

# The Environmental Issues of Taraba State

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**Abstract**-The objective of this paper is to discuss the nature of environmental degradation (limitation) as a result of desertification, deforestation, flooding, soil erosion and climate change, in terms of their impact on productivity and to suggest potential strategies for amelioration or management strategies to prevent degradation and to maintain an environmental balance for sustainable security. This study was conducted to examine some of the environmental problems of Taraba State. Data were generated from secondary sources as well as photographs. The paper highlights some environmental problems of Taraba State. The paper recommends ecosystem education, natural resource rehabilitation, improved technology, environmental data bank, population data and enablement of existing environmental policies among other measures to overcome the environmental problems. It also advocates for the integration of both local and advanced environmental management strategies in order to achieve a sustainable environment.

**Keywords:** Environment, Issues, sustainability, Taraba State.

## 1 INTRODUCTION

Environment is a resource, which is being consumed at an exponential rate. Unfortunately, this resource cannot be easily replenished. This has led to a lot of environmental concerns and issues which need to be dealt with on a war footing. The global scenario today is fraught with drought, famine, floods, and other natural calamities. The frequency of such occurrences is increasing in a dramatic fashion.

The negative impacts of human activities, which affect and alter the balance of nature result into environmental problems. Awareness about human activities causing environmental problems in Taraba State started in the 1960s [1]. Environmental pollution, climate change, environmental degradation, flooding, deforestation, soil erosion, etc, are amongst the important environmental issues [2].

Environmental problems of Taraba State are not peculiar to a particular section of the state. Like the harmattan wild fire, they cut across all regions of the state-rural and urban. Human activities such as farming, hunting, fishing, road construction, building, etc. put a lot of pressure on land, water and air. The environment of the State is thus threatened in several ways thereby causing problems such as soil erosion, desertification, flooding, soil degradation, climate change and river blindness (Onchocerciasis) which affect the populace adversely. Hence, the need for the development of measures that will achieve better environment suitable for all. The measures that enhance environmental quality and resource base

on which humans and other species depend, provide basic human needs in terms of food, in economically viable manner and enhances the quality of life for the society as a whole.

## 1.2 Location and Physical Setting of Taraba State

**Location:** Taraba State lies roughly between latitude 6°30' and 9°36' north and longitude 9°10' and 10°50' east. It is bounded on the North by Bauchi State and Gombe State on the North-east. It is also bounded by Adamawa State on the east and Plateau State on the North-west. The State is further bounded to the west by both Nasarawa and Benue States, while it shares an international boundary with the Republic of Cameroon to the South and South-east [1]. The map of Taraba State showing local government areas is shown in Figure 1 and Table 1 shows Taraba State L.G.A. population.

**Relief and Drainage:** The State may be divided into three topographical regions. West of the River Benue, covering mostly Ibi and Karim Lamido Local Government Areas, are the intensive Fadama Swamps of the Muri Plains. This region is very thinly settled and virtually uncultivated [1].

A marked contrast to the flood plains is the undulating lowland of the eastern Muri plains. This is broken intermittently by high rising hills such as the Kungana, Fali and Bali hills which developed on sandstones. Standing above the 350m contour, the hills are developed on both sedimentary and crystalline rocks [1].

