

TITLE PAGE

**IMPACT OF ENVIRONMENTAL EDUCATION
IN AN INFORMAL SETTING IN SULEJA
ENVIRONS**

BY

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PGD: -GEO -2001 - 2002 - 218**

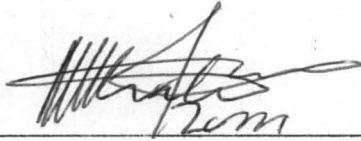
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TECHNOLOGY MINNA, NIGERIA**

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DECLARATION

I MUSA IBRAHIM ABUBAKAR hereby declare that the project entitled 'IMPACT OF ENVIRONMENTAL EDUCATION IN AN INFORMAL SETTING IN SULEJA ENVIRONS' is a product of my own research work under the supervision of Dr. A.S ABUBAKAR.



MUSA IBRAHIM ABUBAKAR

2001/2002/218

1 - 11 - 2003

DATE

ACKNOWLEDGEMENT

To express my gratitude to the head of Department of Geography Dr (Mrs.) A.E. EN for her immense contribution throughout the period of my studies in the city.

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The project would be incomplete if I failed to mention Mr. salihu saidu, the course coordinator who in every respect contributed invaluable to my general academic success through his advice and counseling.

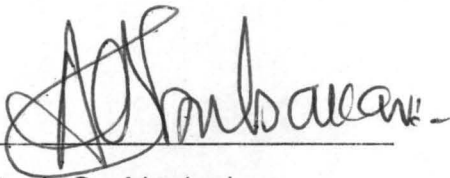
So indeed, grateful to the following: -

For D.O Adefolalu, Professor J.M Baba, Dr. Akinyeye, Dr. Nsofor, Dr. Halilu, Dr. T. Usman, Dr. A .A Okhimamhe and my colleagues for their various contributions in making this book a success.

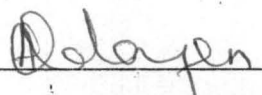
My special thanks to Moses Mammam of Federal Ministry of Environment for providing all the materials for this project and to the Ministry of Animal and Forest resources Minna for releasing and sponsoring me throughout the project.

CERTIFICATION

This is to certify that this project is prepared in partial fulfillment of the requirement for the award of post Graduate Diploma (PGD) in Environmental Management Federal University Of Technology Minna.

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DEDICATION

This Research project is dedicated to the Almighty Allah (SWA) who in His infinite Mercy bestows upon me wisdom, knowledge, understanding and protection through the course of this project. I also dedicate it to his Holy Prophet MUHAMMAD (SAW), to my father and mother, Muhammad and ~~Amal, Zahid, Zahid and Zahid, brothers Danru and Isnaq and finally~~ my children for their patience and support throughout the course of this project.

ABSTRACT.

Consequences of environmental degradation particularly during the process of harnessing resources has heightened in the recent past in both developing and developed countries in the areas of industrialization and urbanization.

The research is centered around Suleja and this is due to the increase of population as a result of its nearness to Abuja FCT. The target group is the informal sector, which is an important group that embraces all the activities outside the school system. This includes farmers, hunters, fisherman, and food seller etc and the aim is to find out their level of environmental knowledge and awareness, how these resources are harnessed and their sustainability.

The result analysis gathered from the questionnaires administered on each site shows that bad methods of harnessing these resources has led to resource depletion. Over population, poverty and ignorance are the major problems with environmental conservation in the study area. Therefore, a lot of recommendations are being suggested in this paper on the techniques and strategies to be adopted in inculcating education/awareness to ensure a sustainable management and conservation of our environmental resource in the study area.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 BACK GROUND

Environment is the total surrounding encompassing everything both living and non living things within it. It has four major components i.e. Hydrosphere (water), biosphere (plants and animal), atmosphere (air), lithosphere (land).

Conservation is looking after the earth's resources so that they can continue to support life, in other words it is using the resources wisely or good management of resources.

Biodiversity is variety of plants and animals or variety of natural life.

Sustainable development is development without destruction. The world commission on environment and development (WCED) described sustainable development as "the development that meets the need of present without compromising the ability of the future generation to meet their own need".

Environmental Education is the education that brings about good management of resources and protection of environment and make people to be aware of what threaten the well being of the environment and have the knowledge, attitude, commitment and will to prevent our future environment problem.

United nations conference (UN conf. 1977) regarded environmental education as a "permanent process in which individual and the community gain awareness of their environment and acquire the knowledge, values, skills, experience and also determination which will enable them to act individually and collectively to solve present and future environmental problems"

1.2 INTRODUCTION TO BASIC CONCEPT

The environment of man is a global concept which consist of natural and man made resources available to a human being for the satisfaction of human needs (UN 1978).

Man interacts with his environment in order to satisfy his needs including food, shelter and clothing's. At the beginning, man's activities were limited by what the environment could offer i.e. the environment was dictating what man can do. Later the need arose from increasing population such that pushed man to develop technologically enough to manipulate the environment to suit his need. Consequently, the rate of man environment relationship depended on man's needs, mode of meeting the needs and perhaps the level of his technological advancement (Goudie, 1989).

Just as the environment affects man's activities, man also affect his environment to the negative because of his technological advancement. The environment of man was very good when God created it. The reality of our time is that we have by our activities and mission individually and collectively contributed to our environment negatively than in the positive. This is because in the process of man's consumption of natural resources in his natural environment, a number of stress is created which adversely affect the quality of the environment in which he lives. It is this type of negative contribution; that one referred to as "Environmental problems (Ajibade 2000).

