs of other countries is mostly responsible for a number of environmental problems such as deforestation, biological diversity loss, unsustainable agriculture, pollution etc.

It is believe that nearly 40% of Nigeria was originally clad with tropical deciduous forest while the remaining (northern parts) were tropical woodland. It is worth mentioning that Sahel and Savanna did not exist a century ago. Today, only 10% of the rainforests are left in reserves and on

inaccessible highlands, the rest of the original forest zone having been reduced to a patchwork farmlands, rubber, oil palm and cocoa plantations due to the problems of deforestation.

Annually, Nigeria losses 360,000 hectares through deforestation as at 1986 while desert witnessed encroachment (due to deforestation) were estimated at about 15 kilometers per annum. Deforestation for timber, agriculture, urban expansion and industrial purposes account for a total of 10.7 million hectares of tropical forest while another 3.8 million hectares of rainforest land are degraded for agriculture. Clearly, the rate of forest degradation is far more than the rate of reforestation in Nigeria. For example, in Niger State, forest/woodland cover that averaged 60% just two decades ago, was 40% 10 years ago and 30% two years ago. At this rate, it is plausible to say that there may not be woodland cover left in the state by 2020.

Table 2.2 shows the forest de-reservation in some states in Nigeria. In addition to deforestation, desertification and losses in soil productivity (which aggravates poverty in land dependent economies), distortion in fresh water regimes also occurs, further constraining human developmental efforts.

There is a marked decrease of 25.8 % in areas covered by forests and woodlands and increase in cropland, permanent pasture and other kinds in Nigeria. The annual forestation rate is about 2.7% and there has also been a disturbing decline in areas of forest reserves of about 3-5% per year in Kano State, 8-14% in Kaduna and 11-15% Bauchi and 16-21% in Sokoto State.

Figs 2.3 and 2.4 are maps of vegetation of Nigeria in 1978 and 1995 respectively showing the negative effects of deforestation and desertification.

Table 2.2: Forest De-Reservation in some states in Nigeria

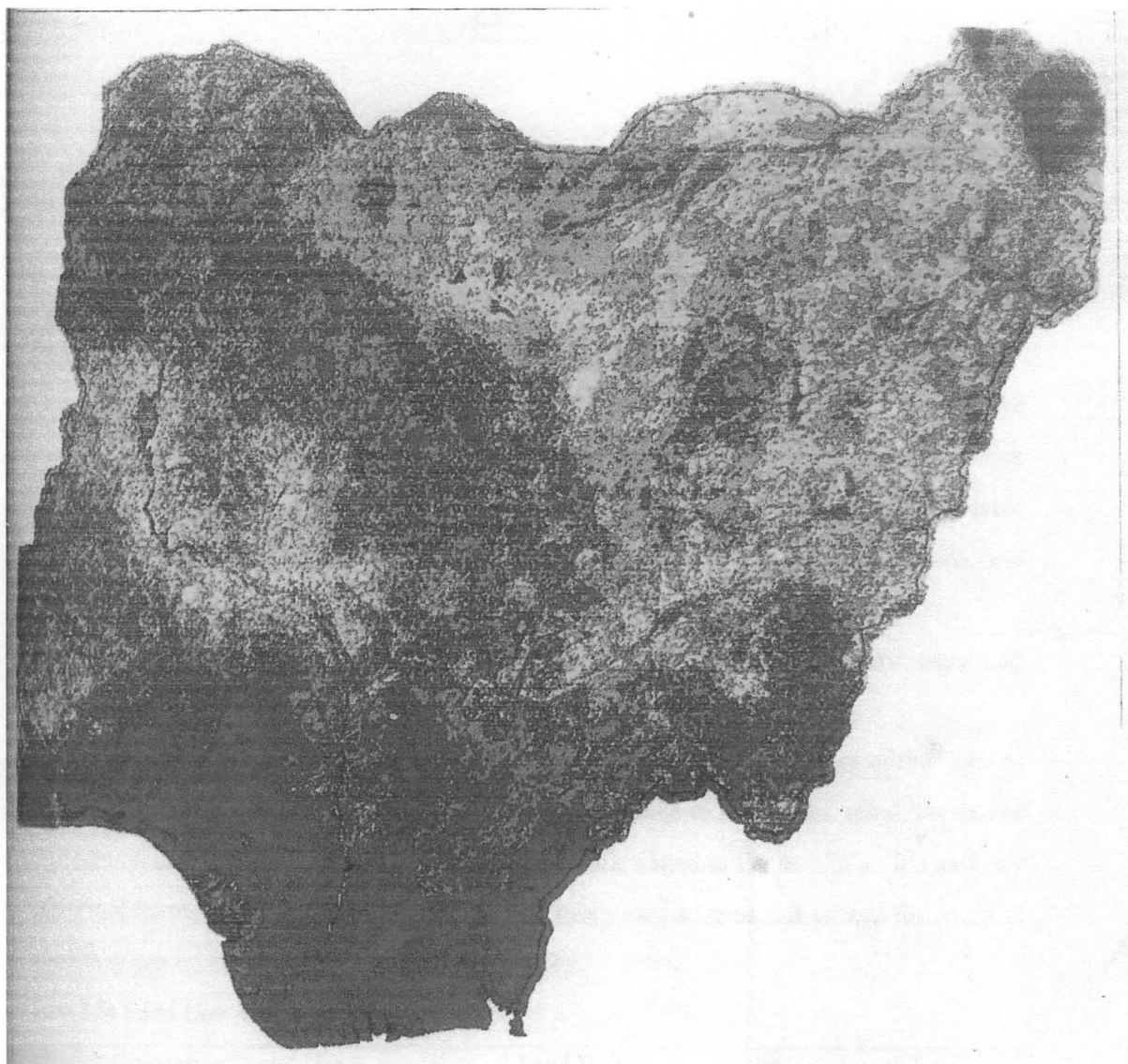
| State | Forest reserve | Gazetted area (Ha) | De-Reserved land (Ha) | Alternative Land Use |
|-------------------------|-----------------|-----------------------|--------------------------|---|
| Anambra | Osomari | 12,098 | 1,500 | Food crop farming |
| | Akpaka | 450 | 100 | Food crop farming |
| | Anambra | 14,575 | 500 | By enclave dwellers |
| Edo & Delta (Bendel) | Okomu | 123,802 | 15,00 | Federal Oil Palm Project & A Proposed National Park |
| | Orile River | 40,033 | (a) 60 | Petroleum Pipeline |
| | | | (b) 19,166 | Food Crop Farming |
| | Iguobazuwa | 26,936 | 1,810 | Cocoa Board Project |
| | Ologholo-Emu | | | |
| | Uma | 14,996 | 145 | Cattle Ranch |
| | Iva-Ada-Obi | 18,002 | 580 | Cattle Ranch |
| | Ogba | 5,517 | (a) 720 | Urban Devt., airport Fed. Sawmill forest Research plot. |
| | | | (b) 1,010 | Food crop farming |
| | Obaretin | 10,800 | 2,849 | Edo oil palm project |
| | Ehor | 29,583 | 8 | Cocoa project. |
| | Ebue | 9,176 | 140 | Food crop Plantation |
| | Sakpoba | 49,210 | 35 | Oil exploration |
| | Ologbo | 19,423 | 1,280 | Oil palm plantation Project |
| Gilli-Gilli | 63,260 | 26 | Oil exploration | |
| Akwa Ibom | Stubbs | 31,080 | 11 | Food crop farming |
| Cross River | Cross River | 10,876 | 10,876 | Food crop farming |
| Imo State | Ubibia | 755 | 106 | Food crop farming |
| | Achare-Ibe | 794 | 300 | Oil palm projects |
| River State | Upper Imo River | 9,696 | 10 | Food crop farming |

Fig 2.3: 1978 Map of Nigeria using remote sensing Technique to show the various types of vegetation.



