

**DEFORESTATION AND ITS IMPLICATION IN
KOKONA AND ITS ENVIRONS NASARAWA STATE.**

BY

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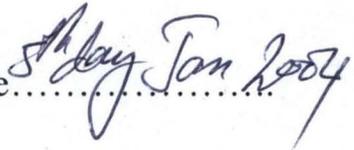
**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF POSTGRADUATE DIPLOMA IN
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DECLARATION

I **EPHRAIM EMBOGO KIBGU** do hereby declare that this project on Deforestation and its implication in kokona and it Environs; Nasarawa state, was written by me as a requirement for the award of post graduate diploma Certificate. This project work has never been presented at any University known to me. The project supervisor, Dr. P.S AKINYEYE contributed universally to it success. All information, maps and data been acknowledged according in the field and references.


EPHRAIM EMBOGO KIBGU
STUDENT

Date.....

CERTIFICATION

This is to certify that I Ephraim Embogo Kigbu have carried out the project work presented in this write up during the year 2001/2002, Academic season.

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Date

DEDICATION

This work is dedicated to my late parents Kigbu Embogo and Atuwyi Kigbu. I also dedicate this precious work to my wife Mrs. Sarah E. Kigbu, my loving children, Atuwyi, Ayitsa and Akwashiki, and to all my brothers and sisters.

Above all, this work is dedicated to Almighty God and to all who cares to preserve and conserve the natural environment.

ACKNOWLEDGEMENT

I am grateful to the Almighty God for sparing my life and his grace on me from the beginning to the end of the programme.

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ABSTRACT

The aim of this study, among others is to identify the problems of deforestation and its implications to the environment and to find a lasting solution to the problem of deforestation. Data were collected using various means such as ground truthing the use of questionnaire, use of library and source of information from internet. The study finds that from the analysis of interviewed indicated that deforestation in kokona and it implications in the environment is as a result of excessive felling of trees for firewood and land clearing for agricultural purpose which constitute about 60% and less attention is given interms of replanting the cutdown trees.

The study recommended that the federal and state governments should provide alternative sources of energy to replace wood, such alternatives are gas, kerosine, coal, stoves and biogas, including governments should purchase the items and sell to the general public at subsidized rates. State agriculture supply companies and cooperative shops could serve as the agent and as a matter of priority there is need to inculcate the act and science of forestry practices in all institutions if learning. These are therefore the need to develop a curriculum to get student to appreciate the importance of forestry right from youth. In other words to catch them young.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Environmental destruction degrades all our lives, it makes everyone poorer. But at greatest risks are the already poor, living on the brink of survival they remains harshly exposed to the elements of deforestation. The fragile ecosystems is been strangulated or butchered via the struggling to grow food graze their cattle timber felling or collect fuel wood as a vicious syndrome to expensive compulsory alternative to gas energy.

In formulating policies to reverse these effects it is critical to recognize that rural people are key part of these solution to environmental degradation, not part of the problem alone (UNDP Nasarawa field office 1998).

For the poor much emphasis on the natural forests are vital source of fuel wood and construction materials and provide folder fruits and opportunities for grazing animals as the case in point in Kokona.

Deforestation has becomes an infestation or a cankerworm in the fabrics of both the rural and urban folks in the study area. For no hour pass during the day without one injury on forest land (wood) via land clearing for agriculture (food security) fetching for fuel and timber for commerce/ construction as the case may be.

A routine extension monitoring reveals that women are more involved in deforestation as opposed to men counterparts in one area of charcoal production (by Mada women) wood heaps at the backyards as a pride

(culture) in Gwari women at Bakin Ayini and ashes production for local soap making known as (sapulo solo) at kurmin shikafa all in kokona areas. If the trends are not reversed the havoc of deforestation will spell down to lives and the people of the area, in terms of erosion, flooding of streams, drought and desertification, this cause as a result of high costs of alternative cooking energy and space for luxuriant foliage via direct sunlight crop plants, and for bumper harvests.

The issue of housing production in recent years has adverse effects on deforestation vide a quest for cutting more wood to meet the demands of estate developments/individuals and government constructions.

The rate at which public bodies go about purchasing power saws posed a great danger signal to forest survival that is to say the number of engines outnumbered the available forest and estates in kokona. Apart from the above aforementioned issues, the relax nature of the forest laws in the state has left much to be desired hence creating an environment for the deforesters to sustain their mass killing of forest trees/resource. Also the need rush for revenue generation by the governments create room for cutting down of trees both legally and illegally by timber contractors and wood sellers.

Another militating factor of deforestation is the excessive grazing by herds, trampling of soil, hunters/smokers setting fire in the bush has a big threat towards stunted growth of young trees and low species multiplication for sustainable yield for next generation to enjoy the natural endowment of trees. Forest is a major source in combating soil erosion, but however, population pressure and increasing demands for fuel have put many natural forest under stress. As a result of forest fires

clearing of land for agricultural activities and rising demand for fuel, the consumption of firewood conveyed by lorries and pickups almost daily now exceeds its annual production (growth) in Kokona.

1.2 STATEMENT OF PROBLEM

Timber felling is done throughout in Kokona and its environ especially most affected areas are Nikoro village, Kafargwari, Agwada, Bassa, Hadari, Arusu, Kandire, Dari etc also grossily affected is along water shed rivers like the Pamparo, Bakin Ayini and Hadari areas. These water shaded areas constitute trees that posses good timber quanlities like Isoboline doka, Danielia lievera Khaya sengenleses, chlorophara excels and Afzeloci africana.

These lack of unchecked altitudes of exploitation of the forest resources, has now led to fast declining of tropical forest and therefore deforestation on he decline in Kokona and its environs which resulted to land degradation and increase in soil erosion. The soil is left without vegetation cover and timber for wood is hardly gotten in the area. In a few years to come there will be no timber in the forest.

Exotic species that were planted for many years ago in order to replace the fast declining of indigenou species is not left-out. Mass destruction of these exotic species is also on the decline because of the demand in exporting them to Europe countries and America. But the purpose was mainly for firewood, serves as wind breaks against buildings. Lack of seriousness on government side to involve on annual tree planting campaign has also created a lot of environmental problems in the country, even with the much emphasis on deforestation in the Global world today, Nigeria government still did not or given less attention on deforestation

problems and now the country is experiencing a lot of environmental problems ranging from land degradation, desertification, desert encroachment and eventually leading to albedo.

1.3 AIMS AND OBJECTIVE

The main purpose of this study is to ascertain the impact of deforestation and its implication in the study area within its broad purpose, the specific objectives are :-

- a. To identify the problems of deforestation and its implication to the environment.
- b. To find a lasting solution to the problem of deforestation.

1.4 JUSTIFICATION

The over exploitation of the forest land clearing for Agricultural purpose, urban development and registration of many timber contractors, illegal felling of timber without proper checking, which is as a result of deforestation land degradation and soil exposure due to removing of vegetation cover.

If the above trends, events is not checked now the effects of deforestation on the environment will increase in the study area.