"Today across the breath and length of our great nation (Nigeria) we are faced with stark realities of the errors of our past developmental activities and indiscipline life styles" (Abacha 1997).

Environmental education/awareness is a necessary ingredient for a successful implementation of environmental policy. It was first coined in United Kingdom in 1965 and the first approach was the conference on human environment and development held in Stockholm Sweden in 1972.

It was recommended during the conference that the secretary General, the organization of the United Nation system especially UNESCO and other international agencies concerned should after consultation and agreement take necessary step to establish an international programme multidisciplinary in approach in school and out of school, encompassing all level of education and directed towards the general public in particular, citizens living in rural and urban areas, youth and adult alike with a view of educating him as the simple steps he might take within his means to manage and control his environment.

In Nigeria, environmental education was first brought by the minister of works and environment in 1977 from an inter-Governmental conference of 1977 in Tbilish USSR. Through the visit of Duke of Edinburg and prince of Netherlands in 1980's to Hadeijia/Nguru wet land conservation project at Nguru. Nigeria conservation education unit was established in Borno state in 1987. A year later, a national conference on conservation education strategy was organized by the Nigerian conservation foundation (NCF).

The objective of the conference is to formulate national conservation education strategy as a follow up to an inter-governmental conference held in Tbilish USSR in 1977. The conference proposed a national policy on education implementation committee (NPEIC) that conservation education should be included in our educational system and adopted national plan to promote a sustainable development.

1.3 STATEMENT OF PROBLEMS

The role of public enlightenment/awareness in conservation of renewable natural resources cannot be over emphasized. It is a fact that a very good percentage of our policy makers not to talk of other government functionaries do not know that conservation of renewable resources amounts to management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generation while maintaining its potentials to meet the needs and aspirations of future generation.

In Suleja and environs farmers through ignorance continue to use fire as the only tool to clear and prepare their farm lands, thereby destroying soil nutrients, encouraging soil erosion and adding more carbon dioxide to the atmosphere.

Hunters decimate wildlife for short monetary gains, while fishermen use poison and explosives to catch fish, fuel wood sellers and Fulani herdsmen cut down trees for sale and to feed their cattle respectively, unaware of the havoc they are causing to the environment. Large hectares of land are cleared indiscriminately in urban areas for development, while bad farming methods has led to erosion of fertile land.

All these problems are difficult to curb with because of lack of awareness and conservation education. There is the need for all of us to know the existence of these natural resources, their importance to us and generation yet urban and every body should know how to manage these resources wisely while the policy makers should be made to know how to conserve the resources for sustainable development especially when planning for development.

A lot of control measures have been suggested to these environmental problems, majority of which are preventive in nature. This rests on the premise that

preventing an environmental problem from occurring is cheaper than what the government will be spending to relief victims yearly. Good and appropriate as these preventive measures are, it is clear that none of these measures can work effectively without carrying the people concerned along. In other words, the people must be brought to interaction with the environment. In addition they must also be informed of all legislation guiding against the destruction of the environment.

Suleja is expanding fast due to it nearness to the Federal Capital Territory (Abuja) which is just about 7km to Suleja. New buildings are springing up daily leading to a lot of pressure, on land and its resources hence the need for an environmental conservation education and awareness.

1.4 AIM AND OBJECTIVES

The aim of this study is to identify some of those who are directly involved in harnessing the resources of the environment, these are people who by their action or in action affect the environment negatively or positively. This study will focus on these individuals to find out whether the negative activities they carryout is out of ignorance or lack of any environmental laws to check such activities. Answers to these questions will help in finding solution by making recommendation and suggestions on measures to be taken by the authority.

The specific objectives are: -

1. To find out the level of awareness of the target group on Environmental Education.
2. To find out how they source for these resources from the environment i.e. whether they follow lay down rules and regulations in the process of sourcing for these resources.

3. To ascertain and compare their present output and the past output and see if there are differences.
4. To find out whether these resources are still within their own environment or they have to travel far to get them.

1.5 STUDY AREA

1.5.1 HISTORICAL BACKGROUND

In 1804 when the fulanis invaded Zaria the Zazzau rulers under Muhammadu Makau the 6th fled to Zuba and later settled at what is now known as Suleja. The Fulanis never defeated Abuja the title "Sarkin Zazzau" which was the original title of Zazzau ruler was retained and is still the official title of Emirs of Suleja to day. In 1825 makau died in a battle in Lapai Emirate and his brother Jatau, nicknamed Abuja (i.e. Abu the red) took over the mantle of leadership.

Abuja led his people first to Gwari Babba (now lambata) where he was crowned sarkin Zazzau where he left for Izom. In 1829 a new capital was built and named Abuja after the king, the first hut built was named Zauren Zazzau. This and other relics still exists to day. Suleja is known internationally because of Dr. Ladi Kwali pottery center which has won many prizes for the town.