Source: Field work 2007

Fig 2.4: 1995 Map of Nigeria using remote sensing Technique to show the effects of deforestation and desertification.



Source: field work

2.3 DEFORESTATION IN THE FEDERAL CAPITAL CITY, ABUJA

Abuja is the Federal Capital City of Nigeria having a landmass of about 8,000km². The population is estimated at 30 million people for the year 2000 with great potential for rapid growth.

As earlier stated before the pronouncement of Abuja as the Federal Capital city in 1976 the area was natural thick forest and lies within the guinea tropical savanna woodland which consist of orchard bush and woodland with trees about 10-15m in height. Reports indicated that the Gwaris (original owner of the territory) used the area for farming, hunting and lumbering of firewood for domestic purposes.

At the same time, government afforestation projects span from Zuba to Karu consisting of Deidei, Gwagwa, Idu, Karmo, Jabi and Katampe government forest reserves.

This can be attested to by the sparsely array of trees seen on both sides of Zuba to Katampe expressway. Following the change of status of Abujato a Federal Capital, the rate of deforestation continued unabated since construction work started in the late 70's. it's an irony of fate that these renewable resources (forests) are being used at rates that exceed the speed at which they can be regenerated in Federal Capital City.

Table 2.3: Land Use analysis in Abuja FCT

| S/No | Category of Land Use | Land Budget | Percentage Of Total |
|------|--------------------------------------|-------------|---------------------|
| 1. | Government Activities | 500.00ha | 1.96 |
| 2. | Services | 891.00ha | 3.49 |
| 3. | Residential | 12,486.00ha | 48.97 |
| 4. | Light Industries | 920.00ha | 3.61 |
| 5. | Infrastructures | 1,840.00ha | 7.22 |
| 6. | Commercials | 561.00ha | 2.20 |
| 7. | Open Space & Recreational Facilities | 8,300.00ha | 32.55 |
| | Total Hectares | 25,498.00 | 100 |

Source: field work 2007

Table 2.3 shows the Land Use Analysis in the Federal Capital city indicating the hectares of land that will be cleared for one reason or the other. Despite the negative effects of the land use analysis on the forestland, it is however sad that the land use analysis was not especially in the suburbs and building of houses on open spaces meant for recreational facilities in the urban area of the Federal Capital City.

CHAPTER THREE

RESEARCH METHODOLOGY AND DATA ANALYSIS

This chapter describes the design of study, sources of data and methods of data analysis.

1.0 Research methodology

3.1 Design of study

As stated earlier, this research work is designed to find out the causes, effects of deforestation in Federal Capital City, Abuja and proffer adequate and practicable solutions to solve this environmental problem.

3.2 sources of data

Due to the dynamic and intricate nature of deforestation coupled with time constraints, the following method was used to obtain the necessary data for this research work.

- i. Administration of questionnaire
- ii. Reconnaissance Surveys
- iii. Personal interview
- iv. In-depth study of research works done by some academicians, theorists, professionals and authors.

All the above sources of data gave me the necessary insight and ample opportunity to gather adequate and necessary information needed for this project.

3.2.1 Administration of Questionnaires:

The questionnaires was designed for all citizens living in the Federal Capital City particularly the stake holders which include farmers, civil servants, professionals working in construction companies, villagers and village leaders. In the questions asked, a number of response

options was supplied which have direct and indirect bearing on causes of deforestation in the Federal Capital City. In some areas of the Federal capital City, the questions were translated to local languages for proper and quicker comprehension due to the high degree of illiteracy. Stratified sampling technique was equally used in administration of the questionnaire.

3.3.2. Reconnaissance survey

The reconnaissance surveys entails the physical observation and assessment of man's physical activities on the environment in the city such as cultivation and construction activities. It equally involves watching, evaluating the extent of deforestation and carrying out an inventory of the damage done to the environment.

Apart from given hand information, the reconnaissance surveys also provide ample opportunity to know the problems created by deforestation.

Pictures were also taken to serve as proofs attesting to the problems of deforestation in the Federal Capital city.

3.2.2 Personal Interviews:

All the stakeholders particularly farmers were personally interviewed about all the pertinent problems concerning this study.

Inquisitive and well-formulated questions were asked to allow for detailed information from the targeted group.

This gives more opportunity to get direct and intensive explanation on causes of deforestation in Federal Capital City.

3.2.4. In-depth Study of Research Works:

Since deforestation has a global perspective, books and journals that dwell on deforestation were extensively studied and necessary information needed was extracted from them.

Permission was granted to me by the Federal Capital Development Authority (FCDA) and Abuja Municipal Area Council (AMAC) to make use of some of their official documents such as maps.

3.3 PRESENTATION AND DATA ANALYSIS:

Having carried out the necessary research to acquire the required data, it becomes expedient at this stage to present, analyse and interpret the data and information. The data analysis was based on frequency- percentage method where tabulations, graphs and other statistical data were used to enhance the method. This method of analysis was chosen by me to ensure simplicity, reliability, easy understanding and allow for retentive ease of presentation and interpretation.

One- hundred (100) questionnaires were randomly distributed to relevant people of different professions in the Federal Capital City using a stratified sample technique.

The questionnaires were administrated directly to them and after some days, eighty-two (82) duly completed questionnaires were returned.

Table 3.1: Questionnaires Distribution and Responses Collection.

| Category of people | Number Distributed | Percentage (%) | Number Returned | Percentage (%) |
|--------------------|--------------------|----------------|-----------------|----------------|
| Farmers | 30 | 30 | 25 | 25 |
| Civil Servants | 30 | 30 | 26 | 26 |
| Professionals | 20 | 20 | 18 | 18 |
| Traders Artisans | 10 | 10 | 7 | 7 |
| Unskilled workers | 10 | 10 | 6 | 6 |
| Total | 100 | 100 | 82 | 82 |

Source: Source: field work 2007

From the above, 30% of the questionnaires was issued to farmers and 25 was returned.

Also, 30 questionnaires were issued to civil servants and 26 were both returned duly completed. This represents 26% of the number of questionnaires returned. Furthermore, professionals such as Architects, Engineers, Quantity Surveyors and Builders working in construction firms were issued 20 representing 20% of number distributed, 18 questionnaires were returned 18% of number returned.

Traders, Artisans and Unskilled workers were issued with 10 questionnaires each of these; I received 7% and 6% responses respectively.

Do you clear forest/vegetation for construction purposes?

To know the number of percentage of people involved in clearing forestlands for construction purposes.

Table 3.2: forestland cleared for construction purposes

| Options | Frequency | Percentage (%) |
|---------|-----------|----------------|
| Yes | 64 | 78 |
| No | 18 | 22 |
| Total | 82 | 100 |

Source: Source: field work 2007

From the table, it shows that 78% of the respondents clear vegetation for construction and this is one of the causes of deforestation in the federal Capital City.

How many hectares do you or your organization clear for construction purposes?

This question was aimed at indicating the amount of vegetation cleared for construction purposes in the Federal Capital City.

Table 3.3: Hectares of land cleared for construction purposes

| Options | Frequency | Percentage (%) |
|---------------|-----------|----------------|
| Five hectares | 10 | 12 |
| >5<20 | 60 | 73 |
| >20 hectares | 12 | 15 |
| Total | 82 | 100 |

Source: field work 2007

Form the table, it shows 73% of the respondents clear more than five but less than twenty in one of construction or the other.

The overall effect of this destruction on Federal Capital City forestland is dangerous.

What type of construction activities was carried out?

This question was aimed at knowing the major types of construction activities carried out in the Federal Capital city.