1.5 SCOPE AND LIMITATION

The study will be limited to Kokona and its environs with reference to deforestation impacts on the environment and possible solutions how to stop further implications that could be completely minimize leading to land degradation, drought, desertification land depletion and soil erosion as well. Subsequently other information will be collected form government establishment, private individuals, questionnaires will be

provided and oral interview, also photographs will be taken were most of the impact is affected.

1.6 STRUCTURE OF THE THESIS

This project is divided into six (6) chapters, chapter one deals with, Introduction, statement of problems, aims and objective, justification and scope and limitations.

Chapter two, deal with the Historical Background of the study area, topography of the area, climate of the area, vegetation of the area soil population and land use. While chapter three deals with literature review, global issue of deforestation, then chapter four deals with the methodology, data collections and analysis while chapter five deals with discussion of the results and finally chapter six deals with summary, conclusion, findings and recommendations.



ate 1: Charcoal production is one of the source of income by mada Women. It is packed into the sacks ready for Transportation to the Market. It is one of the factors involve in deforestation.



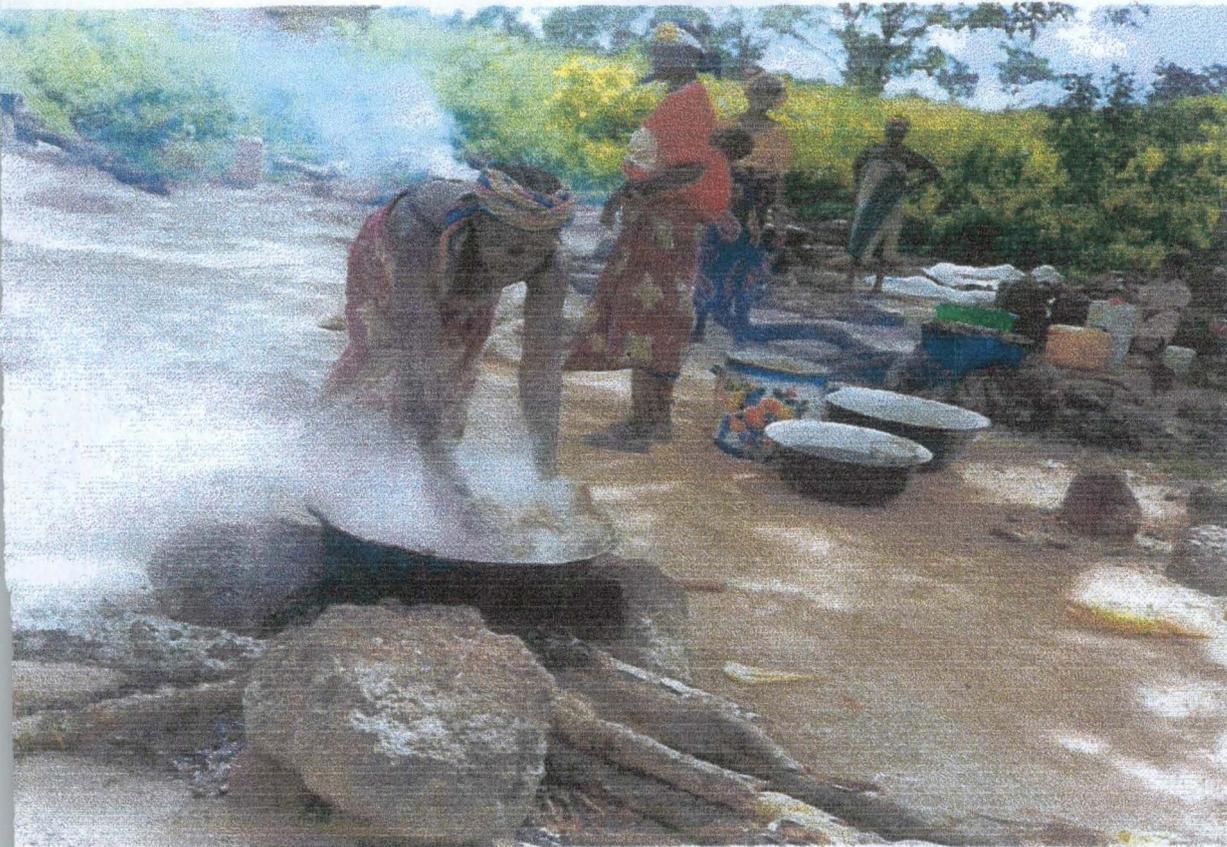
2: Firewood inside the Pickup on the way to the urban city for sale - source of deforestation.



Plate 3: Rural Women involved greatly in deforestation, these are heaps of firewood arranged for sale. Mostly the urban people come to buy for their domestic use.



Plate 4: Women contribute greatly in deforestation as it is a pride for a gwari women pack heaps of wood at the backyards of the house.



te 5: The Gwadara Women used the ashes derived from firewood used in preparing Black soap known as sapolo solo



6: A log of timber felled, it is ready for cutting into pieces of 4 x 6 x 12 and 3 x 9 x 12 after that it will be loaded into 911 lorry for transportation to timber shed as it is shown in plate 7 below. These are all processes of deforestation.



Plate7:



Plate 8: Timber brought from the bush into the timber shed ready for sale to end users either for roofing of house, constructions of furniture etc.