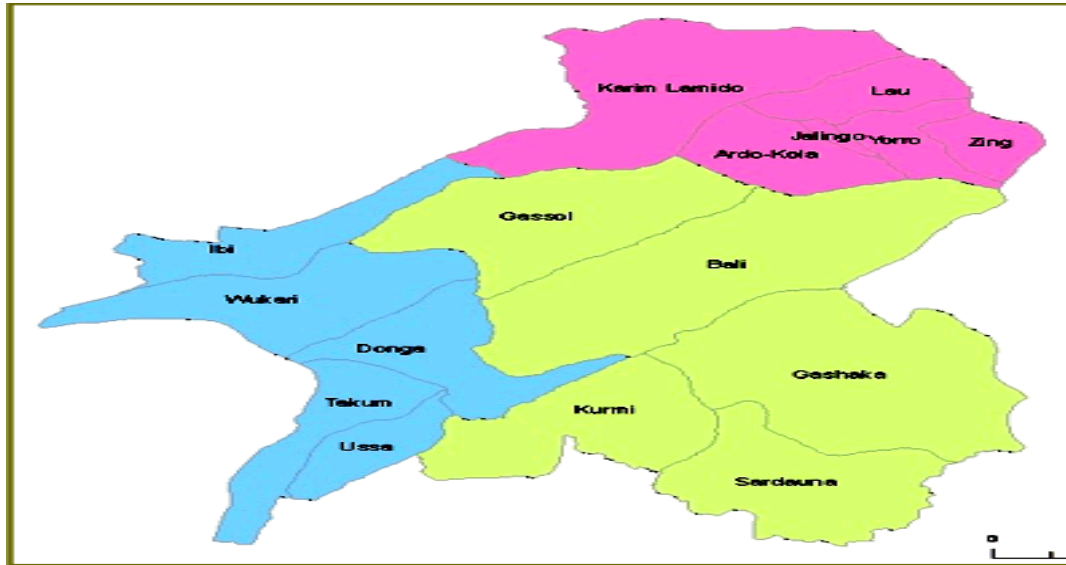


Fig.1: Map of Taraba State showing local government areas [3]

Usually, hills on sedimentary formations tend to have flat tops due most probably to lateritic capping [2]. On the other hand, the hills which developed on crystalline rocks consist of dome shape inselbergs. The Mambilla Plateau is a unique topographic region with some of the largest and highest mountains in Nigeria, with peaks reaching over 1840m. The Chabbal Hendu, for example, is over 2000m above sea level.

The Plateau which developed on basement complex rocks, measures about 96km along its curved length and 40km wide, and bounded by an

escarpment which is about 900m high in some places. The Mambilla Plateau forms the watershed from which the major river systems in Taraba State take their source. Rivers Benue, Donga and Taraba (from which the State derives its name) are the dominant river systems which flow across the Muri plains to drain the entire State. Together with the minor ones, such as the Lamorde and Mayo Ranewo, they form extensive flood plains in the central part of the state, providing sufficiently fertile agricultural land which is presently under utilized [1].

**Climate:** Like most parts of Northern Nigeria Taraba State has a wet and dry climate. The wet season lasts, on the average, from April to October. Mean annual rainfall varies between 1058mm in the north around Jalingo and Zing, to over 1300mm in the South around Serti and Takum. The Wettest months are August and September [2].

The dry season lasts from November to March. The driest months are December and January with relative humidity dropping to about 15 percent. Mean annual temperature around Jalingo is about 28°C with maximum temperature varying between 30°C and 39.4°C. The minimum temperatures range between 15°C to 23°C. The Mambilla Plateau has climatic characteristics typical of a temperate climate. Temperatures are low throughout the year and the rainy season lasts from February to November with a mean annual rainfall of over 1850mm [2].

**Vegetation:** Rainfall distribution and topography are the most important factors influencing the pattern of vegetation in Taraba State. The vegetation may be classified into three broad types: The Northern Guinea, the Southern Guinea and the Mountain Grassland and Forest Vegetation [2].

The boundary between the Northern Guinea and Southern corresponds fairly closely with the 1400mm mean annual rainfall isohyet, while the mountain forest and grassland vegetation occur mainly on the Mambilla plateau. Most of the lowland areas are made up of ferruginous tropical soils which developed on crystalline acid rocks and sandy parent materials. The upland areas, especially the Mambilla plateau, are covered by humic ferrosols and lithosols which are highly weathered and markedly literalized, due to leaching [2].