Table 3.4: Hectares of land cleared for construction purposes

| Options | Frequency | Percentage (%) |
|-----------------------------|-----------|----------------|
| Building of Houses | 24 | 29 |
| Provision of infrastructure | 8 | 10 |
| All of the above | 50 | 61 |
| Total | 82 | 100 |

Source: field work 2007

From the above table, 61% of the respondents indicated that building of houses and themselves or the organizations carry out provisions of modern infrastructures where they work. This definitely has a lot of impact on the forest land in the federal Capital City.

Do you engage yourself in any agricultural activities?

Table 3.5 shows the number and percentage of people involved in agricultural activity which show the effects on the rate of deforestation in the Federal Capital City.

Table 3.5: Engagement in any agricultural activity

| Options (Agric) | Frequency | Percentage (%) |
|-----------------|-----------|----------------|
| Yes | 60 | 73 |
| No | 22 | 27 |
| Total | 82 | 100 |

Source: field work 2007

For the table, 73% of the respondents engaged themselves in agricultural activities. Some as full-time farmers while the others do it as part-time to support their salaries. The engagement of this percentage (73%) surely has negative impact on the forestlands in the Federal Capital City.

What clearing method do you or your organizations use?

Table 3.6 shows or indicate the percentage of soil disturbance and extent of forestland cleared in the Federal Capital City.

Table 3.6 Types of clearing methods adopted

| Options (clearing methods) | Frequency | Percentage (%) |
|----------------------------|-----------|----------------|
| Mechanical | 50 | 61 |
| Manual | 22 | 27 |
| Burning | 10 | 12 |
| Total | 82 | 100 |

Source: field work 2007

From the table, 61% of the respondents use mechanical system in clearing their land. The impact of their activities on land is devastating because it can lead to increase in soil infertility, erosion and thereby having direct bearing on the existing vegetation in the Federal Capital City

Table 3.7 shows the proportion of lands used for agriculture.

Table 3.7 Hectare of land cultivated

| Options (amount of land) | Frequency | percentage |
|--------------------------|-----------|------------|
| < 5 hectares | 12 | 15 |
| >5< 10 hectares | 10 | 12 |
| >10<30 hectares | 60 | 73 |
| Total | 82 | 100 |

Source: field work 2007

From above, 73% of respondents cultivated more than ten hectares of land and less than thirty hectares of land. The cultivation of forestland from the table clearly attests to the rate of deforestation in Federal Capital City through cultivation of forestland.

Types of grazing methods

This is aimed at knowing the effects of grazing on the Federal Capital City forestland

Table 3.8 Types of grazing methods

| Options (Agric) | Frequency | Percentage (%) |
|-----------------|-----------|----------------|
| Zero-Grazing | 12 | 15 |
| Free Grazing | 61 | 74 |
| Semi Grazing | 9 | 11 |
| Total | 82 | 100 |

Source: field work 2007

From the table, 61 respondents or 74% of the respondents use free grazing method in feeding their animals

This method is the release of animals mostly cows to graze freely and this is one of the causes of deforestation in the Federal Capital City.

The zero-grazing is the feeding and keeping of animal indoors or in a restricted area within a compound, while the semi-intensive is the combination of both methods of grazing. 15% and 11% of the respondents use the zero -grazing and semi intensive respectively.

Sources of energy at home

The sources and domestic use of energy at home is one of the basic causes of deforestation in Federal Capital City as seen in the analysis of the table below.

Table 3.6 Types of clearing methods adopted

| Options (Agric) | Frequency | Percentage (%) |
|-----------------|-----------|----------------|
| Gas | 5 | 6 |
| Fuel –wood | 61 | 74 |
| Kerosine | 12 | 15 |
| electricity | 4 | 5 |
| Total | 82 | 100 |

Source: field work 2007

From the table, 74% of respondents make use of fuel wood as the source of energy for their domestic use, 5 respondent or 6% make of gas; 12 respondents or 15% of respondents use kerosene while 4 representing 5% make use of electricity.

From the analysis, it is very glaring that the urge for fuel-wood is a major cause of deforestation in Federal Capital City.

Awareness Campaign against deforestation

A well formulated campaign against deforestation in the Federal Capital City will surely discourage people from indiscriminate cutting down of trees

Table 3.10 Awareness campaign against deforestation.

| Options (Awareness) | Frequency | Percentage (%) | Degree |
|---------------------|-----------|----------------|------------------|
| Yes | 10 | 12 | 44 ⁰ |
| No | 72 | 88 | 316 ⁰ |
| Total | 82 | 100 | 360 ⁰ |

Source: field work 2007

From the surveyed data above, 88% of the returned questionnaires are not aware of the current local, national and global campaign against deforestation while only 12% are aware.

A good formulated; implemented policy and campaign against deforestation is one of the anti-dotes necessary to solve problem of deforestation in the Federal Capital City

Awareness of Negative consequences of deforestation

The creating of necessary awareness will be a great weapon and means of fighting deforestation in the Federal Capital City.

Table 3.11: Awareness of negative consequences of deforestation.

| Options (Awareness) | Frequency | Percentage (%) | Degree |
|---------------------|-----------|----------------|--------|
| Yes | 9 | 11 | 40 |
| No | 73 | 89 | 320 |
| Total | 82 | 100 | 360 |

Source: field work 2007

From the table, 73 respondents representing 89% are not aware of any negative consequences while 9 or 11% are aware.

From the foregoing, it can be that many people are not aware of the negative consequences of deforestation hence the need for the awareness programmes to enlighten and educate the people

Number of forest reserve in Federal Capital City

The creation of more forest reserve is necessary in replenishing the continued lumbering exercise taken place in Federal Capital City.

Table 3.12 Number of forest reserves.

| Options (Number) | Frequency | Percentage (%) |
|------------------|-----------|----------------|
| 2 | 10 | 12 |
| >2<5 | 52 | 63 |
| Nil | 20 | 25 |
| Total | 82 | 100 |

Source: field work 2007

From the above 52 respondents representing 63% agreed that the forest reserves in Federal Capital City are more than two but less than five.

With the rate of deforestation going on in the city, the rate of demand for forest wood clearly outweigh the rate of supply hence this has a effect of the forestland.

Estimate of fuel-wood sold monthly.

The commercial sales of fuel-wood have a lot of impact on deforestation in the Federal Capital City.

Table 3.13: Estimate of fuel –wood sold monthly.

| Options (Estimate) | Frequency | Percentage (%) |
|-----------------------|-----------|----------------|
| 10 pick-up loads | 14 | 17 |
| >20<50 pick –up loads | 58 | 71 |
| >50 pick-up loads | 10 | 12 |
| Total | 82 | 100 |

Source: field work 2007

From the table 58 respondents representing 71% sell fuel-wood more than 20 pick-up loads but less than 50 while 14 respondents representing 17% sell 10 pick-up loads monthly.

10 respondents representing 12% sell more than 50 pick-up loads every month. From the analysis, it shows that the sale of fuel-wood is a contributory factor to deforestation in Federal Capital City.

Burning of Vegetal cover

This practice of burning of vegetation cover is very common in Federal Capital City and the consequences have been devastating on agricultural products. Infact, it is the fastest rate of soil degradation.

Table 3.14 Burning of Vegetal Cover

| Options (Burning) | Frequency | Percentage (%) |
|-------------------|-----------|----------------|
| Yes | 62 | 76 |
| No | 20 | 24 |
| Total | 82 | 100 |

Source: field work 2007

From the table, 62 respondents 76% burn the vegetal cover while 20 respondents representing 24% do not burn vegetal cover.

This burning of vegetal cover also contributes to deforestation as attested to by the analysis.

Monthly Planting of Trees

The general attitude of people gives an opportunity in assessing their consciousness of problems relating to deforestation in the Federal Capital City. Table 3.15 Monthly planting of trees

| Options (Planting) | Frequency | Percentage (%) |
|--------------------|-----------|----------------|
| Nil | 68 | 82 |
| one | 10 | 12 |
| two | 4 | 6 |
| Total | 82 | 100 |

Source: field work 2007

From the table, 68 respondent representing 82% do not plant trees, 10 respondents representing 12% plan one tree monthly while 4 respondent representing 6% plant two trees monthly.