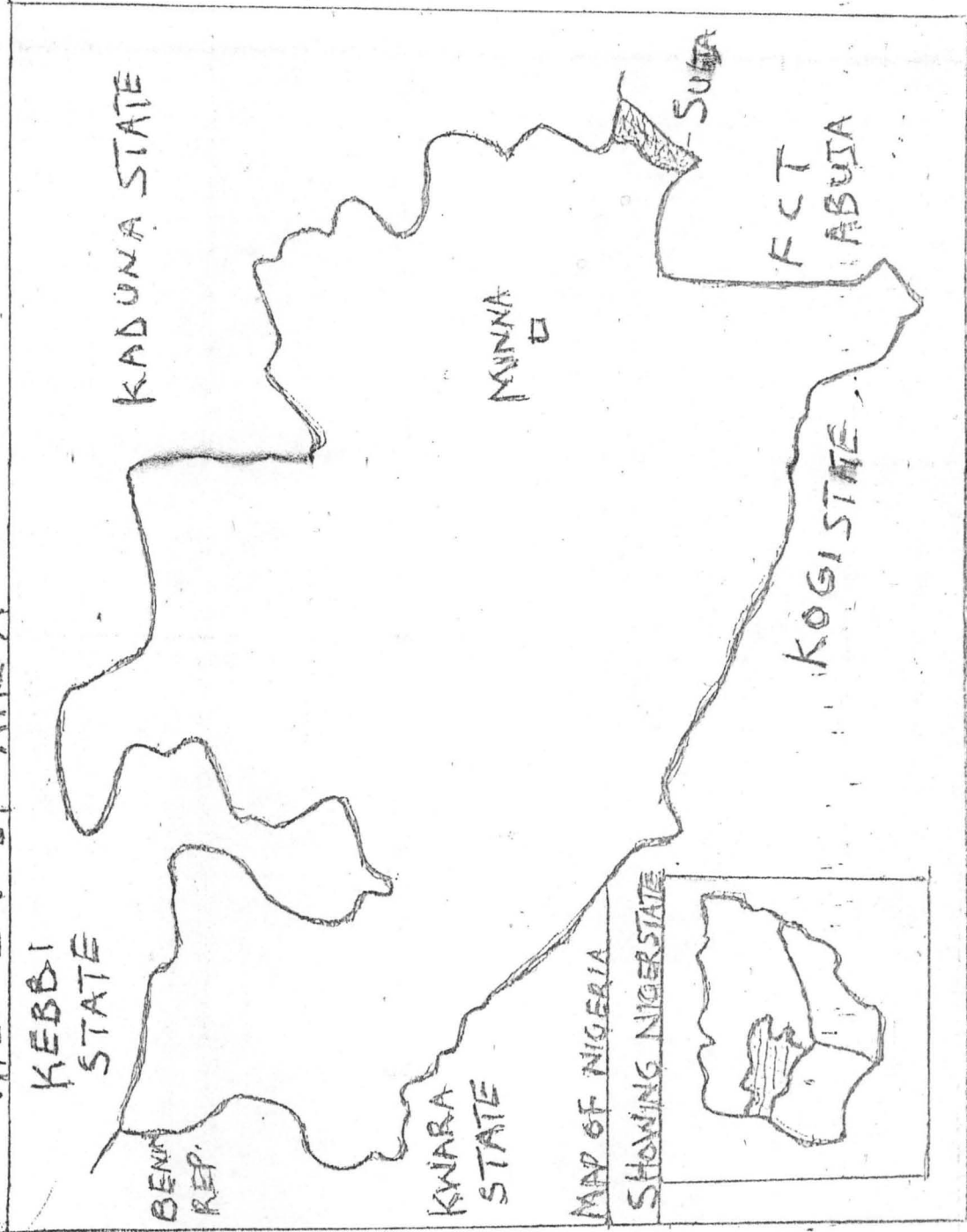
When the new Federal Capital Territory was to be chosen for the country, greater part of Suleja Emirate was excised for the new capital. This was due to its central location, excellent climate and geographical features. In February 1979, the name Abuja was conceded to the proposed Federal Capital Territory and the town was renamed Suleja after the late Emir, Alhaji Suleman Barau. (Talib 1993)

1.5.2 PEOPLE

The population of Suleja is essentially made of Gwari, Hausa, Gade, Koro, Gwandara, Ganagana, Bassa and Fulani, other tribes of Nigeria are however

MAP OF NIGER STATE SHOWING SULEJA

THE STUDY AREA



Scale; NOT DRAWN TO SCALE

present in good numbers because of its exposure to trade from both the Northern and Southern States of Nigerian. The projected population figure of Suleja is estimated to be 244, 454 in 2003 (NPC Minna) The nearness of Suleja town to the Federal Capital Territory Abuja has attracted many people from other parts of the Federation to the town.

1.5.3 CLIMATE

The climate of Suleja is characterized by dry season from November – April and rainy season from April/May – October. Suleja has a relatively high annual rainfall of 1640mm concentrated into three months of July – August – September. The usually cloudless season has high temperature with extreme maximum occurring in February and March (38⁰c). By contrast the raining season is cooler and more humid.

1.5.4 GEOLOGY

Located in the center of Nigeria, Suleja is a land of hills and huge outcropping of granite rocks, it is land of rivers, gorges and streams, forest and open spaces. It possess a varied and delightful scenery, Suleja is 117 km East of Minna the State Capital and is surrounded by the new Federal Capital territory at a distance of 5 – 10km to the East, West and South.

1.5.5 VEGETATION

In the Nigeria vegetation Map, Suleja falls within the Southern guinea zone, it consists of rather open savanna woodland with tall grasses and trees, Usually with short boles and broad leaves. The vegetable is swept annually by fierce fire in the dry season.

Most of the species are closely related to high forest species, such species include *Lophira lanceolata* very closely related to *Lophira alata*, *Terminalia glaucus* closely related to *Terminalia ivorensis* other typical species are *Danielia oliveria*, *Hymenocardia acida*, *vitex*, *doninana*, *Afzelia africana* and *vitelaria paradoxyn*. All these species have thick bark capable of resisting fierce grass fire and they possess remarkable powers of sending up fresh growth after the fire have passed.