**TABLE 1:** Taraba State L.G.A. population [Source: 4]

LGA	POPULATION	MALES	FEMALES
Karim-Lamido	195844	99513	96331
Lau	96590	51859	44731
Ardokola	86921	44020	42901
Jalingo	139845	77425	62420
Yorro	89410	45548	43862
Zing	127363	64602	62761
Gassol	244749	125293	119456
Ibi	84054	45350	38704
Wukari	241546	124635	116911
Bali	208935	112014	96921
Gashaka	87781	48911	38870
Sardauna	224437	113185	111252
Kurmi	91531	49188	42343
Ussa	90317	50700	41995
Takum	135349	68863	66584
Donga	134111	69267	65844
Disputed Areas	20253	10386	9867
<b>TOTAL</b>	<b>2300736</b>	<b>1199849</b>	<b>1100887</b>

## 2 ENVIRONMENTAL PROBLEMS

### 2.1 Desertification and Deforestation

Desertification and deforestation are assuming increasing magnitude in the semi-arid zones of the world as major threats to ecologically productive systems. Desertification refers to a process of land degradation in fragile dry land ecosystem adjoining the true deserts. The United Nations Environmental Programme [5] defines desertification as, “the diminution or the destruction of the biological potential of the land, and can lead ultimately to desert-like conditions. It is an aspect of the widespread deterioration of ecosystem, and has diminished or destroyed the biological potential (that is, plant and animal production), for multiple use purposes at a time when increased productivity is needed to support growing populations in quest of development.”

The greatest process of desertification occurs in the arid (200 – 250mm annual rainfall) and semi-arid (250-800mm annual rainfall) lands, representing more than 30million square kilometers (20% of the earth’s surface). According to Grainger [6], 6.9 million sq.km of this is in sub-Saharan Africa. It has been estimated that Nigeria alone has lost some 351,000sq.km to the desert, representing 38% of its total landmass, and more than 30 million people live under the threat of desertification [7]. The rate of desertification in Nigeria is estimated to be about 0.6 35km per year [8, 9].

Deforestation on the other hand, is the indiscriminate felling of trees without their replacement. Because the vegetation has been regarded as an inexhaustible bounty of nature, it has been treated casually. We have also regarded its protective functions and potential value for raw materials supply lightly. Yet, deforestation is

directly related to desertification, accelerated soil erosion, declining soil productivity; and loss of farmland, which are serious environmental problems in the country.

Excessive deliberate bush burning, soil erosion, desertification and deforestation are among the most adverse ecological problems in Taraba state. From December to February (during the peak of the dry harmattan season), a large part of the natural vegetation especially in the Northern part of the State, is easily turned into an ash laden, dark looking wilderness of burnt vegetation, posing serious threat to livestock rearing activities in the state. Bush burning, fuel wood exploitation and the traditional slash and burn agriculture practiced by the peasant farmers are gradually but consistently causing desertification and soil erosion especially in the northern part of the State [1].

## 2.2 Flood Disaster

A flood is an over flow of an expanse of water that submerges land. Flood effects can be local, affecting a neighbourhood or community or very large, affecting entire river basins and multiple states [10].

However, no floods are alike. Some floods develop slowly, some times over a period of days. Nevertheless, flash floods can develop quickly, sometimes in just a few minute and without any visible signs of rain. Flash floods often have a dangerous wall of roaring water that carries rocks, mud and other debris and can sweep away most things in its path. Overland flooding occurs outside a defined river or stream, such as when a levee is breached, but still can be destructive. Flooding can also occur when a dam breaks producing effects similar to flash floods [10]. Even very small streams, gullies, creeks, culverts, dry streambeds, or low-lying ground that appears harmless in dry weather can flood.

Flooding is another major environmental problem in Taraba State. Large hectares of farmland, crops, lives and properties have been destroyed in recent times as a result of excessive flood disaster especially in the southern part of the State. Disastrous flooding of the weak volcanic lake Nyos in neighbouring Cameroon, poses serious threats to the survival of several indigenous communities in Takum Local Government Area of the State [1].

River blindness is also a major environmental problem in the State. *Onchocerciasis* is particularly a serious health hazard in the Gashaka, Bakundi and Gassol districts. It is a form of filarial disease caused by a nematode (fly) called *onchocerca volvulus*. The vector (called the black fly), takes advantage of the fast flowing sections of rivers, such as rapids or rock surfaces, as breeding grounds.

Such conditions are provided by River Taraba which in fact traverses the three districts of Gashaka, Bakundi and Gassol, in the Gashaka, Bali and Gassol Local Government Areas. It has been speculated that the Taraba River valley may be one of the worst *onchocerciasis* zones in West Africa.