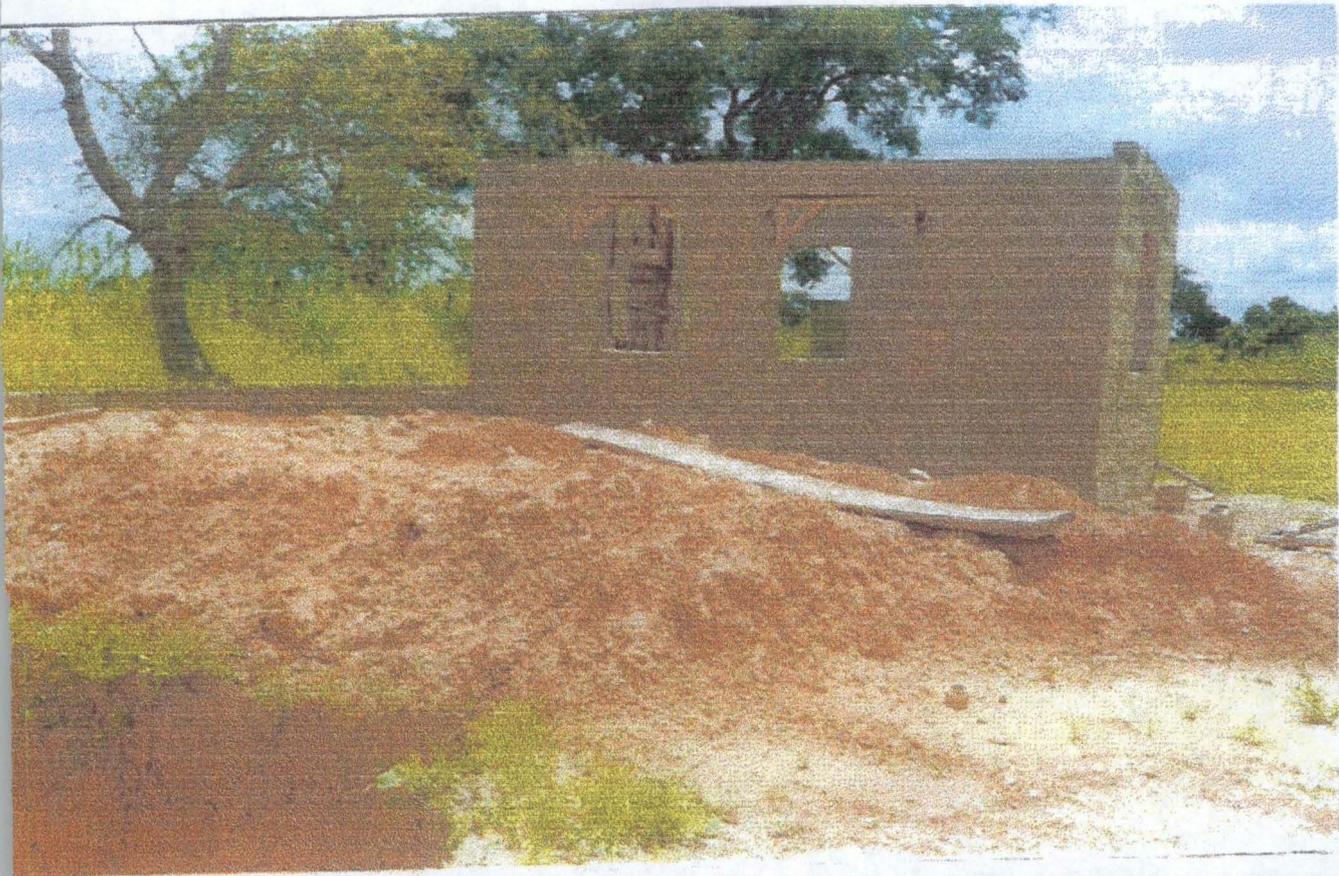


Plate 9: Influx of people into the town involved in deforestation, an example of the above picture shows construction or building of a house.



Plate 10: Deforestation is as a result of land clearing for Agricultural purpose this picture Shows a typical example, Land is left without vegetation cover, grasses are been burnt the soil will be bare and exposed to high run off and this will lead to erosion

PLATE 11: Road construction is one of the factor involved in deforestation and land degradation in the process of clearing land to get good soil, the bulldozer removed the vegetation cover and the top soil leaving the soil infertile, there will be runoff, the land is left without vegetation, hardly will grass grow in the area, the above pictures is a typical example.



MAP OF KOKONA L.G.A. SHOWING TIMBER FELLING AREAS

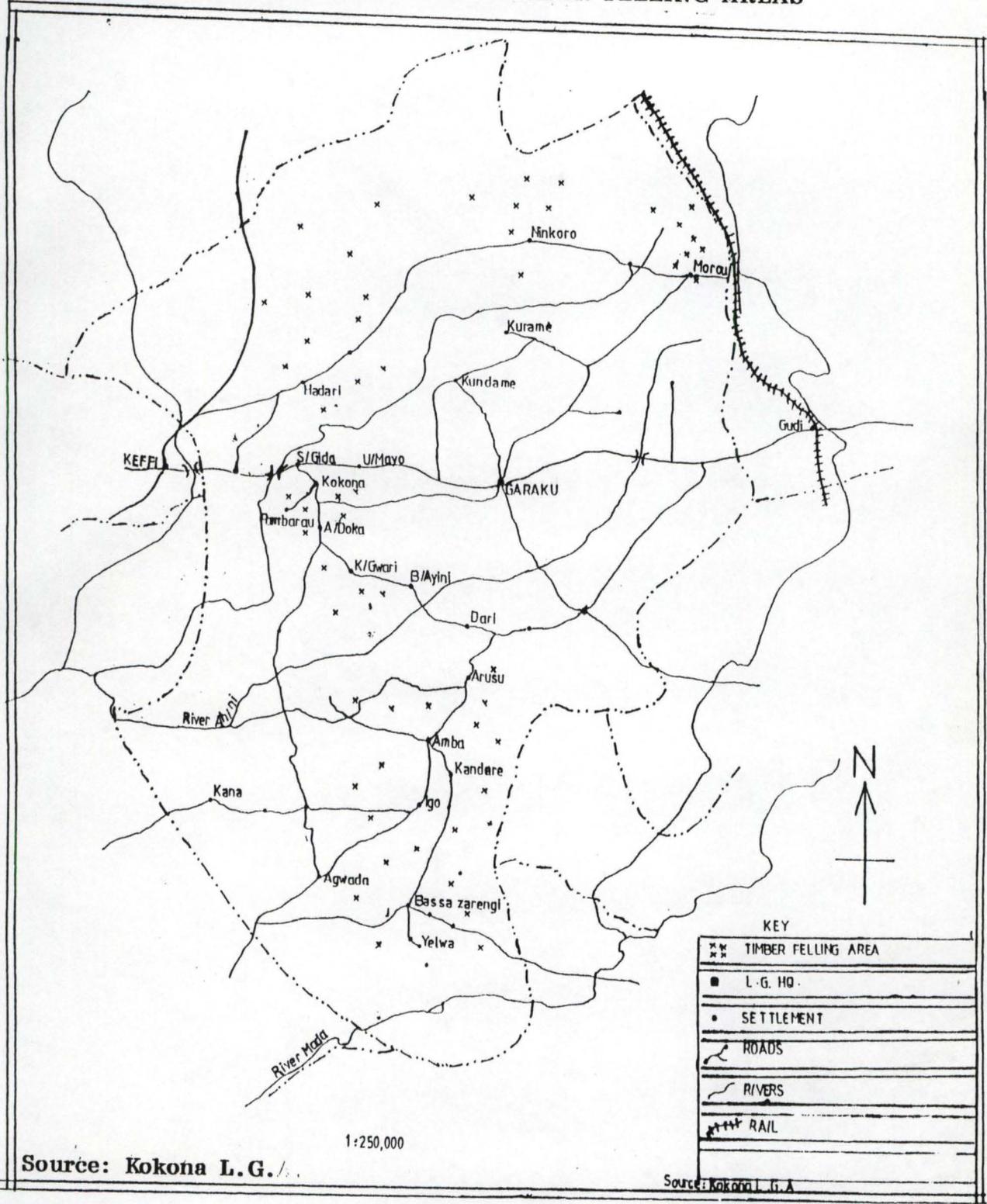


Figure 1.

CHAPTER TWO

STUDY AREA

2.0 HISTORICAL BACKGROUND

Kokona Local Government area with Headquarters in Garaku of Nasarawa State was created in December 4th 1998 following the creation of six additional states in October the same year in the country by the administration of the Late Head of state, General Sani Abacha.

It has a boundary sharing with Keffi Local Government in the West, Doma Local government in the south western part, Akwanga, Nasarawa Eggon and Obi Local Government areas in the Eastern part with Nasarawa Local Government area in the south Western part respectively.