In low-lying ground, such as flood plains, usually with heavy clay soils, the grass is very tall and dense. On a better-drained soils near the bank of streams and rivers there are forest similar in many respect to the forest of the drier low land forest zone. Forest outlier are often known in Northern Nigeria as kurmi and are a very characteristic of the Southern Guinea zone of which Suleja belongs.

1.5.6 JUSTIFICATION

Man alters the natural characteristic of his environment sometimes on a small scale but often on a very large scale. He may clear a small patch of bush, build a hut or dig a small canal to irrigate his vegetable garden, or he may build a large city, drain swamps, irrigate arid zones, dam rivers and create large artificial lakes. Many such changes have proved beneficial to man but some aspects of these changes have created new hazards.

Environmental components must be conserved and used sustainably for future generations. Environmental education and awareness is therefore a key to a sound environmental management and sustainable development.

Public environmental awareness is referred to as a synthesis of people's conception interpretation and perception on environmental issues which affects their behavior and the quality of responses and reaction to environmental

problems (Chokor 1988). According to him its utility in shaping desirable environmental management practices and effecting control can therefore not be overemphasized.

The failure of some of our activities are sometimes attributed in part, to lack of public awareness. It is through people's awareness that all efforts towards preventing damages to our environment can be effective. If people are aware of the dangers in some of their actions, it will bring about a positive change and thereby prevent any future catastrophe that can arise from, environmental problems. Therefore, there is the need to re-awake and re-oriented the individual mental state of perceptions to the environment.

1.5.7 SCOPE AND LIMITATION

This study will specially focus on the informal sector of the society living in Suleja and environs. This group comprise mostly adult who in one way or the other abuse the environment the most. They include farmers, fishermen, hunters, rural women (firewood sellers), cattle and sheep/goat rearers, timber dealers and saw miller's e.t.c.

A lot of people still exist who source for their livelihood within the environment that will not be covered by this study, this is because the study is limited to the above named groups so as to allow for effective coverage and data collation.

CHATER TWO

2.0 LITERATURE REVIEW

2.1 INTRODUCTION

"The earth is sick, it is losing its air because of deforestation, produced by fumes and acid rains, its face has wrinkles due to desertification. The blood that runs by its veins is poisoned by rivers and sea's pollution. Its temperature goes up because of the "green house gases that pollute the air" (Monteagudo 1992)."

The above quotation is a representation of environmental problems (Ogunseitain, 1991) depict the state of our environment both globally and locally. At the global level, our environment is ill and beset with problems which are essentially the product of human activities of yesterday, to day and tomorrow. The green gases has continued to increase with a yearly emission of 6 billion tones, threatening climatic change and sea level rise. The depletion of ozone layer continue through excessive emission of clorofluro-carbons (CFCS) and nitrogen oxides have been poured into the air increasing the occurrence of acid rain.

If the gulf war spillage is excluded, over 10 million tones of oils have been discharged into the ocean. Also over 150 million tone of forest have been destroyed. Land lost through soil degradation were estimated at 70 million hectares in which about 24 billion metric tones of top soil are lost yearly (Aina 1992). The Nigeria environment has been facing series of environmental problems, which can be attributed to various factors. Prominent among such factors are, low level of awareness about the consequences of our actions on the environment, our poverty level, and the adoption of non-sustainable modes of development.

he resultant effects of all these problems range from climate changes, loss of soil fertility decrease in agricultural production general loss of biodiversity, spread of diseases leading to untimely deaths, scarcity of non-renewable resources to a serious reduction in the peoples quality of life.

earth summit (1992), which says, "Education is essential to change the ~~destruction relationship between human beings and the rest of nature~~" (Abrams, 1992). In recent times, grim pictures have been painted about the state of the earth's environment. The message emerging from the global scene is for all inhabitants of planets earth to be more conscious of the need to leave our environment better than we met it. The medium through which the inhabitants of the earths will get this message as observed by Fafunwa (1991) is environmental education.

beginning from 1990 focus begin to shift to environmental knowledge, attitude and environmental effects. Data sources also shifted from the public to the elements within the school system. (Noibi 1991) for instances surveyed the environmental knowledge and attitude of preservice teachers in Lagos State. In a follow up study, Njweng (1992) appraised teachers and students knowledge and attitudes on environmental issues in some Lagos State Secondary Schools.

environmental education is carried out in the formal school system in various countries all over the world. In Nigeria, it is incorporated into the subject – citizenship education and there is a syllabus for this. The knowledge of environmental education cuts across various subjects such as Biology, chemistry, Physics, Agricultural science e.t.c. While primary science and integrated science in the primary and junior secondary schools respectively are taught under the environmental education programme.

The environmental conservation education and awareness co-coordinating unit of the Federal Ministry of Environment has among its functions to liaise with the State and Federal Ministry of Education for effective teaching of environmental education co-curricular in primary and secondary schools in the country.

The Nigeria conservation foundation (NCF) under the auspices of World Wide Fund (WWF) has established two environmental education units in the college of Education Ekiadolor Benin and the University of Calabar. Also FUT Minna is involved in the training of post Graduate Students in Environmental Management.

CHAPTER THREE

3.0 DATA AND COMPUTATIONAL TECHNIQUE

3.1 DATA SET

This study will focus on existing publications, which include reports on conferences, journals, magazines and newspapers, text books publication in environmental education etc.