The socio economic consequences of *onchocerciasis* on the people of Taraba State is enormous [1].The disease has affected between three to forty eight percent of the productive age groups of the population living near the river valleys in these districts. It also reduces the economic productivity of the rural dwellers and undermines primary school enrolment and school attendance. In many cases, it results in the complete abandonment of a whole village for fear of the disease. Plate 1 shows collapse of building on waterway while plate 2 shows overflowed River Lamorde affecting farmlands.



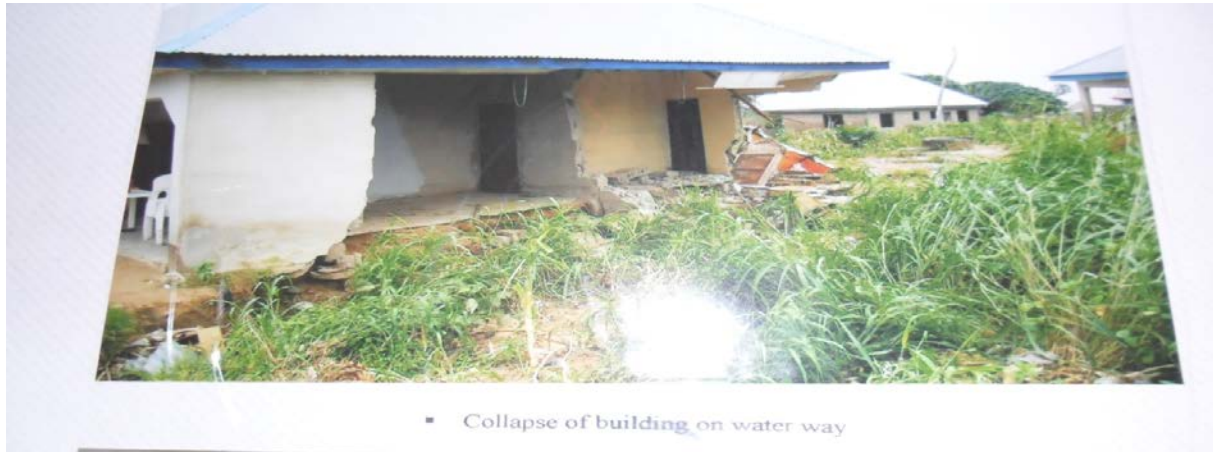


PLATE 1: Collapse of building on waterway [11]

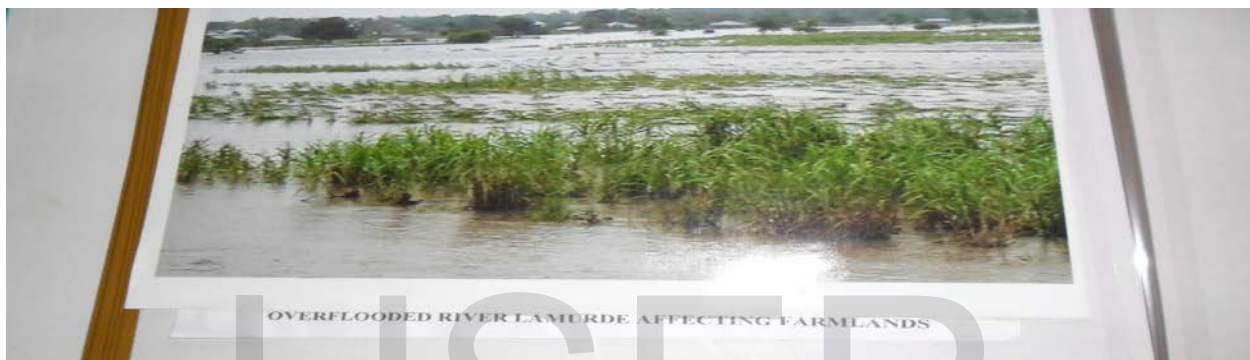


PLATE 2: Overflooded River Lamurde affecting farmlands [11]

### 2.3 Soil Erosion

Soil erosion can simply be defined as the detachment and transportation of soil particles by water, wind and glacier. Two types of erosion have been identified. These are natural erosion which is geological in nature and occurs at all times, the other is man-made (accelerated) erosion which as the name implies is man-made and is much more destructive [12].