Kokona lies between latitudes $8^{\circ} 30'$ and $8^{\circ} 53'$ N and longitudes $7^{\circ} 45'$ and $8^{\circ} 15'$ E. it occupies an area of about 3,800 square kilometers.

2.1 POPULATION

The population of the area based on the 1991 National population census was 199,969 people while it is on the increase on daily bases, with density of about 70 people per square kilometer.

The dispersed nature of the settlement is as a result of the gradual disintegration of nucleated settlement. This disintegration is brought about by the increasing demand for farm land due to population growth or may have been caused by other factors which include inheritance and kinship or political.

The area is determined by rural settlements with inhabitants of different tribe that form the local government area today, this include the

Gwandara, Afo, Eggon, Mada, Hausa, Fulani and Ninzun. Similarly the Yorubas and the Ibos in the area contributed in merely to the socio-political economic development of the area.

2.2 TOPOGRAPHY

The study area is an undulating extensive plain in the south and is drained by river Mada. Towards the North, the plains are of the height 200-600 meters above mean sea level with undulating land, plains with rocky outcrops scattered and with less river draining the area. These rocky outcrops are part of the exposed underlying Precambrian undifferentiated basement complex and are mainly granitic gneisses and migmatite. The wide variation in lithology is reflected in their resistance to erosion.

2.3 CLIMATE

The study area has a strongly seasonal climate, which is largely determined by air movement. The major components of the air circulation are:-

- a. The humid maritime monsoon air stream blows as South –Westerly wind from the Atlantic ocean.
- b. The dry continental harmattan blows from the Sahara desert as a dusty north easterly wind.

2.4 RAINFALL

Rainfall in the study area is a single rainfall peak in August/September and dry season of five months or more with mean annual rainfall of 1240mm

2.5 VEGETATION

One of the major geographical features of almost all parts of the earth's surface is vegetation. The variation in vegetation are possible indications of soil variation's on regional scale.

The vegetation can be described to climatic influence and man's activities known as Guinea Savanna or savanna wood land. The typical trees of the Guinea savanna include locust beans sheer-butter trees. The trees for most part are deciduous with trees up to 15 meter of height while the grasses are shorter, with a range of 0-5 –1-5 meters high, and the grass may be superseed altogether in some areas.

2.6 SOIL

The soils are derived mainly from basement complex and old sedimentary rock of shale and sand stone. The soils are a function of the underlying parent, material, the climate vegetation and topography. The soils are mainly the ferruginous tropical soils.

2.7 LAND USE

Agriculture and economy- Kokona and its environ have a vast land for agricultural activities which most of the inhabitants are farmers, which is characterized by rainfall upland with a small family farms, cultivated by manual labour. The major crops here include sorghum, maize, cassava which are grown on ridges: yams and sweet potatoes are usually grown on mounds or large ridges. Rice is grown only were fadama farm is available, so rice farming is in limited form.

Cultivation is continues for a long period. This area also experience the seasonal invasion by fulani herdsman, because it provides an adequate

grazing land during the dry season. Soil fertility is maintained by the combined use of fallow, some animal manure and fertilizer.

Agriculture is enhanced by the presence of agricultural agencies such as, Nasarawa Agricultural Development Programme (NADP) and Ministry of Agriculture and Agricultural Department of Local Government should help in the supply and sales of fertilizer and tractor hiring to farmer and also offering of extension service to the peasants farmers through the Nasarawa Agricultural Development Programme (N.A.D.P.)

CHAPTER THREE

LITERATURE REVIEW

3.1 GLOBAL ISSUE OF DEFORESTATION.

According to ("Olanrewaju 2000)" that the number of people on earth, their distribution across the global, consumption pattern and technologies they use determine their relevance on the environment.

That is, man uses the environment as a resource bank, a habitat and as a sink for waste however, over use of the exhaust resources to the point that the survival becomes difficult (world Bank, 1993) reported that rapid population growths in developing countries and high level of resource consumption in developed countries are considered to be important causes of environmental change, which increased the rate of deforestation globally. (F.A.O, 1991) also reported that deforestation is a major global problem with serious consequences to the planet. These consequences have negative effects on the climate biodiversity the atmosphere and threatens the cultural and physical survival of indigenous peoples.(FAO, 1991) reported of public out cry the world's tropical forests are being cut down at a rate of 40% faster today than they were 10 years ago. This is because of the high rate of demand of timber for construction purpose, as population is fast on the increase in alarming rate. Timber is use for furniture, road construction and rapid in urban development.

According to (FAO, 1990) that approximately 17 million hectares of tropical forest were cleared, about the size of Washington D.C.

According to (FAO, 1992/93) carried out a survey of 87 tropical forest countries and came out with the following regional data of forest cover and annual rates of deforestation.

S/N	COUNTRY	FOREST AREA 1980	FOREST AREA 1990	ANNUAL DEFORESTA TION 81/90
1	Latin America	923,000,000	839,900,000	8,360,000
2	Asia	310,800,000	274,900,000	3,600,000
3	Africa	600,300,000	600,100,000	500,000
	Total	1884,100,000	1714,800,000	16,900,000

Source: world resources institute 92/93

(World resources institute 1996) also reported that some three million people rely on firewood for almost all their house hold energy, example Africa for every ten people nine uses fire wood as their main energy source. (Harrison, 1992) reported that for each use of wood however there is corresponding crises.

(World Bank, 1993) reported that the search for firewood is said to be one of the primary causes of deforestation in the developing countries. This is because of the high cost of kerosine which is not easily affordable by a common man. Urban population tends to use more fire wood per capital than their rural counterparts. According to (Grainger, 1982) he stated that in the developing countries rapid growth of urban areas in many dry land areas has put increasing strams on the ability of the local environment to satisfy urban energy needs.(Grainger 1982) reported the case of Khartoum in Sudan where hardly a tree survives within 90km of the city. (Middleton, 1991) reported a similar incident in may other sahel urban centre for example Ouagadougou in Burkina Faso.

According to (FAO, 1982) reported that as many as 16 out of 45 countries in sub-Sahara Africa faced fire wood deficits on part of their territory and could not meet their needs by cutting trees faster than they are growing and reducing the stock. (Global forest fund, 1982) also reported that deforestation comes as a direct consequence of shifting cultivation, logging, grazing, fuelwood use, fire and urbanization, if these factors shifting cultivation is the far most important cause and its accounts for about 70% of the total deforestation in the African region.