Also, a sample survey using a simple random sampling technique is to be adopted in administering questionnaire in the study area. This study will reach out to them either individually or in groups as the case may be. The target groups are expected to tell us by themselves how their daily activities within their environment whether positively or negatively, knowingly or unknowingly affects the environment. This study will also find out how they have been able to sustain their activities up till date at the end of which their answers will guide us on the type of suggestion and recommendation to put forward for implementation by the appropriate authority.

3.1.1 COMPUTATIONAL TECHNIQUE

This section will highlight the techniques to be adopted in the analysis of data. The presentation of result will be in form of tables and graphs showing the various groups of professional covered in the study, number of questionnaires collected by each groups and how many were answered and returned. The questionnaire will find out from the target groups individually or collectively how these resources are harnessed from the environment and a summary of how these resources are harnessed will be presented in a tabular form. Also to be highlighted in this section is to find out and compare the present quantity and quality of output from the present and past to see if there are differences and why?

The questionnaire is to be distributed in a simple random sampling technique. This is to allow a fair representation of the study area.

3.1.2 TARGET GROUP

The informal sector is the largest and the most important group that embraces all the people who in one way or the other abuse the environment the most. They are the one who are not in the school system, they are the main focus of this study. They constitute a very large percentage of the population that can not be reached through the school system.

A questionnaire is being prepared for them through which their level of understanding will be known. The informal approach for teaching environmental education is an approach that is capable of reaching more people, it is very useful and important in popularizing environmental education.

Below is the list of the targeted groups who in one-way or the other affect the environment positively or negatively: -

- (a) **Farmers:** - who burn bushes and cut down trees indiscriminately.
- (b) **Hunters:** - Who kill animals especially endangered species for sale or for food and by so doing some species are almost extinct.
- (c) **Fishermen:** - Who catch fishes any how and sometimes pour chemicals into the rivers.
- (d) **Firewood Sellers:** - Who destroy large areas of forest in search of fuel wood to sell.
- (e) **Fulani Herds men:** - Who take their animals to various areas for feeding and cause over grazing.
- (f) **Timber Contractors:** - Who cut down large trees in the forest and destroy younger ones in the process.

CHAPTER FOUR

4.0 ANALYSIS AND DISCUSSION OF RESULTS

4.1 INTRODUCTION

This chapter is devoted to the analysis and discussion of results from the questionnaires returned from the field. The summary of responses from various groups is presented graphically.

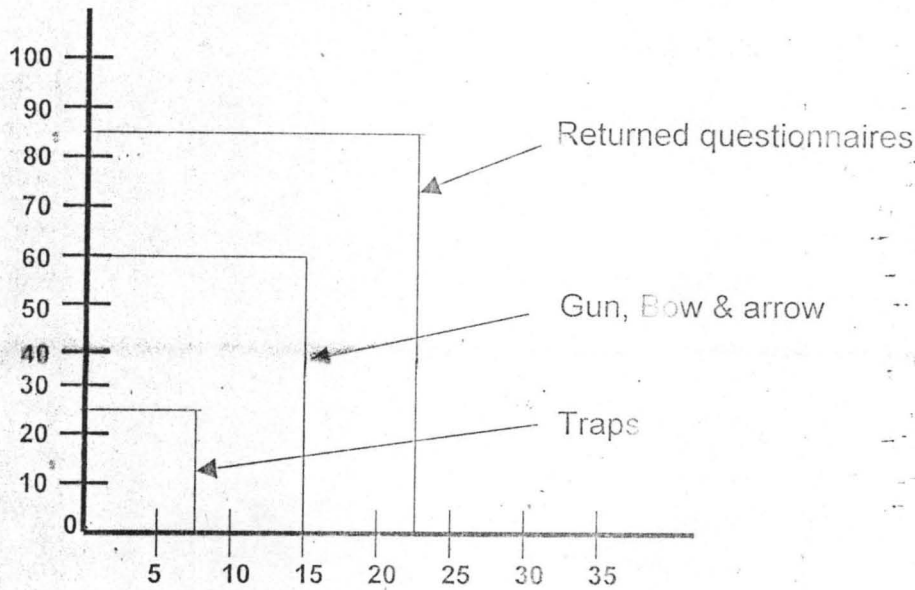
4.2 HUNTERS

They are responsible for the indiscriminate killing of wildlife especially endangered species, which has contributed greatly to their extinction in the study area.

Twenty-five questionnaires were administered and twenty-two or 88% were completed and returned, 60% of the returned questionnaires uses den gun, bow and arrow in harnessing these resources while 28% use traps. They catch both the young, and pregnant ones, which has led to their being extinct in the study area.

As a result of these unsustainable methods of resource harnessing, most of them now travel far on hunting expedition during the dry season when farming is at its lowest.