Natural erosion occurs very slowly and constantly on land (with or without its natural protective cover) and is unaffected by human interference on land. It is characteristically not detrimental to the soil. Unlike natural erosion, accelerated erosion leaves noticeable impacts whose magnitude is often devastating. Physical factors such as topography, climate and vegetation also play vital roles in its occurrence.

The various forms of soil erosion are namely; Splash erosion, Sheet erosion, Rill erosion, Gully erosion, and Stream bank erosion. Sheet erosion, which is the removal of the topmost thin layer of the soil by surface run off, is initiated during the early rains that characterize the commencement of

the rainy season. It is the initial result of accelerated runoffs caused by high intensity and short duration rainfalls on all land with even the slightest gradient. The removal of vegetation that shields the land surface from direct impact of raindrop through deforestation, bush burning and other practices set the stage for sheet erosion. The high intensity rains generate accelerated runoffs that rapidly wash off the topsoil which is also very essential for the survival of plants. This in effect has resulted in the depletion of the soil nutrients [12].

When trees are absent, splash erosion is enhanced and wind erosion is enhanced since the windbreak action exercised by trees is removed. The absence of trees enhances the rate of loss of soil fertility, because organic manure, which is usually added to soil by dropped leaves of trees, is lost. Another area is increased rate of encroachment. Table 2 shows Some Gully Sites in Selected L.G. A. of Taraba State and Plate 3 shows gully erosion in Abuja phase II, Jalingo, Taraba state.

## 2.4 Climate Change

The global food crisis is indeed real and biting hard, especially in some developing countries, including Nigeria, where many cannot afford three square meals a day. Reasons for the food crisis are not far to find. Possible causes can be attributed to the effect of climate and the possibility of global warming especially in recent years, which affect the amount of rainfall and soil fertility [13]. It is

generally accepted that climate change is as a result of human activity including industrial output, car exhaust and deforestation. These type of activities increase the concentration of Carbondioxide (CO<sub>2</sub>), Methane (CH<sub>3</sub>), Nitrogen IV Oxide (N<sub>2</sub>O) and other Green House Gases (GHGs) in the atmosphere [14].

**TABLE 2:** Some Gully Sites in Selected L.G. A. of Taraba State (Source: Field Survey, 2012)

S/N	LGA	GULLY SITES
1	Jalingo	Nukkai
2	Jalingo	Abuja Phase II
3	Jalingo	Kona
4	Jalingo	Madasa
5	Gassol	Tutare
6	Gassol	Tella
7	Gassol	Mutum Biyu
8	Wukari	Tsokundi
9	Wukari	Pwadzo
10	Wukari	Kinkinso
11	Wukari	Gidan Idi
12	Wukari	Rafin-Kada
13	Takum	Nite club
14	Takum	GSS quarters
15	Takum	Chanchanji
16	Takum	Tati
17	Donga	Kumbo
18	Donga	GDSS
19	Donga	Nyita
20	Lau	Kona
21	Lau	Yiti
22	Lau	Mayo Lope
23	Lau	Abbare
24	Bali	Suntai
25	Bali	GSS quarters
26	Zing	Mampalli
27	Zing	Nbosung
28	Ussa	Kpambo
29	Ussa	Fikyu



**PLATE 3:** Gully erosion in Abuja phase II, Jalingo (Source: Field Survey, 2012)

If the current trend in carbon emission continues, temperature will rise by 1°C by the year 2030 and by 2°C by the next century [15]. This increase in temperature, however, will probably have different impacts in different regions. Agricultural impacts, for example will be more adverse in tropical areas than in temperate regions. Today, poorest developing countries are negatively affected with reduction in the extent and potential productivity of cropland. Most severely affected will be sub-Saharan Africa due to its inability to adequately adapt through necessary resources or through greater food imports.