According to (Southgate, 1990) that deforestation include land degradation in developing countries is a direct result of land tenure systems that facilitate property right acquisition in idle lands. (FAO 1993) reported in similar situation that deforestation can cause the climate to become more extreme in nature, the occurrence and strength of floods and drought could increase. Forest store large amount of carbon that are released when trees are cut or burned of biomass I will lead to green house effect. (FAO, 1990) reported that the world lost a total area of forest cover nearly twice the size of Italy. Deforestation which is caused by human population growth and encroachment clearance for Agricultural production and the growing worldwide demand for products has been linked with effects ranging from local changes in climatic and disease patterns to global climate change and biodiversity loss. According to (UNEP1995) that deforestation is responsible for about 25% of net annual releases of carbondioxide into the atmosphere and also lessens the amount of forest available to absorb green house fas emission. In view of that deforestation also causes a tremendous loss of biodiversity worldwide. It is estimated that of the next 50 years deforestation will rank as the single greatest cause of species loss. (FAO, 1995). The rate of deforestation in Mexico is at an alarming rate and government in

expressing fears over the rapid loss of forests areas. Where impoverished peasants are invading natural reserves (FAO 2001). The causes of deforestation are very complex. A competitive global economy drives the need for money in economically challenged tropical countries. Government sell logging concessions to raise money for projects to pay international debts or to develop industries. An example of Brazil had an international debt of 159 billion in 1995 on which it must make payments each year. The companies seek to harvest the forest and make profit from the sales of pulp and valuable hardwood such as mahogany source from (internet).

Allen and Barnes (1985) present a panel matrix (including 28 countries in Asia Africa and South America) that indicates deforestation in these countries results, from agriculture expansion caused by population growth. (Houghton, Skole and lefkwitz, (1991) attribute deforestation to human settlement as evidenced by expansion of pasture, cropland and shifting cultivation. Smill (1983) also identifies these process as a major factors of deforestation Ranjitsinh (1979) maintain agricultural expansion and timber extraction are the primary causes of deforestation in Asia and south east Asia.

Many authors consider the role of firewood cutting in conversion of moist forest inconsequential. Myers (1980) explains that in many parts of the world firewood is obtained mostly from Savannah shrubs and patches and local woodlots in conversion of tropical moist forests.

Fearnside (1989) explores substantial destruction of forested areas in the eastern Amazon to provide raw materials for charcoal to be used in smelting pig iron., Anderson (1990) illustrates the role of industrial

development and the demand for fuelwood in destruction Amazon Basin forest.

In relating land use and global land cover, Turner, Moss and Skole (1992) maintain that other causes of deforestation include two sets of factors.

Proximate sources are activities that affect land cover dynamics such as agricultural expansion and cattle raising. These activities in turn are the result of policies and attitudes of socio economic and political institutions that motivate and constrain production and consumption.

According to (Ganong, 1983) that oxygen is essential to human survival. It is a by-product of photosynthesis an important biological process that takes place in most plants. Deforestation may lead to reduce of oxygen in the atmosphere in causing chronic hypo-oxygenation of redblood cells. The body tries to compensate for this by increasing the affinity of the redblood cells to oxygen and also through an increase in the ration of red cells compared to that of plasma.

(Dudley et al 1985) surveys in Cameroon cote d'voire chana and Liberia found that forest wildlife accounted for 70 to 90 percent of the total animal protein consumed (FAO 1993) some indigenous peoples are completely dependent on forests. As well as providing a home for some people, the forest environment provides a popular setting for ecotourism which includes linking carrying bird watching and other adventures or nature study activities.

Recent report by the world resources institute have shown that more than 80% of the planets natural forest have been destroyed (Hatch 1997) that

already human kind is the cause of deforestation. But just as humans are able to create such widespread destruction these can have a positive effect on the crises.

(Mccrory et al 1997) that British Columbia has about forty percent of its original forest remaining, while Europe has less than half. (Dadlley et al 1995) reported that the united states have approximately one to two percent of their original forest cover.

3.2 NATIONAL ISSUE OF DEFORESTATION

(Harrison, 1992) reported that fire wood crises have also imposed a growing burden on urban house hold for instance, more of their income about 20-30% are spent on fire wood or charcoal.

(Harrison, 1992) reported again that deforestation occurs rapidly on the routed leading out of urban areas, and many developing countries as the urban demand for firewood grows. Harrison (1987) Sherbiniji (1993) also concluded that increasing demand for firewood has contributed to deforestation encouraged commercialization of rural fuel supplies and increased the fuel poverty of rural consumers. It becomes obvious that the search for firewood is no longer restricted to rural areas but has extended to the urban areas as well ass due to the recent hike in fuel price such as kerosene and natural gas.

Infact Bowonder et al (1986) found that forest depletion had reached such proportion in some areas that firewood cost had increased at a much faster rate than the consumer price kerosine, coal and liquid petroleum. Woodfuel remains the most affordable option a major challenge to poor household both in urban and rural area. High firewood prices also appear

to be responsible for an increase in the illegal extraction and sale of firewood by the rural poor which may increase income short run but will reduce agricultural productivity and fuel resource in the long run.

According to (Ujah, 1982) that the adverse effect of timber felling is already measurable in the form of increase in light intensity, soil and air temperature decrease in soil moisture and atmospheric relative humidity.

Roby (1991) calculated that the rates of deforestation for reserved and unreserved forests in different vegetation zones between 1970 and 1976 and arrived at a total deforestation rate of 400,00 per annum for the country as a whole. According to F.A.O (1992) using logistic function linking deforestation to land use area and population densities for 1980, 1985, and 1990, forecast deforestation rates for the 1981, 1985 and 1986, 1990, as 3.45% and 3.57% respectively.

F.A.O (1992) reported that if these rates are maintained, the remaining forest area of Nigeria could disappear within the next three decades i.e. by the year 2020. Adeyoyu (1974) reported that the value for shade trees provided to both human and livestock are stressed especially in the hot arid climate of Northern Nigeria. The effect of deforestation as a result of mass timber felling during the oil boom of 1970 which resulted to various large-scale agricultural schemes and roads construction as well as housing schemes in the country, e.g. the operation feed the Nation, feeder roads construction and low-cost housing estate.

(W.W F 1982) reported that the existing forest, Savannah wood land and mangrove that serves as a cover and food for the wild animals are fast

disappearing at an alarming rate in Nigeria to about 9.9% which calls for urgent solutions.

(UNDP Nigeria 1996) reported about 200 hectares of forest and wood land out of every 1000 hectares suffered from deforestation while 26 hectares were reforested on an annual basis.

(F.G.N,2000) reported that the value of cost forest cover has been estimated at U.S.D 750 million annually due to high demand of timber from the developed countries. In the northern state alone the annual deforestation of woodlands runs at about 92,000 hectares, while the whole country consumes about 50 to 55 million cubic meters of wood annually. Due to these factors poverty has a significant linkage with woodlands and forest depletion in Nigeria as most of the people especially the unprivileged one depend on wood for cooking and timber felling for commercial purpose. Harrison (1992).

(Gbadegesin and Oyelaran, 1995) maintained that forest also serves as a regular thus when it is removed the surface is exposed to direct heat from sun destroying the shade loving soil. Micro and macro organisms which may have some very serious implication on plants.

(Eckholum et al, 1984) based on a world Bank report, the yearly pade of deforestation in Nigeria averaged 3.5% between 1980 and 1990, while forest declined from 14.9 million hectares to 10.1 million hectares in the same period. (Papka1993) another estimate by he world bank suggest that the value of cost forest cover has been estimated at 750 million dollars yearly (based on 1989 price index) which was equivalent to about 23% of the nations gross product in 1989. (Umeh 1986) maintain that annual deficit of fuelwood in the North is about 5-8 million cubic meters.