Fig 1: Summary of results

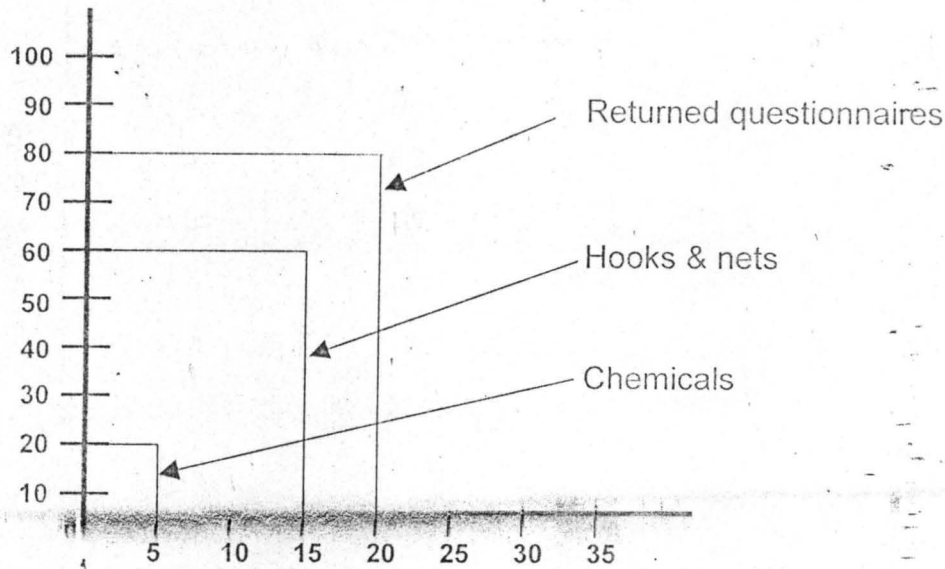


4.3 FISHERMEN

Some of the methods being used by this group in harnessing fish resources in the study area include Hooks, nets and chemicals. The use of chemicals in water is the crudest way of harnessing these resources, apart from killing all aquatic lives the poisoned water can also affect both human and animal lives down stream.

Twenty-five questionnaires were administered, and twenty or 80% returned for analysis. Five or 20% of this group uses chemicals while the remaining 60% or 15 fishermen uses fishing nets and hooks of all sizes.

Fig 2: Summary of results

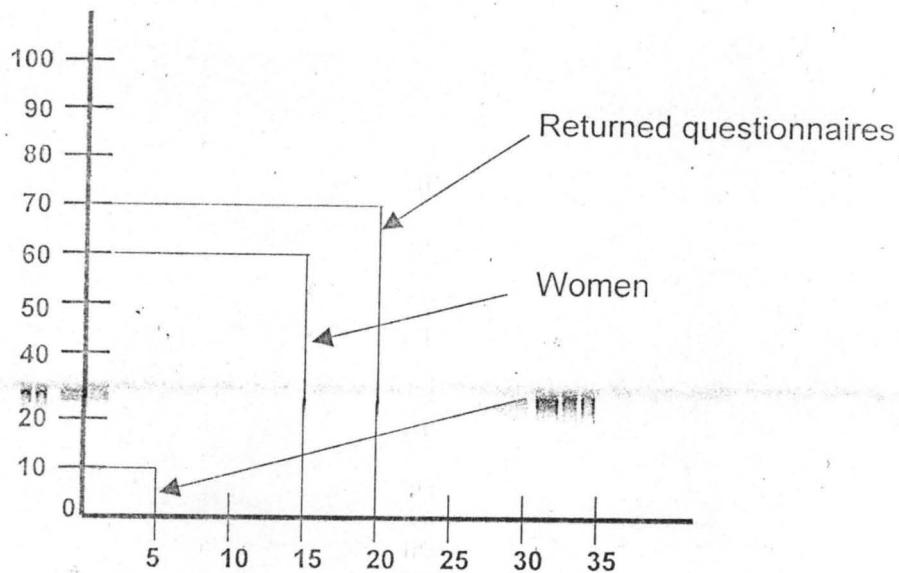


4.4 FIREWOOD SELLERS

This group destroys the forest the most as all types and sizes of trees and shrubs are cut down in large volume for sales. This is the group that has an increase output now than the past. The rise in population has a corresponding increase in the demand for firewood as a source of energy. This group harnesses these resources from far and near government forest reserves where the vegetation is still rich with trees.

A total of 25 questionnaires were administered on this group and 18 or 72% were returned. About 25 women or 60% and 3 men or 12% were involved and they all recognized the fact that there is high demand for their products.

Fig 3: Summary of results

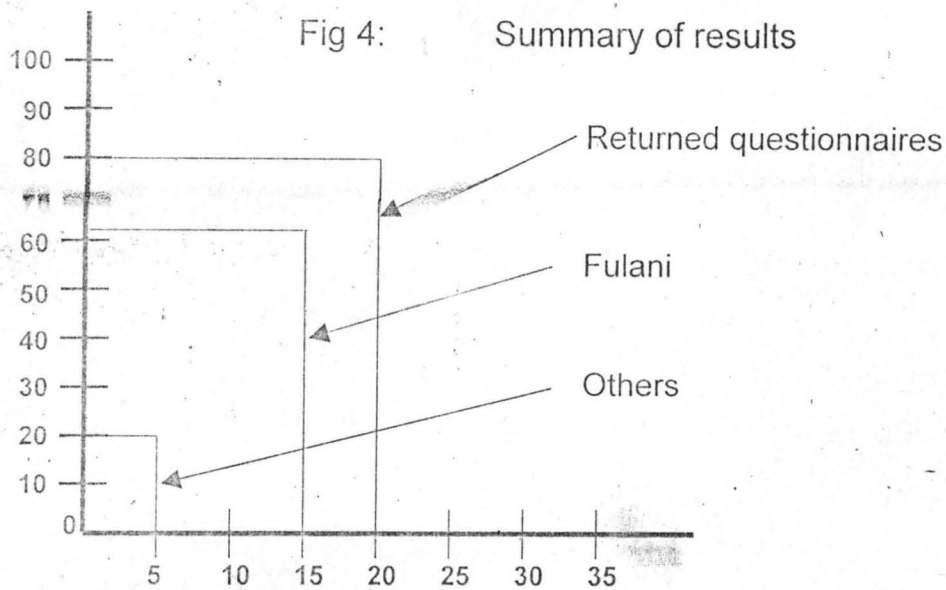


4.5 HERDSMEN

The 'Fulani's are more associated with cattle rearing in Nigeria than any other tribe, but today the Gwari's and Hausa farmers also combine farming with cattle, sheep and goats rearing.