In Nigeria, climate change renders many individuals, households and communities food insecure especially the food crisis of 2008/2009. The scourge is capable of setting the country back in achieving the Millennium Development Goals (MDGs) of the United Nations especially goal 1: Eradication of Extreme Poverty and Hunger, if drastic measures are not taken by the appropriate authorities in mitigating the effects of climate change and improving agricultural productivity.

Climate change and global warming is also being acknowledged as a key environmental problem in Taraba State. This is responsible for the food shortage recently experienced in Taraba. This manifests through reduced precipitation, increase in temperature and irregular relative humidity. The consequence of climate change results in direct and indirect effects on crop and livestock production [1].

### 3.0 CONCLUSION

Conservative pollutants are pollutants that do not decay, that are non-biodegradable e.g. heavy metals and many pesticides. The various ways, by which agents of denudation naturally deplete land usage, involves natural agents like water and wind in relation to erosion. In addition bush burning and deforestation are usually manmade activities that usually contribute to degradation.

Issues of environmental balance for sustainable food security should be addressed simultaneously. Effective soil management can be a key to sustainable food security – A well managed soil and its resources supports high plant canopy which protects soil from erosion, minimize leaching, aids in recycling of organic matter residue along with judicious chemical fertilization, improving soil physical and chemical condition could easily mitigate environmental hazards. FAO's efforts to develop an integrated soil – plant system approach that is ecologically, socially and environmentally viable are highly commendable.

### 4.0 RECOMMENDATIONS

The first and essential step in overcoming any problem is to recognize and understand it. Scientific approaches to sustainability have led to in-depth study of the concept and suggestion of ways of ameliorating the problem. Indicators that reveal pollution levels, soil erosion and degradation, salinization and other environmental

problems have been established especially in the advanced countries.

A natural resource-based economy, as is common with the developing world, is difficult to evaluate with reference to ecosystem balance. The database in these nations is grossly inadequate; hence, reality is easily distorted giving a false idea of the consequences of growth and production. Suffice it to say that a base line conclusion and policy recommendation to enhance sustainable living involves a break away from past trends that encourage carefree deforestation for domestic uses as well as logging, pollution and global warming traceable to living habits. In details, these can be achieved via the following:

**Ecosystem education:** There is need for environmental education and public awareness; because environmental problems are people oriented. The ideas, attitudes and behaviour of different sections of the population are critical variables in efforts to resolve or present such problems, hence the link between environment and human crystal formation. Culturally sensitive programs will be designed and delivered to enhance citizens' roles as environmental managers. Simple rudimentary training in the areas of land evaluation, assessment of land for signs of degradation and desertification, soil sciences and survey will be done. The evaluation of population support capacities and land use potentials in agro-ecological perspective will be included in the curriculum. It is suggested that the 2000 millennium universal basic education of the President Olusegun Obasanjo government should include not only curriculum on environmental education, it should also create room for the training of resource persons/teachers in this regard.

**Improved technology:** As part of boosting ecosystem literacy, better use of resources need to be put in place. Agriculture may be mechanized with strong emphasis for organic manure application which will serve as a ready demand for urban organic wastes. Wastes recycling to produce farm produce manures should be emphasized.

**Natural resources rehabilitation:** The environment now apparently stands on a delicate balance. There is urgent need to rehabilitate the environment. Fruit tree/tree planting campaigns at the grassroots level should be vigorously pursued.

**Environmental data bank:** As a matter of urgency, there is the need for environmental data banks. With this, an environmental balance sheet is prepared, revealing at a glance the quantitative and qualitative nature of our environment.

**Population data:** Population explosion has been identified as a major contributor to environmental problem. Accurate population figures should be made available for effective planning. This is so because there is a relationship between population growth and environmental degradation and resources depletion. This includes constraints on the provision of social services and infrastructures, the depletion of forest, water and marine resources, and the growth of uncontrolled urbanization.

**Enablement of existing policies:** Governmental bodies should as a matter of urgency, effectively implement all legal promulgation aimed at contemporary environmental management. The Taraba State Environmental Protection Agency (TEPA) should come up with policies on standard to be maintained by the different mineral exploration companies and enforce the policies. Attention should be paid to pollution and soil degradation which are often the order of the day in most mineral producing areas.

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