Therefore, one can deduce that tree planting which is one of the solutions to deforestation is not popular among the people living in the Federal Capital City.

Increase in population of Federal Capital City

This question was aimed as knowing the effects of increase in population in relation to deforestation in the Federal Capital City.

Table 3.16 Increase in population

| Options (Increase) | Frequency | Percentage (%) |
|--------------------|-----------|----------------|
| Yes | 78 | 95 |
| No | 4 | 5 |
| Total | 82 | 100 |

Source: field work 2007

From the above, 78 respondents representing 94% believed that increase in population of Federal Capital City contributed to the high rate of deforestation while 4 respondents representing 6% do not believed so.

Urbanization effects on deforestation

This becomes necessary in order to know the adverse effects of urbanization on deforestation in Federal Capital City.

Table 3.17 NUrbanization effects on deforestation.

| Options (Number) | Frequency | Percentage (%) |
|------------------|-----------|----------------|
| yes | 74 | 90 |
| No | 8 | 10 |
| Total | 82 | 100 |

Source: field work 2007

From the above, 74 respondents representing 90% believed that urbanization is one of major causes of deforestation while 8 respondents representing 10% don't believed that urbanization is one of the causes of deforestation in Federal Capital City. But it can be confirmed from the analysis that urbanization is one of the causes of deforestation in Federal Capital City.

Purchase of fuel-wood/fire wood and forest wood

Payment of fees for cutting trees will drastically reduce the scale of collection of fuel wood in Federal Capital City. When people go into the forest to indiscriminately cut down trees without paying any fee have worsen the problem of deforestation in Federal Capital City.

Table 3.18 purchase of fuel-wood/fire wood and forest – wood.

| Options (Purchase) | Frequency | Percentage (%) | degrees |
|--------------------|-----------|----------------|---------|
| Yes | 5 | 6 | 22 |
| No | 77 | 94 | 338 |
| Total | 82 | 100 | 360 |

Source: field work 2007

From the table, 77 respondent representing 94% do not pay any fees before cutting trees while 5 respondents representing 6% pay before cutting trees. This analysis attests to the high rate of deforestation in Federal Capital City because people do not pay anything for cutting down trees, for domestic, agricultural and industrial uses.

Source of wood for lumbering activities

Lumbering activities going on in Federal Capital City is equally for one of the causes of deforestation.

Table 3.19 Sources of wood for lumbering activities

| Options (sources) | Frequency | Percentage (%) | degrees |
|--------------------------|-----------|----------------|------------------|
| Forest Reserve in FCC | 70 | 85 | 307 ⁰ |
| Other places outside FCC | 12 | 15 | 53 ⁰ |
| Total | 82 | 100 | 360 ⁰ |

Source: *field work 2007*

70 people representing 85% use the forest reserve within Federal Capital city for lumbering activities while 12 people presenting 15% use other places.

The effects of their activities on the forestland are also responsible for the high rate of deforestation in the Federal Capital City

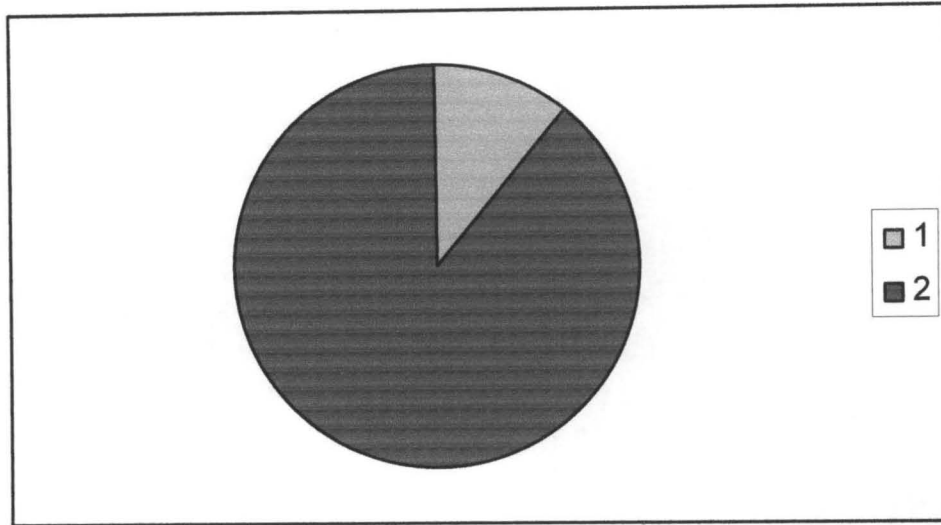


Fig 3.1: Illustration showing the degree of awareness against deforestation using pie chart.

Source: field work 2007

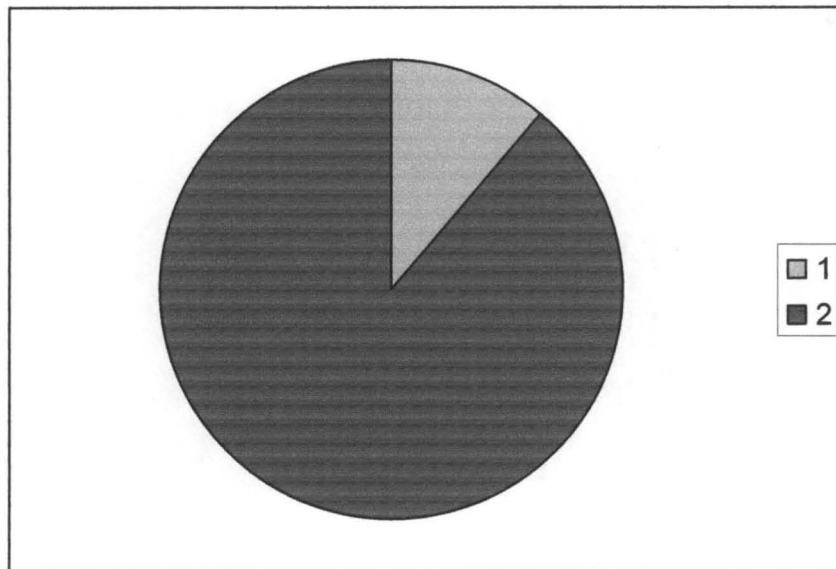
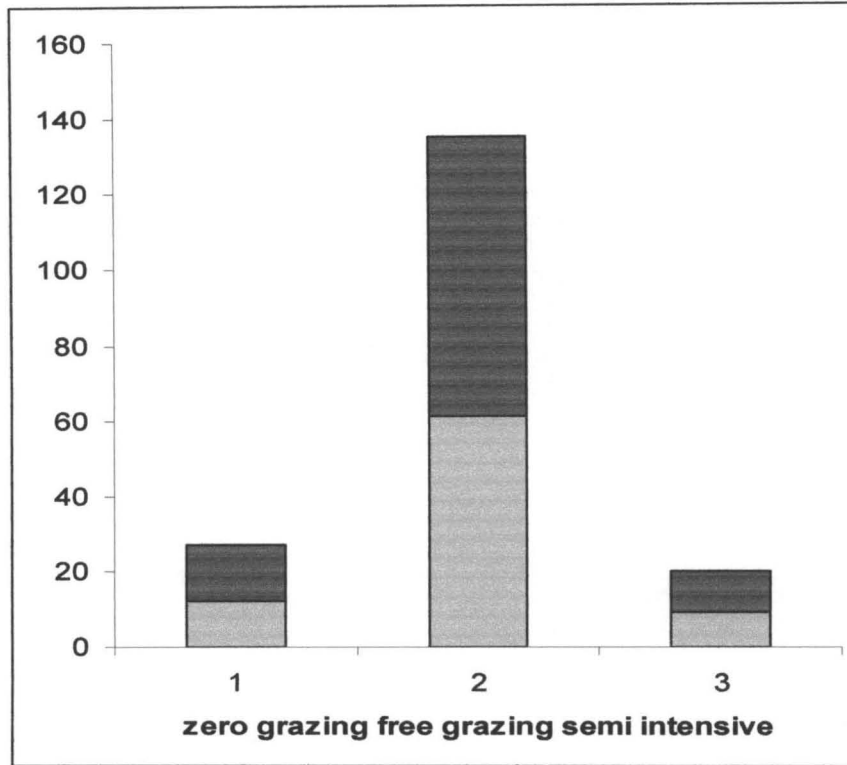