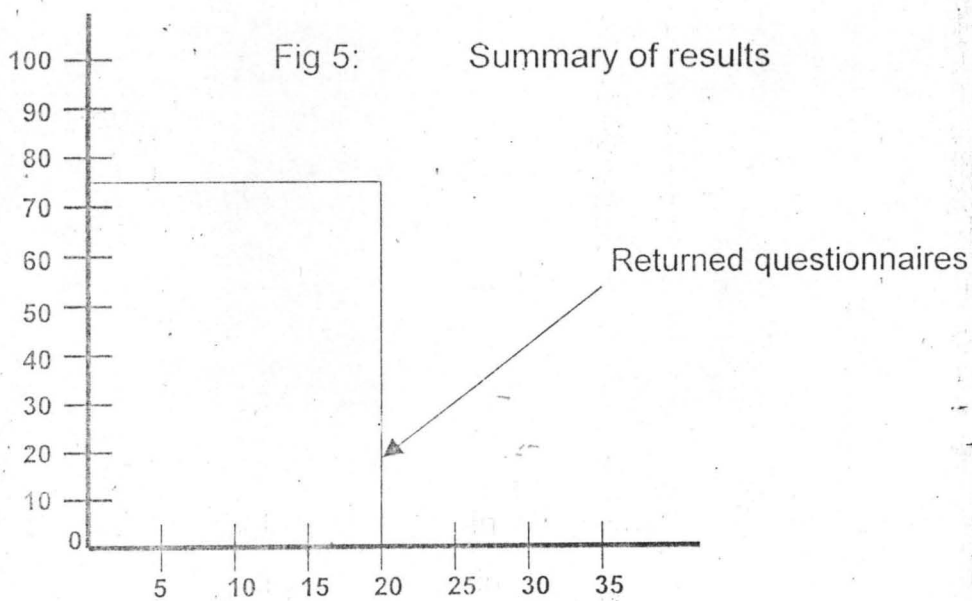
Twenty-five questionnaires were distributed to this group and 21 or 84% were returned for analysis. The Fulani's numbered 16 or 64% of the total returned while the remaining 5 or 20% were Gwari and Hausa farmers.

The Gwari and Hausa farmers use their farm products to supplement the feeding of their animals in their immediate environment while the Fulani's migrate during the dry season to anywhere that could offer their animal a place to graze.



4.6 FARMERS

These are small scale farmers who in the process of clearing the land cut down trees, clear the vegetation, and set fire on it. During this process only economic trees such as sheanut butter and law cust been are spared because of their economic value to the farmers. Twenty five questionnaire were administered and nineteen or 76% returned, the men confirmed that due to the depletion of the soil because of over cultivation the output of their production has reduced considerably over the years.



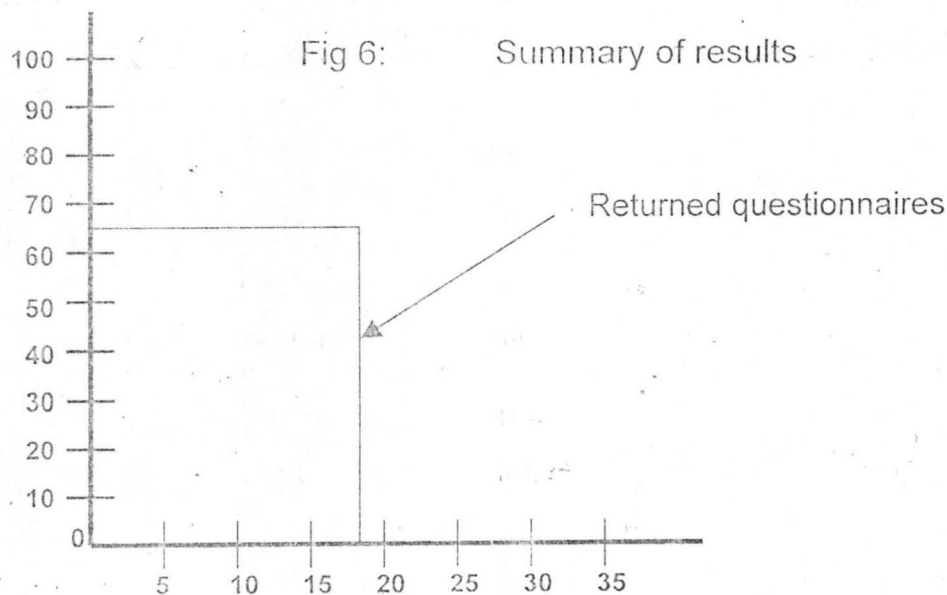
4.7 TIMBER DEALERS

Bad exploitation methods led to a lot of destruction of the forest and its systems, young trees, plants and animal are killed or displaced during exploitation. The forest loses its cover when large trees are felled and this exposes the forest floor to direct sunlight and raindrops, which could lead to, run off and erosion.