Morgan (1978) reported that deficit in fuelwood supply in the extreme northern part of the country became so serious that charcoal had to be imported to satisfy energy needs in this area. From the estimates, about 6,900km² of the country's forest estimates have been lost in the past 30 years, giving an average of about 230 km² per annum. (Umeh 1986) that annual deforestation of the woodlands in the northern part of Nigeria runs to about 92,000 ha yearly. (Gernitz, 1985) reported that the fuelwood extraction rate in the country is estimated to be 3.85 times that of the regrowth rate and almost ten times that of the regeneration rate.

These figures, however, though not accurate, give a rough idea of the magnitude of the problem and the degree of severe population pressure on woody species in many parts of our arid and semi-arid areas.

(Gernitz, 1985) maintain that the high rates of rural-urban migration a feature of virtually all dry land developing countries, creates spatial pressure of demand. Drought in the Sahel has pushed rural inhabitants towards cities in the hope of finding employment and food. This invariably swells the population of the urban centres and thus increases their fuelwood demand, especially in developing countries (Courtant 1991) reported that the population of the Nigerian cities increases wood becomes progressively more scarce. Once nearby wood resources have been used, firewood dealers travel further, and scarcities spread in an expanding ring around cities.

Fuelwood shortages have hit many of the urban centres in the Savannah zones of the country. Pressure on wood resources becomes more severe during drought because it can paradoxically, increase supplies by firewood. As fuelwood becomes scarcer during drought, prices may

become so expensive that it is very profitable for entrepreneur to bring in trucks and transport fuelwood to the cities from far distances in the country side – Hardins (1968) illustration of ownership if the trees cut down to supply urban firewood need is another key issue and many in cases the tragedy of the common principle. All these happen at a time when the ecosystem requires little disturbance from wood cutting matter for it to regenerate when the rains return (Oladipo, 1989) (Newcourse 1984) maintain that Niger state has had its population blown in the last couple of years partly due to the influence of refuge farmers who have come from the desertifying and decertified upper northern parts of the country to farm in the hitherto virgin lands the state offered. The resultant effects of the influence is the deforestation if the timber forested lands. (Oladipo 1989) reported that the uncontrolled wood cutting can contribute to environmental degradation in many ways. Trees and vegetation in general play an extremely important role in the conservation of natural resources. Not only to recycle soil nutrients their foliage also provide a constant source of human. They also play the role of anchoring the limited amount of top soil to the ground and they act as a check against wind and water erosion.

Deleterious felling of trees to meet demand may consequently lead to disturbance of soil cover, development of sand deflation and increase in the susceptibility of exposed soil to wind and water erosion (Oladipo, 1989).

(Oladipo, 1989) that the consequences of man's bad management of his land resources is periodic drought which in every few decades brutally interrupt the cycle of attempts to extract more from a deteriorating environment. The consequence is a disaster to man and his environment.

Teplitz-sembitzky and Schramm (1989) concluded that it is the overall frame work of development rather than energy demand of the residential sector which is at the heart of the problems. The production of wood for fuel may be less profitable enterprise than the clearance of forest for cultivation or other purpose.

3.3 LOCAL ISSUE OF DEFORESTATION

Deforestation comes as a direct consequence of shifting cultivation logging grazing fuelwood use and bush burning due to influx of population into the area.

Timber felling is an agent of deforestation as a result of open nature of the vegetation renders the soil venerable to direct impact of raindrops. These easily dislodge the naturally loose soil particles and start a wash off as the rainfall is heavy the result will lead to soil erosion and flooding of the stream.

Timber felling for construction of houses construction of bridges/culverts and furniture making has been an increase in the area as a result of population pressure and influx of people from the environs and neighbouring states. Urbanization is an increase which required the used of timber for roofing houses, forms of works and other non structural structures eg carbin, wooden boxes, shelves and cupboard etc. There is also increase demand for timber in the market because of population influence into urban areas such as construction of housing estate, and furniture used are some of the increase in timber felling in the Kokona and its environs. If the trend continue unchecked it will soon lead to environmental degradation such as flooding and erosion will occur.

Land use in our arid and semi-arid areas seem to have entered a vicious cycle of overuse. Soils are over-exploited resulting in rapid diminution of soil fertility and tree cover. Loss of soil fertility means that more land must be over exploited to make up for falling yields in the face of increasing human and bovine population. The land gets progressively worse, and signs of severe erosion, land degradation and eventually desertification appear. And these are consequently of deforestation in Kokona due to man's over exploitation of land resources.

THE CAUSES OF DEFORESTATION

Usually the onset of any deforestation processes start with the structures and nature of the environments. Deforestation is the indiscriminate felling of trees or wanton exploitation or clearance of the forest in a particular geographical location without any effort at replacing it. The role of deforestation in global environmental dynamics is gaining increasing attention at all levels ranging from small village commonly in developing countries to international summits in developed nations.

The expansion of data base on the scale and rate of deforestation in recent years has evoked serious concern from the world public to the extent that there is now a growing perception that deforestation is one of the most pressing contemporary environmental problems. The United Nations conference on environment and Development (UNESCO) identified deforestation as one of the (3) three specific topics. The other two (2) are being biodiversity and climate change. The current trends or pressure on the vegetation is due to increase in population poverty etc. which lead to high demand on natural resources and new trends in land use with linkages between crop production livestock and human settlements these reduced the forested areas in the study area.

Destroying such little vegetation has impact on the environment. It helps to increase green house gas emission into the atmosphere. Deforestation degrades the forest land and the soil in the kokona area, such activities if continue may likely lead to desert encroachment in future in the study area.

Deforestation is caused by human factors mostly and could be as a result of the following:-

- Population pressure. The most important factor causing large-scale deforestation in kokona and its environs either directly or indirectly linked to population pressure of influence of people moving from one state to another either in search for land or religion disturbances.
- Timber harvesting is declining in Kokona due to lack of available trees for timber uses, because of the over-exploitation for construction of furniture, roofing of their houses and land clearing for agricultural purposes.
- Bush fire- is an agent in the process of deforestation some of the fires are either accidentally but others are deliberately due to land clearing for agricultural, hunting in search for game, such as rats and antelopes. Also cattle herdsman set fire on grasses to stimulate growth of dormant grass buds.
- Provision of fuel wood and charcoal- the demand for domestic fuel is accelerating deforestation in Kokona and its environs because firewood and charcoal are the main sources of energy in the study area. Some trees species are particularly important due to healing efficiency of their wood (eg) Vitex doniana, Bombax costatum, Prosopis africana. As population increases more energy is needed for

domestic purpose such as cooking food baking bread, heating water and ironing clothes; while the bulk of this energy is derived from forest product in the form of either wood or charcoal.