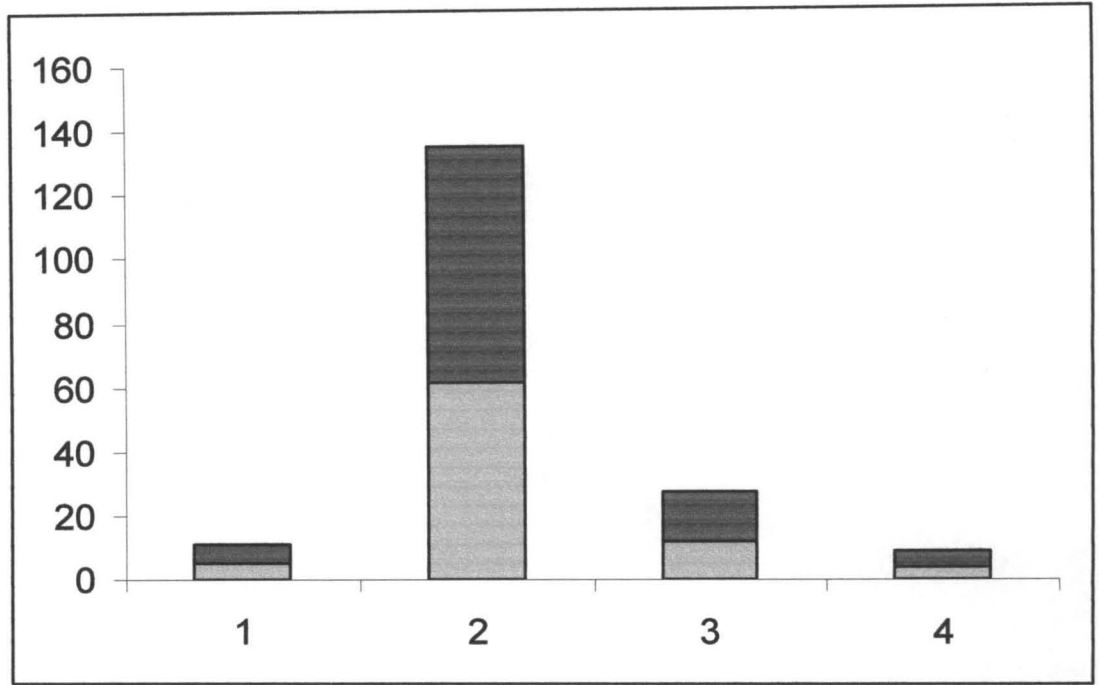
Fig 3.1: Illustration showing the degree of awareness against negative consequences of deforestation using pie chart.

Source: field work 2007



Options (Grazing System)

Fig 3.1: Illustration on Types of Grazing methods using histogram



Options (sources of Energy)

Fig 3.2 Illustration on different sources of energy using histogram

Source: field work 2007

CHAPTER FOUR

METHODOLOGY

4.0 Causes of Deforestation in the Federal Capital City.

Based on my findings and analysis in Chapter Three, the causes of deforestation in Federal Capital City are population pressure, provision of infrastructural facilities, cultivation of crops provision of fuel –wood/fire wood, construction of buildings, timber harvesting and lumbering, urbanization and bush fires. Other minor causes include over-grazing, medicinal, construction of mechanical, block moulding, car washing workshops and religious outlets.

4.0.1 Population Pressure and Urbanization

The rise in population of Federal Capital City is the most important causing large scale deforestation in the city which has been urbanized due to the change in Abuja status. Other factors are either directly or indirectly linked to population pressure.

The population pressure on land is as a result of increasing demand for food, wood, fibre, fuel, cultivable and pastoral land, housing and others. This has equally endangered the lives of certain species and survival of some ecotypes in the Federal Capital city. Cities such as Abuja are centres of power and privileges especially throughout the third World. The impact on the cities of accelerated population growth normally result in desperate need for extra amenities including schools, housing and other things necessary to sustain life.

4.0.2 Provision of Accommodation and Infrastructural Facilities

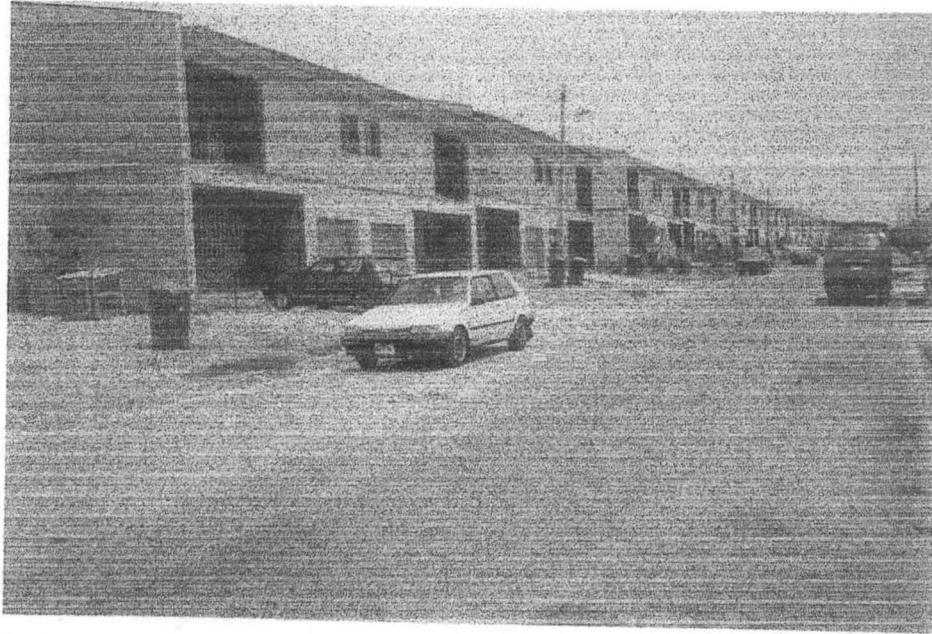
The provision of accommodation and infrastructural facilities have contributed in no small measures to deforestation in the Federal capital City.

Due to the change of Abuja status as the new Federal Capital, there was urgent need to provide the city with good housing estates and necessary infrastructures such as roads, electricity, telecommunications, model markets, drainage and sewage systems, pipe-borne water, schools, hospitals, recreational facilities etc.

The Federal Capital Development Authorities (FCDA) and Federal Housing Authority (FHA) have housing estates to cater for the ever-increasing population in the Federal Capital City.

The housing estates include Life Camp, Apo Quarters, Kado, Gwarinpa (under construction) Finance Quarters and a host of others.

Major construction companies such as Julius Berger PLC, Dantata & Sawoe, Aprofim, PW, SCC and Impresit Bakolori also have housing estates for their staff while some individuals are equally building houses to supplement government efforts. Since the provision of accommodation and infrastructures are necessary to enhance the Federal Capital City's status, the effects and impact on the city's forestland has been devastating as clearly shown in my analysis.



Place 4.1: Kado Housing Estate, Abuja.