Twenty-five questionnaires were administered on this group and 17 or 68% returned for analysis. Timber dealers in Suleja now travel out of the area to neighbouring local governments like Gurara, Lapai, Tafa and FCT Abuja to obtain these resources for their sawmills and Timber sheds:

The demand for timber products is in the increase in the study area and this is due to the influx of people and development in and around Abuja F.C.T:

Apart from the destruction of forest and its resources, one major environmental problem created by timber dealers is the burning of sawdust in the sawmills and timber sheds. The smoke that comes from the burning of these sawdust is adding carbon dioxide to the atmosphere and can lead to climate change and global warming. These sawdust can be utilized in making particle board instead of wasting it through burning.



CHAPTER FIVE

5.0 RECOMMENDATION AND CONCLUSION

5.1 RECOMMENDATION

Various researchers have designed series of public awareness programmes on environmental issues and some of these have been implemented in parts of Nigeria. Yet not many people tend to be aware up to date. This may be due to the brief nature of their implementation e.g. people were only responding positively to the call to plant trees during the short period of the programme when the Government discontinued the campaign due to faulty implementation.

Below are some of the positive techniques useful in creating environmental awareness among the target group.

- A. Legislation
- B. Training programmes
- C. Drama
- D. Discussions
- E. Jingles
- F. Visual display (posters)
- G. Community for public campaign

5.2 STRATEGIES FOR IMPLEMENTATION

- (a) **LEGISLATION:** – Laws are the bedrock of all environmental control measures for when there are no laws, nobody can be apprehended for an offence. The laws must be clear, gazetted and known to the public, they should be simplified, interpreted in various languages and make them reach the people. Such laws must spelt out the rights of individuals and the limits to which the environment can be exploited, sometimes, awareness is not created until some people are punished and used as examples.

- (b) **TRAINING:** – Local, state and Federal government officers, traditional rulers, rural and urban dwellers can be brought together and trained in workshops, symposium and public lectures on the need to respect and conserve the environment. Those who are to train the people must be well knowledgeable in their area of concern and practice what they have taught the villagers in order to show the seriousness attached to the campaigning e.g. not buying bush meat or firewood from the villagers after the training programme.
- (c) **DRAMA:** - Drama is one of the effective tools of mobilizing people. Arrangement can be made to reach the home video artists with a view to encouraging them to put into consideration plays that will focus on the use and abuse of the environment. Also theater groups can be hired for stage plays on prominent environmental problems in specific areas in their local dialects. Such plays can even be sponsored on the electronic media.
- (d) **DISCUSSIONS:** - Environmentalist, lawmakers and law enforcement agents can discuss topical environmental issues on radio and television in different languages. It can also take the form of community when traditional leaders whom people respect are saddled with the responsibility of arranging for discussion with the people.
- (e) **JUNGLES:** - Stimulating programmes on radio and television such as News, Drama etc can be made to have environmental jingles at intervals where songs can be composed to review how generous and friendly our environment is to man. Such should be clear and short enough to inform, educate and bring about attitudinal changes in the use of the environment. Public unit vehicles with public address system can also be used from one community to the other.
- (f) **VISUAL DISPLAY:** - This is a good technique according to Page and Thomas (1977) of imparting knowledge. Instructive and advisory public awareness captions can be written, face caps, vests etc to remind and inform the public of the illegality of abusing the environment. Pictures can

also be used to show various problems arising from improper use of the environment e.g. using a sketch or photographs of flooded houses, dried stream, deforested land etc.

With the caption "you can prevent these, don't dump refuse in gutters and rivers" other captions can ordinarily be written as follows:

"The law forbids reckless and indiscriminate exploitation of the environment, avoid any rush with the law" "keep your surrounding green, it checks erosion"

(g) **Community for a Public Campaign:** Though this is financially involving for sustenance, it is one of the good ways of committing the public to fight the course of environmental protection. It can be established at community level when some of the tools required for use will be provided. They will be charged with the responsibility of educating the people, monitoring the occurrence of environmental hazards, assisting those faced with the problems. Such clubs should be funded at the beginning and later become self-financing. The federal and state environmental protection agencies can establish "environmental safety corps" this will have staff of the agency as regular marshals, interested public members as special marshal and students as cadets. They should be charged with the following responsibilities among others:

- (a) Enforce environmental regulation
- (b) Apprehend offenders
- (c) Punish offenders
- (d) Monitor and source for causes of environmental problems
- (e) Education and awareness among the people on the use of the environment.

5.3 CONCLUSION

Dealing with environmental problems is no doubt an uneasy task, because it requires tough and bold decision on the part of the government. Consequently, established agencies should be supported. Creating public awareness should however not be left to Niger State Environmental Agency (NISEPA) a lone, attempt should be made to create separate departments in individual ministry charge with the responsibility of creating public awareness.

Environmental awareness should be a continuous activity until it become an accepted and normal part of human behaviour towards the environment. It therefore becomes relevant to monitor the implementation of these public awareness techniques constantly in order to determine their continuity or change. While this act of creating awareness on environmental issues among the people continues, attempt should also be made to achieve a sizable population through population control measures, good leadership and sound economic policies which will assist in implementation of the environmental control measures.

Finally, the government must address the issue of poverty in the society seriously through the poverty alleviation programme in the study area.

The fishermen should be encourage to embark on fish farming, the firewood sellers, and farmers should be provided with tree seedlings by the government to re-afforest deforested areas. In the case of the herdsmen, government should create grazing reserves with dam to encourage the Fulani herdsmen to settle permanently with their cattle. While Game reserves must be properly protected against poachers and the saw millers should be encourage to establish plantations of their own using fast growing species and at the same time use modern machines that can convert pole size logs into planks.

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