- Cultivation of crops (land clearance of cultivation): Deforestation process is the large-scale clearance of land for cultivation to due mainly increase in population. The level of disturbance associated with such land use can be either intermediate or high.
- Poverty . infact the most suitable and often neglected cause of deforestation is poverty although no statistical data to show or hard to come by. Therefore, the people depend heavily on the national resources of their areas or environment. Both in the city and the rural area people depend on the little vegetation around them. Selling wood to the town people made a useful supplement to their meager cash income.

EFFECTS OF DEFORESTATION

Deforestation results not only in the loss of trees, but also cause the entire remaining vegetation to partially break down. Most area are chained and the organic matter (eg) human bound in the soil becomes easily decomposed. All these processes release carbon dioxide (Co₂) into the atmosphere. Since 1850 there has been a world-wide release of some 20% (117,000 tones) of carbon which was locked up in vegetation. However, each carbon has been lost due to human induced activities on the forest (climate problem 2000).

- a. loss of species and biodiversity
- b. increased soil erosion
- c. decline in soil fertility
- d. lowering of water table.
- e. Flooding and increased rate of evaporation due to exposed soil.

- f. Cumulative effects is one of the increased "poverty".
- g. Distortion of ecological balance.

The economic effects of fuel wood scarcity are felt beyond the home. Agro-based industries such as fish smoking are equally affected. Some minor causes, some trees have medicinal properties extracts and made from the leaves, branches, barks and roots are depending on the types of medicine and intensity extraction this may cause tree to die.

CHAPTER FOUR

METHODOLOGY

4.1 DATA COLLECTION: The study will undertake an oral interview in Kokona and its environs and the fire wood dealers, timber dealers will be the main focus to ascertain what typed of trees have been felled matures/premature and how they have been put to use.

Also going to library and internet to source for information which will be included as a data collection

4.2 QUESTIONNAIRES.

This will be distributed among the people especially, those that have direct bearing on timber felling. The answers or data will be compiled and use for determining the result/data.

4.3 DATA ANALYSIS.

Having received or collected the data from both the communities and people and the offices / ministry of Agric and local government Agric Dept) after which they will be analyzed and result formulated. Statistical methods such as percentage etc will be used for data analysis like graphs and tables will be used to discuss various findings. Also photographs will be used for illustrations of various causes of timber felling and using purpose during the fieldwork.

CHAPTER FIVE

ANALYSIS DISCUSSION OF RESULT

5.0 DISCUSSION OF RESULT

This chapter presents the discussion of the data collected and result obtained from the study area. Results obtained from the questionnaire and interview have been grouped.

Table 5-1 People that were interviewed and age group.

Age of interviewer	Number of people	percentage
20-40	34	42.5
41-50	32	40.0
51-55	10	12.5
65 and above	4	5
Total	80	100.

Source – field survey

Interview were conducted by use of questionnaires and this revealed that most farmers involved in timber felling, this constitute 42.5% and range from the age of 20 to 40 years while 40% are in the age group of 41-50years and constitute about 12.5% while timber producer and marketers are in the age of 55years 5% are within the age of 56years and above. Although those involved in timber felling (operators) are mostly within the age of 25yrs (75%) which clearly indicated that timber business is common among the youth in Kokona and its environs. Also timber felling is mostly carried out in kokona during the dry season than the rainy season, because in the rainy season they go back to their farming business.

Table 5-2 STANDARD OF EDUCATION

Education obtained	Number interviewed	percentage
Illiterates	6	7.5
Pri-school	26	32.5
Secondary	38	47.5
Higher school	10	12.5
Others	0	0
Total	80	100

Sources = field survey.

The main purpose of the above table is to know those who can read and write. Although most of the youth in the area are those that completed their secondary school and cannot go to higher institutions either for lack of good results or lack of sponsorship. Which shows 47.5% and 7.5% also interviewed are illiterate, with the level of educational background it is expected that most of those involved in timber felling should know the implications of felling premature trees or indiscriminate cutting down of trees and its implications to the environment.

Table 5-3 HOW TIMBER IS ACQUIRED.

Timber obtained	Number of people	percentage
Government	35	43.75%
Individual	45	56.25%
Total	80	100.

Source: field survey

The information from those interviewed indicate that 43.75% acquired their timber through government. Mostly in open forest while 56.25%

obtained theirs through individual with trees in their farm land. This eventually, create chances for illegal timber contractors in the area by felling trees indiscriminately leading to land degradation and soil erosion may occur.

Table 5-4 **PURPOSE OF FELLING TREES**

Timber used	Number interviewed	percentage
Roofing	20	25%
Firewood	30	37.5%
Charcoal	8	10%
Business	16	20%
Total	80	100.

Source = field survey

Table 5-4 shows that 37.5% of people mostly women involved in trees felling for firewood, for either livelihood, 25% for roofing because of population increase in the area, more houses are built dairy this lead to high demand of timber and deforestation on the increase leading to environmental problems in the study area such as soil erosion etc.

Table 5-5 **IMPLICATIONS OF TREES FELLING IN THE ENVIRONS**

Implication in environment	Number interviewed	percentage
Flooding	20	25%
Soil erosion	40	50%
Loss of biodiversity	15	18.75%
Others	5	6.25%
Total	80	100.

Source = field survey

This indicates that 50% is as a result of soil erosion due to indiscriminate felling of trees without proper control, if the trend continues unchecked it will cause more havoc in future, while 25% is as a result of flooding due to over exploitation of the forest resources, clearing for cultivation and eventually loss of biodiversity indicates 18.95% and other implications resulting to 6.25% such as population pressure.

Table 5-6. **METHOD OF PAYMENT**

Payment	Number interviewed	percentage
Government	30	37.5%
Individual	10	12.5%
Not paying	40	50%
Total	80	100.

Source: field survey.

From both the state ministry of Agric and local government dept shown that 15 timber contractors were registered in the year 2002 and 2003 respectively, but only 37.5% represent those who come to pay to the government for permit and 50% represent those that operate illegal means that they don't pay kobo to the governments. This shows that those illegal operators involved in causing more havoc to the environment and government is losing in both aspect of revenue and compacting in land degradation.

Table 5-7 PROBLEMS TO THE ENVIRONMENT

Problems	Number interviewed	percentage
Desertification	15	18.75%
Land Degradation	40	50%
Soil infertility	20	25%
Total	80	100.

Source – field survey

Table 5-7 shows that, the effects on land degradation to the environment is 50% this is because people involved more in tree felling for firewood and land clearing for agricultural purpose, as they are mostly agrarian while 25% as a result of soil infertility because of the trees cover are removed the soil is exposed to bare ground and high run off and evaporation.

Table 5-8 REPLANTING OF TREES

Replant after felled	Number interviewed	percentage
Farmland	15	18.75
Surroundings	10	12.50
Not planting	55	68.75
None	0	0
Total	80	100

Source = field survey (2003).

This indicated that only 18.75% replant tree after felling in their farmland while 12.50% replanted in their surroundings and 68.75% represent those who don't replant at all, this clearly shows the lukewarm attitudes of people in only destroying but don't care to reafforest this is why it is not easy to bring back the environment to its natural form. This also lead

to the natural forest almost disappearing from Kokona and its environs, with this trend continues in 5 years to come hardly will there be trees for timber, even if it is available, will be found in pockets or scarty form.