4.0.3 Demand of Fuel-wood/Firewood plates

The demand for fuel-wood/firewood is another factor accelerating deforestation in Federal Capital city since it is one of the cheapest sources of energy for domestic purposes.

As the federal Capital City's population increases, more energy is needed for domestic purposes such as cooking of food for domestic purposes, baking bread, heating water and ironing of clothes.

The bulk of this biomass energy used is derived from forest products in the form of either wood or charcoal. In fact, the massive resort to the use of firewood as cooking fuel has further decimated the endangered forests and causing an unmeasurable damage to the fragile ecology of the Federal Capital City.

The low-income levels of the people coupled with high cost and scarcity of cooking gas also preclude the large scale of firewood in the Federal Capital City.

4.0.4 Land Clearance for Cultivation and Bush Fire.

In the federal Capital City, the process of deforestation is of great importance in the large scale clearance of the land for cultivation due mainly to ever increasing population and the need to feed them. The level of disturbance associated with such land use is high and was clearly shown in my data analysis.

Forest degradation by bush fires also accelerates deforestation in the Federal Capital City. Some of the fires are started accidentally but others are started deliberately.

Thick forests, woodlands with under storey grasses near main roads and footpaths in the Federal Capital City are most prone to accidental fires than other vegetation types.

Accidental fires may result from agricultural uses, cigarettes, rubbish tips, children playing with fire, campfires and arson.

Farmers can also deliberately set fire on patches of land in the Federal Capital City to manipulate the vegetation i.e. to eliminate the weed from pastures and hunting for animals (bush meat).

4.0.5 High Demand for Timber and Lumbering Activities

The insatiable demand for timbers used for construction and commercial purposes in Federal Capital City have direct impact on deforestation of the forestland.

Due to the increase in population there have also been corresponding increases in demand for planks used in furniture making, doors, windows and for other construction purposes. Some logs of wood are equally used for

electrification purposes. Infact, the continuous lumbering activities taken place ay Dei-dei planks market has led to loss of bio-diversity, different species and forest products through devegetation in Federal Capital City's forestland.

4.0.5 Minor Causes

Other minor causes of deforestation in the Federal Capital City include over-grazing, construction of mechanical, block moulding, car washing workshops, building of religious outlets, felling of trees for medicinal purposes and extraction for honey.

4.1 Effects of deforestation n Federal Capital City.

Having carefully traced the causes of deforestation through my data analysis, it has become imperative to itemize the multiple effects of deforestation in the Federal Capital City. The consequences of deforestation in the Federal Capital City are diverse with various environmental and economic implications.

It has led to the loss of forest products i(both timber and non-timber products), uncontrolled flooding and erosion, aggravation of desertification and pollution, higher rates of siltation, of streams, decline of biological diversity and acceleration of extinction of the Federal Capital City's flora and fauna.

4.1.1 Loss of Species, Bio-Diversity and Forest Products

Due to the need to provide good houses, infrastructures such as good roads, houses for the ever increasing population of the Federal Capital City has led to loss of different species, bio- diversity and forest products through devegetation.

The Federal Capital City forestland, which used to be exceptionally rich in species and genetic diversity as countless flora and fauna with economic and medicinal values, has been lost to deforestation.

4.1.2 Increased Flooding and Soil Erosion

Clearing of large areas of forestland in the Federal Capital City has resulted to the large scale of Flooding with the antecedent result of gully soil erosion.

In the Federal Capital City, the increased rate of water flow over any de-vegetated land surface usually lead to an increase in the magnitude and frequency of flooding, soil erosion, increased sediment loads in rivers and slope instability because there is no vegetation cover to impede the flow of water.

This is noticeable in Minister hill area of Maitama, Wuse and Kado Housing Estate in Gwarinpa District where steep slopes (due to deforestation) has led to intense soil erosion.

This in turn has increased the sediment loads in adjoining streams thereby causing siltation of streams and river beds.

4.1.3 Desertification and Pollution

Desertification and pollution are both direct effects of deforestation in the Federal Capital City. Desertification is the reduction or destruction of the land's biological potential resulting in the appearance of desert-like conditions. Due to the activities of man, some areas are gradually showing desert-like condition in the Federal Capital City. A very good example of a desertified land in Federal Capital City is the large expanse of land behind Central Bank quarters, Mabushi district along Nnamdi Azikwe Road as clearly shown in plate 4.7

The vegetation in this portion of land has been desertified due to deforestation and activities of block making outlets.

Deforestation has also increased the rate of environmental pollution (i.e. wind, water and dust). For example, the wind can easily blow off the top soil due to the increasing activities of construction companies and lack of vegetal cover. This has resulted in diseases such as schistosomiasis, asthma, bronchitis and other air and water borne related disease in the Federal Capital City.

4.1.4 Decline in Soil Fertility

From my data analysis coupled with reports from farmers in the Federal Capital City clearly shows that the decline soil fertility in the Federal Capital City is a direct effect of deforestation. Since the rapid degradation of the forest soil accompanies deforestation, the nutrients are washed away by rain and the organic compounds are no longer replaced in the soil thereby causing soil fertility. This has finally resulted in low yields of agricultural products.

4.1.5 Distortion of Ecological Balance and Lowering of Water Table

Human pressure (such as deforestation) on natural ecosystems is incompatible with the survival of certain species and ecosystems in the forestland of the Federal Capital City. Infact, some plant species are known to be very specialized in their habitat use range, exhibiting restricted ecological amplitude and often showing highly localized patterns of distribution.

One of the

Effect of deforestation in Federal Capital City is the upgrading of slums to glorified villagers and towns e.g. Gwagwa, Karmo and Idu.

Due to deforestation coupled with activities of water speculators, the water table in the Federal Capital City has been lowered thereby contributing to the increased in the depth of aquifers, systematic dryness of rivers, streams and a resultant low yield of agricultural products. Therefore, deforestation does not only lower the water table, it equally affect the productivity potentials of plants, eliminates plants species and species habitat in Federal Capital City.

4.1.6 Other Effects

Other effects of deforestation in Federal Capital City include increase in carbon dioxide and temperature of the atmosphere, regulation of nutrient cycles, (e.g. carbon dioxides and photosynthesis) shifting in population, provision of income through the sale of fuel-wood/firewood, increased rate of evaporation and alteration of fluvial (water) competence and capacity.

Summarily, it is worth mentioning that the cumulative effects of deforestation are increased poverty in land dependent economics.

4.2 Solutions to Deforestation in Federal Capital City

In order to solve the problems of deforestation and thereby reducing the negative consequences, I hereby proffer the following feasible and practicable solutions.

4.2.1 Reclamation Programmes

A well structured, formulated and implementable reclamation programmes should be put in place to act as catalyst in reducing and totally eradicating deforestation in the Federal Capital City.

The programmes include afforestation, re-afforestation and immediate replenishment of trees cut down for one reason or the other.

Afforestation is the planting of trees while re-afforestation is the planting of trees in stages. The reclamation programmes should adequately be funded and supported by the government in Federal Capital City so that the objectives of the programmes can be attained.

4.2.2 Creation of New Forest Reserves and Maintenance of Existing Forest Reserves

The government should create New Forest reserves to reduce the problems of deforestation.

Also, the existing forest reserves in Gwagwa, Idu, Karmo, Jabi, Katampe should be well maintained. Situation whereby some of them have been converted to car washing and mechanical workshops should be discouraged. Companies like Julius Berger Plc that engage in furniture making should be discouraged to invest in afforestation projects.

Moreover, selective cutting down of full-grown trees in the reserves should be carried out periodically.

The government through the relevant monitoring agencies should ensure that management of forests outside forest reserves is well coordinated with the activities of forest areas. This is because the present System of harvesting and sale of fuel-wood and timber outside forest reserves is not conducive to the protection and forest resources.

4.2.3 Legislations

The government should as a matter of urgency ensure that well-formulated and enforceable laws are enacted to discourage deforestation in Federal Capital City. A tight control on fuel-wood extracted from the forests should be put in place while the revenue from forest including royalties and charges must be reviewed upwards to reduce abuse and to increase revenue accruing from the exploitation of the forest resources.

4.2.4 Awareness and Education

The creation of necessary public policy of awareness on the consequences of deforestation will surely reduce the rate of deforestation in the Federal Capital City. The creation of adult literacy classes will equally help in this laudable means of educating the inhabitants of the Federal Capital City about adverse effects on deforestation on human beings and the environment in the Federal Capital City.

Environmental education should also be included in curriculum of schools in order to allow students imbibe the consciousness in environmental conservation.

Flyers, leaflets and handbills written in different languages should be distributed periodically to create the necessary awareness. Furthermore, billboards located in strategic places in Federal Capital City will also create awareness on deforestation.

4.2.5 Provision of Alternative Sources of Energy

The provision of alternative sources of energy in domestic use will surely be a good recipe in fighting deforestation in the Federal Capital City. Because there will be a reduction on the pressure on fuel-wood and forest reserves.

Viable renewable energy systems such as solar cookers (box and concentrating parabolic types), solar water heaters, biogas plants, coal stoves, solar dryers, solar chick brooders, photovoltaic power and solar water pumping systems should be made available at affordable prices in order to reduce the rate of deforestation in the Federal Capital City.

4.2.6 Improvement in Land Management System

Appropriate improvements in system of land management will prepare Federal Capital City Forestland to absorb the impact of population pressure thereby reducing deforestation rate.

For example, a vigorous programme of mixed farming could be embarked upon as a way of improving the presently prevalent slash-and-burn cultivation and pastoral nomadism which are highly conflict-prone in Federal Capital City.



Plate 4.2 De-vegetation area in Gwarinpa District in quest for provision of infrastructures.



Plate 4.3: Staking of fuel-wood at Jabi Village, Abuja

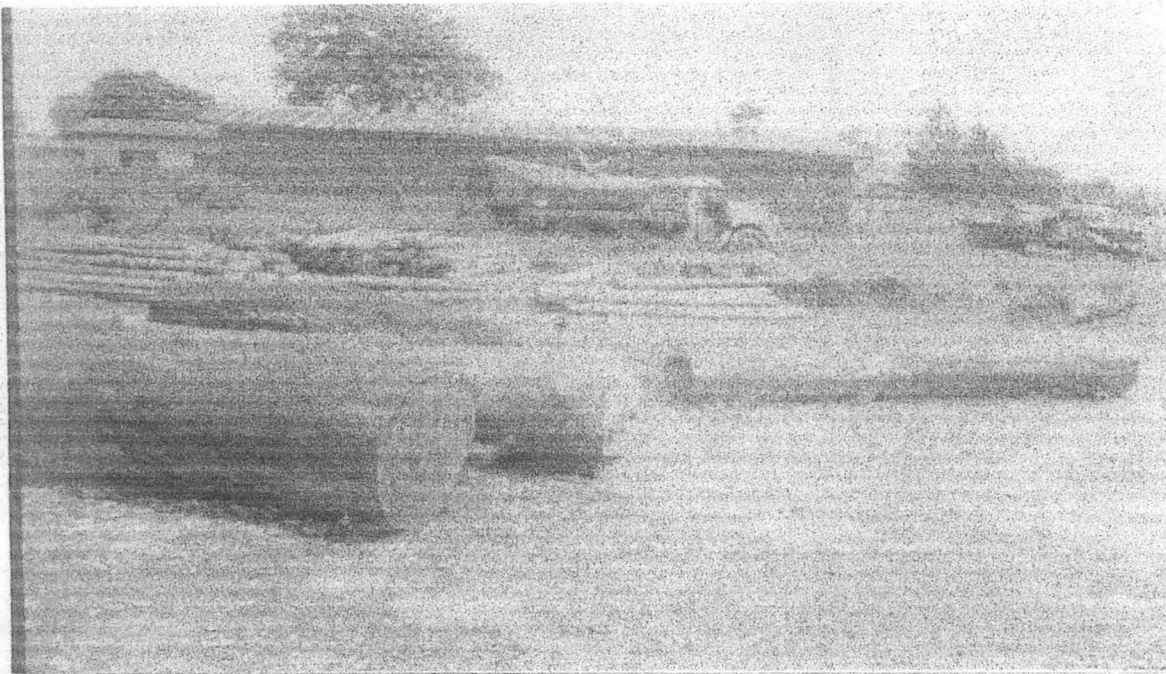


Plate 4.5: Fuelwood assembled at Karmo – Abuja for domestic use



Plate 4.5: Fuelwood assembled at Karmo – Abuja for domestic use



Plate 4.6 Soil Erosion in Wuse District caused by deforestation.



Plate 4.7 Decertified land behind CBN Quarters Mabushi, Abuja.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

From the foregoing, it has been established from my research work that deforestation is a global environment problem through the rate varies from region and the major causes of deforestation in the Federal Capital City can be mostly attributed to construction of building and provision of infrastructures.

Reclamation projects and creation of necessary awareness are some of the antidotes proffered as solutions to deforestation in the Federal Capital City. Halting deforestation would help to maintain genetic diversity, reduce erosion, stabilize climate, cleanse water and air and preserve opportunities for future generations.

Infact, what is generally required and desired is a balance between development aimed at upgrading the quality of life and conservation of the Federal Capital City environmental quality.

Having carefully analyse the causes, effects and for the practicable solutions proffered to be achievable in solving problems of deforestation in the Federal Capital City, the following recommendations are suggested.

Firstly, the land use pattern in the Federal Capital City should be reviewed because the Abuja Master Plan was tampered with during the inglorious military regimes. Some areas designated as recreational areas or buffer zones where trees are planted have been converted to residential plots. This has considerably reduced the vegetal cover in the Federal Capital City.

Moreover, government should make beautification and tree planting exercises a monthly not yearly affair. It is also necessary to monitor the

growth of the flower and trees planted during the exercises since they absorb carbon dioxide from the environment and serve other useful purposes.

Companies such as Julius Berger Plc and individuals that operate furniture-making factories should be encouraged to invest in afforestation projects in order to sustain the insatiable demand for timber.

Also the government in conjunction with the relevant agencies should embark on massive production of local stoves that uses sawdust and low-carbon charcoal. This will reduce the pressure and demand for firewood in the Federal Capital City.

Furthermore, the government should make cooking gas available at affordable costs since non-availability coupled with higher prices encourages the use of fuel-wood which is readily available at a cheaper cost but have devastating effects on the natural environment in the Federal Capital City.

Government should also look into the erratic supply of electricity in the Federal Capital City in order to reduce the pressure on the forestland. Steady supply of electricity will discourage the use of fuel-wood because the people will be encouraged to use electric burners.

The government in conjunction with the relevant agencies should provide enough funds for research works mostly on solar-related appliances, which can provide alternative sources of energy for industrial, agricultural and domestic uses in the Federal Capital City. Examples are solar coolers, biogas plants, solar water pumping machines etc. If adequate funds are provided there will be massive production of these solar appliances at affordable costs thereby reducing over-exploitation of our forest products.

Government should also as a matter of urgency enact stringent laws on lumbering activities by making it compulsory and mandatory for any

organization that carry out lumbering activities to have afforestation projects. Also, there is need for an upward review of fees paid by people engaging in lumbering activities in order to discourage them and to conserve the Federal Capital City forestland.

The Ministry of Environment and relevant agencies should strictly monitor activities of those in lumbering businesses in order to reduce the indiscriminate cutting of full-grown trees to the barest minimum in the Federal Capital City.