Table 5-9 problems in trees acquisition.

Problems	Number interviewed	percentage
No trees	80	100
None	Nil	Nil
Total	80	100.

The information received from those interviewed and oral questions above indicated that 100% of their problem is lack of availability of matured trees for timber is not easily available as it used to be ten (10) years ago. The only remedy is to plant more as you cutdown so as to regain the forest back in future.

Table 5-10 LAND CLEARING.

Purpose for Land clearing	Number interviewed	percentage
Agricultural	40	50%
Cattle raising	35	43.75%
Others	5	6.25%
Total	80	100.

The above table 5-10 clearly indicated that 50% as a result of Agricultural activities through land clearing, planting crops, especially poor farmers chop down small area (typically a few areas) and burn the tree trucks a process called slash and burn agricultural. While the rich involve in large-scale or intensive or modern agriculture. Deforesting several square miles at a time and the cattle raising indicated about 43.75% mainly for grazing purpose.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 SUMMARY /FINDINGS

From the analysis of interviewed indicated that deforestation in kokona and its implications in the environments is as a result of excessive felling of trees for firewood and land clearing for agricultural purpose which constitute about 60% and less attention in given interms of replanting the cut down trees. Even if they replant less or not properly care is given for its maturing. Mostly they replant in their farmland and surrounding, and most of the friuts trees are replanted instead of timber trees. The believe they have is that, when they plant trees in their farmland it will cover the crops and hence lead to low yield crops.

Timber felling in Kokona and its environs is one of the factors of deforestation as it has been an age long affair due to high demand for construction of houses construction of culverts and furniture making especially for primary and post primary schools in the area.

6.2 CONCLUSION:

Presently there is existing law in forestry especially the Northern Nigeria law of 1963 cap 44 which deals with forestry matters, this law is over due for reviewing to suit our present day generation once this law is reviewed it will provide an affective control and protection of our forest resources in the study area.

The increase in indiscriminate timber felling should be stopped and that could only be achieved through working good relationship between the local government and state government because, the two tears are all

working in achieving one goal that is protection, conservation and control of deforestation, decertification drought and river silting.

Another setback in compacting deforestation is lack of government commitment in providing enough fund and the federal government should involved the united Nation development programme and UNESCO in funding for proper management and protection of forests.

However, Kokona and its environs has experienced a high rate of timber exploitation since twenty (20) years ago. Also as a result of population pressure and influx people from other local government areas and neighboring state urbanization is on the increase which required the use of timber for roofing houses and other non structural purpose of cabin, shelve, caboard and also increase demand in furniture makings. As a result of this man activities there is increase in timber felling in the study area and if this is not checked immediately will result in more river siltation, flood.

Aeforestation and soil erosion, hence they are in existence at the time of writing the project and they are all highlighted in the project.

6.3 RECOMMENDATIONS

Here, from the observation, it is considered desirable to make the following recommendations, which could long way in reducing the rate of deforestation in the study area and global at large.

The federal and state government should provide alternative sources of energy to replace wood such alternatives, are gas/kerosene, coal stores and biagas, including government should purchase the items and sell to the general public at subsidized rates. State agricultural supply companies and cooperative shops could serve as the agent.

The federal government should be contacted to provide continues supply of gas, kerosine and coal to beat inflation.

Media houses and National Orientation Agency should be involved to launch campaigns against indiscriminate felling of trees frequent brush burning shifting cultivation, mutilation of plants for medicinal purposes etc. hand intend with the agencies should be used to campaign for massive tree planting all over the country.

Traditional rulers youths clubs like (environmental conservation club) NGO's and public media should be involved in environmental protection and improvement. The state government should make laws in this regard.

There is the need to provide logistics staff and funds to intensify the protection of forest estate and also carry one meaningful aforestation programme.

The state governments should as a matter of urgency create standing committee on desert encroachment in the states.

There is need to incorporate rural forestry activities in all agricultural enterprises.

Resurveyed all existing forest reserves are necessary in order to find out the actual extent of such estate. As there were serious illegal encroachments.

Large-scale farmers should be encouraged to establish commercial (industrial) plantations through incentive to provide continuity. In addition the state and local governments should provide seedlings and fencing materials at subsidized rate.

Research on indigenous species and other exotic species chosen should be conducted with a view to exploiting their potentials.

Government should stop de-reserving forest reserves for minor reasons. When it is necessary to de-reserve an alternative land should be provided.

As a matter of fact and urgently, pharmaceutical Association should be advised to establish herbarium and arboretum to allow future uses and continuity. Currently herbalists are causing great havoc to plants.

As a matter of priority there is need to inculcate the art and science of forestry practices in all institutions of learning. There is therefore the need to develop a curriculum to get student to appreciate the importance of forestry right from youth. In other words to catch them young.

Establishment of geographic information system to study the ecological problem in magnitude of deforestation.

The National tree planting campaigns which has been taking place every yea should be revisit and its normal tradition should be extended to district level.

Encourage companies, individual and private organization to establish woodlots the government should provide land for them as an incentives

Clear felling of trees in sloppy areas roadside and riverbanks should be prohibited. Similarly complete clear felling in large farm should be discouraged, a belt of natural trees 30 metres wide should be left at every 200 metre of clear felling.

As a means to encourage conservation consciousness, throughout the country, consideration should be made for the financial incentives to communities, local governments that were able to eradicate indiscriminate timber felling.

APPENDIX 1

**DEFORESTATION AND ITS IMPLICATION IN KOKONA AND
ITS ENVIRONS
QUESTIONNAIRE**

Dear Sir/Madam,

I am a post graduate student of the Federal University of Technology Minna undertaking a research on Deforestation and its implications in Kokona and its environ.

Please respond to the questions below by ticking the appropriate Options. All information Collected will be treated as confidential and will be used for the purpose of this research alone.

Thanks.

TOWN/VILLAGE:

AGE:..... **SEX:**.....

DISTRICT/WARD:.....

MARITAL STATUS: MARRIED () SINGLE ()

STANDARD OF EDUCATION:

1. What do you do for a living?.....
2. Did you ever involve in timber felling? Yes () No()
3. If yes why do you fell the timber for? (a) roofing of house (b) firewood (c) charcoal (d) business.
4. How do you acquire the timber?.....
5. What are the implications of tree felling?.....

6. Do you pay for the felling of timber? (a) Yes (b) No
7. What are the likely problem to the environment?(a) Desertification
(b) degradation of land. (c) soil infertility (d) None.
8. What type trees do you fall in a day? (a) matures (B) pre-matured
9. Do you replant as you fell? (a) yes (b) No
10. If yes have you been able to solve the above problem? (a) yes
(N0)
11. Where do you?.....
12. Do you encounter some problem (s) in tree acquisition (a) yes (b)
No
13. If yes what are the problems?.....
14. How do you solve the problem(s) in Question 8 & 14.....
15. Do you involve in Land clearing?.....
16. If yes, why do you clear land (a) cultivation (b) grazing

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