Creation of awareness policy is equally recommended as a tool to reduce rate of deforestation because enlightenment campaign for all categories of people living in the Federal Capital City will surely help in this direction. Leaflets, handbills in all the major local languages should be distributed periodically to enlighten people on the need to protect, conserve and preserve the environment in the Federal Capital City.

Furthermore, the government should enact a standard uniform environmental policy that will be applicable in all states and the Federal Capital City in order to allow for a sustainable development.

Moreover, it is my special recommendation that all those involved in governmental control should weight their actions against our African cultural background, the available technology, our level of economic development and the imperatives of social life in Federal Capital City.

Government should also adequately fund universities and research institutions to engage in research on environmental standards appropriate to the Federal Capital City in its search for social welfare and good quality of life.

Government should co-ordinate the activities on non-governmental organizations such as Nigeria Conservation Foundation (NCF) because they

are closer to the grassroots where they create the necessary awareness. The government should as a matter of policy provides the framework where they're articulated policies can be successfully implemented for a better environment.

Since illiteracy and lack of adequate infrastructures are some of the reasons attributed to general poverty, therefore the current poverty alleviation programme of this government should be sustained and adequately funded in view of insidious damaging effects of poverty on the environment in the Federal Capital City. In essence, the government should set-up clearly defined guidelines and de-politicized the monitoring and evaluation of the programme so that the objective of reducing the poverty level can be achieved. This on the long run will invariably reduce the pressure on the Federal Capital City forestland.

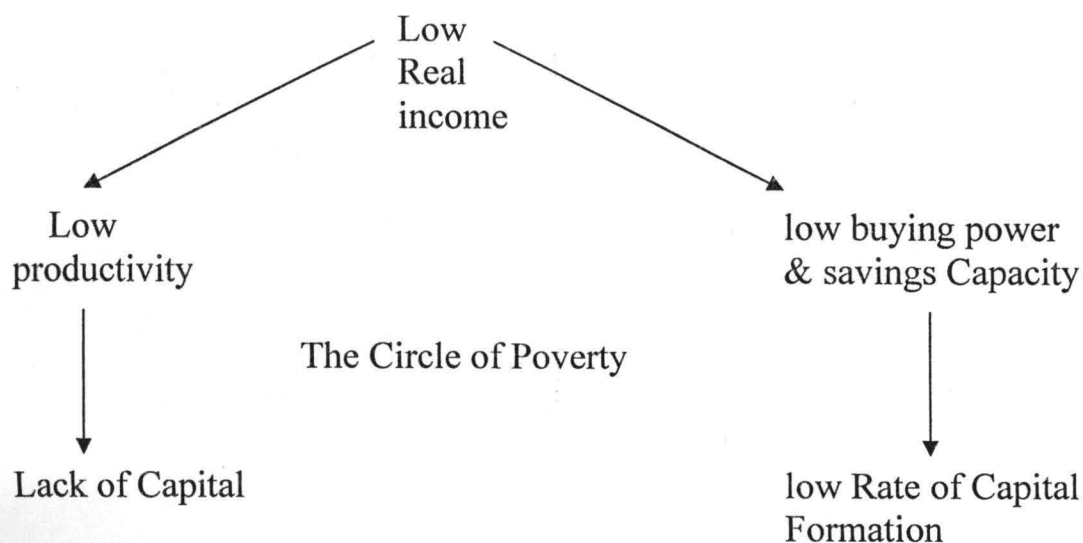


Fig 5.1 The Circle of Poverty.
Source: field work 2007.

This vicious circle above must be broken before citizens in the Federal Capital City can feel the impact of poverty alleviation programme.

It is my fervent and candid hope that the realistic solutions proffered and practicable recommendations will be given a trial for an achievable, sustainable development and proper harnessing of the natural resources of the Federal Capital City for this generation and generations yet unborn.

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APPENDIX

IMPACT ASSESSMENT OF DEFORESTATION IN FEDERAL CAPITAL CITY, ABUJA

Instruction:- Be honest and sincere in answering the questions and I assure you that any information given to me will be used for the simple purpose of this project. Also your personal information will be treated confidently.

PERSONAL DATA

1. Name
2. Occupation.....
3. Age
4. Sex
5. Educational Qualifications.

RESEARCH QUESTIONS

1. Do you clear forest/vegetation for construction?
(a) Yes () (b) No ()
2. How many hectares do you or your organization clear monthly for construction?
(a) Five (b) More than five but less than twenty (c) More than twenty
3. What types of construction activities to you or your organization engage in?
(a) Building of houses (b) Provision of infrastructures e.g. Road drainage
© All of the above.
4. Do you engage yourself in any agricultural activities?
(a) Yes () (b) No ()
5. What clearing method do you or your organization use?
(a) Mechanical (b) Manual (c) Burning
6. Do you clear forestland wantonly?
(a) Yes () (b) No ()
7. How many hectares of land do you cultivate or put into use?

(a) Less than five (b) More than five but less than ten (c) More than ten but less than thirty.

8. What grazing method are you using for feeding your animals

(a) Zero grazing (b) Free grazing (c) Semi Intensive

9. Do you normally burn the vegetation/forest for one reason or the other

(a) Yes () (b) No ()

10. What is your source of domestic energy at home?

(a) Gas (b) Fuel wood (c) Kerosine (d) Electricity .

11. Do you buy fuel-wood?

(a) Yes () (b) No ()

12. Do you sale fuel-wood

(a) Yes () (b) No ()

13. Give an estimate of the fuel-wood you normally use every month.

(a) One pick up (b) Two pickup (c) More than two pickup loads

14. Where is your source of fuel-wood?

(a) Surrounding vegetation /Forest (b) Interior parts (c) from other

L.G.A's

15. Do you pay foe felling down trees?

(a) Yes () (b) No ()

16. Give an estimate of fuel-wood you sell monthly

(a) 10 pickup loads (b) More than 20 but less than 40 (c) More than 40 pickup loads.

17. How many forest reserves do you know in the Federal Capital City?

(a) Two (b) more than two but less than five (c) Nil

18. Are you into lumbering activities?

(a) Yes () (b) No ()

19. Are you aware that your activities on forest land have negative consequences?

(a) Yes () (b) No ()

20. Where is your source of wood for your lumbering activities?

(a) Forest reserves in the Federal Capital City (b) other places outside the Federal Capital City.

21. How many trees do you cut in a trip?
 (a) Four (b) Five (c) Ten
22. Do you pay for cutting down trees?
 (a) Yes () (b) No ()
23. Does your organization/company have any afforestation project?
 (a) Yes () (b) No ()
24. How many trees do you plant monthly
 (a) One (b) Two (c) Nil
25. Do you cut down trees with preference?
 (a) Yes () (b) No ()
26. Are you aware of any campaign against indiscriminate cutting down of trees in the Federal Capital
 (a) Yes () (b) No ()
27. Do you cut down trees to extract honey and for medicinal purpose?
 (a) Yes () (b) No ()
28. Were you taught environmental education in school?
 (a) Yes () (b) No ()
29. Do you think the increase in population of the Federal Capital City contributed to deforestation
 (a) Yes () (b) No ()
30. Do you know deforestation can lead to desertification and soil infertility?
 (a) Yes () (b) No ()
31. Do you apply any management practice in order to replenish soil fertility?
 (a) Yes () (b) No ()
32. Do you think urbanization have effect on de-vegetation in the Federal Capital City?
 (a) Yes () (b) No ()
33. What type of agricultural activity do you engage yourself in ?
 (a) Crop production (b) Animal production (c) Nil
34. What type of crops do you cultivate?
 (a) Arable crops (b) Personal crops (c) Orchids
35. What can you say about the case of erosion in Federal Capital City

(a) Natural (b) Deforestation (c) Heavy Machinery's
36. What do you think is responsible for the degrading the Federal Capital City's soil?

(a) Continuous cropping (b) Heavy rainfall and leaching
(c) Destruction of forestland/vegetation.