

## **EFFECTS OF ENVIRONMENTAL DEGRADATION ON RESIDENCE OF YAKURR LOCAL GOVERNMENT AREA OF CROSS RIVER STATE-NIGERIA**

**<sup>1</sup>Yaro, Margaret A.; <sup>2</sup>Okon, Asuquo E. and <sup>3</sup>Ukpali E. Obongha**

<sup>1&3</sup>Department of Urban and Regional Planning, Cross River University of Technology,  
P.M.B 1123, Calabar, Nigeria

<sup>2</sup>Department of Geography & Environmental Sciences, University of Calabar,  
P.M.B 1115, Calabar, Nigeria

E-mails: mamboline2004@yahoo.com, asuquo4sure@gmail.com,  
obonghaukpali@yahoo.com

**Abstract:** This paper examined the effects of environmental degradation on residence of Yakurr Local Government Area of Cross River State-Nigeria. A field survey using structured questionnaire was used in data collection. Four hundred and fifty one (451) copies questionnaire were distributed using stratified sampling to select five communities from the list of communities and simple random sampling to select respondents in the study area to capture information such as effects of degradation and periods of the effects, as well as the perception of the people on the causes of degradation. Weighted index (WI) was used to determine the level of effectiveness of the effect. The factors were considered relative to average. The result indicates that 86.7% of the people have been affected by the effect of environmental degradation. Moreover, the effect is seasonal with 71.6% of the respondents more vulnerable to the effects of degradation in rainy season. Further analysis on the perceived causes shows that 66.1% of the respondents perceived environmental degradation to stem from anthropogenic (man-made) activities. The weighted index to find out the most significant effect based on average revealed that, water scarcity and scarcity of firewood are the most significant effect of environmental degradation in the study area ( $WI > 3$ ). Other include low crop yield, change in season, increased temperature, nutrient depletion, loss of Non-Timber Forest Products (NTFPs), Flood, loss of plants etc. The paper finally recommended that there should be introduction of legislative measures to prevent the incidence of bush burning on the environment and reduces deforestation as well as greenbelt disappearance and provision of waste collection and disposal materials for the people of Yakurr community among others.

**Keywords:** Environmental degradation, Significant Effect, Residence, Weighted index, scarcity.

### **1. Introduction**

Many human activities increase both the severity and frequency of environmental degradation. Essentially environmental degradation relates to the depreciation in the qualities and quantities of vegetation, soil air and water resources, among others. Miller (1998) puts

*Received Mar 16, 2015 \* Published April 2, 2015 \* [www.ijset.net](http://www.ijset.net)*

environmental degradation more succinctly to mean a downward trend in the environmental resources such that their level of use in the human societies equally decreases at an increasing rate. The cultural landscape on the other hand denotes that an interaction has taken place between man and his environment. Such activities that are human based include agriculture, mining operations, sinking of boreholes, wells, tree felling, construction of bridges, houses, road networks, railways among others (Uchegbu, 2002). Thus, every organism sees the environment as a resource store which he can conveniently fall back on for all his needs (Ebong, 2003). Land degradation is a serious problem in most of the upland agricultural areas of Yakurr community. Soil erosion is the most widely recognized and most common form of land degradation and, therefore, a major cause of fallen productivity (Cunningham, 2004). It is a natural process and generally aggravated by human activities and exceeds the rate of soil erosion regeneration.

However, efforts made by man to harness these environment-based resources have translated into environmental degradation. By this second component of the environment, it is clear that due to growth in human population, the desire for a better condition of living has ensured. In meeting this drive, the earth's natural plants and animals lives have been replaced with economically more productive species. This development is certainly in conflict with the natural conditions. One of such conflicts is the emergence of environmental degradation which is the subject of discussion in this paper. Man's relationship with his environment has always changed with time depending on his understanding and knowledge of the physical environment (Ofomota, 2000).

Human activities and the environment are interrelated. This is because activities of man are done in the environment and the resultant effect is either positive or negative to the environment. The negative effect of human activities arises from such economic and domestic activities as agriculture, industry, burning of fossil fuels and exhaust fumes etc. Environmental degradation has affected some residence in the urban and rural areas of Nigeria. This has posed a lot of danger to lives and property and therefore, renders some people vulnerable. The resultants environmental problems are many: Aggravated soil erosion, flood disasters, desertification due to the effect of shifting agriculture in fragile soils, forest clearing in erosion prone and flood prone areas, bush burning, animal overgrazing, poor construction and maintenance of roads, pollution of water, air and land due to improper disposal of domestic and industrial wastes, inadequate drainage system, poor planning (land use control), illiteracy and poverty, all these affect human well-being especially in

Yakurr Community. The main thrust of this paper was to examine the effect of environmental degradation on residence of Yakurr Local Government Area of Cross River State-Nigeria.

### **1.1 The Concept of Sustainable Development**

Sustainable development as a concept largely incorporates the twin objectives of human development and environmental protection. As defined by the Bruntland commission in its 1987 report on our common goal of meeting the needs of the present generation without compromising that of future generations (World Development Report 2004). It is further elaborated as a process in which the exploitation of natural resources, the direction of investment, the orientation of technological development and institutional change are all in harmony and enhance both current and future potentials to meet human needs and aspiration (NEST 1999).

Sustainable development is not a new concept. It is in fact, the latest expression of a long standing ethnic system involving people's relationship to the environment and therefore very much related to the concept of human relationship to the environment and their adaptation pattern to changes in the environment.

## **2. Theoretical Consideration**

Risk is an integral part of life. Risk combines characters meaning opportunity/chances and dangers to imply that uncertainly always involves some balance between profit and loss. (Smith,1996). Since risk cannot be completely eliminated, the only option is to manage it. Risk assessment is the first step in risk management. Risk management according to kates and Karsperson (1983) comprises three distinct step; (i) An identification of hazard likely to result in disaster for example, what hazard event may occur? (ii) An estimation of risks of such event, for example, what is the possibility of such event appearing? (iii) An evaluation of the social consequences of the derived risk, for example, what is the loss created by each event? However, for sound risk management to occur, there should be a forth step (iv) which address the need to take post audit of all risk assessment exercises which risk analysis is undertaken. Risk (R) is taken as some product of probability (P) and (L).  $R = P \times L$  ...eqn 1. Flood risk involves both the statistical probability of an event occurring and the scale of the potential consequences (Smith, 1996).

All development of land within the flood plain of a water course is at some risk of flooding, however, small. The degree of flood is calculated from historical data and expressed in terms of the expected frequency of 10 years, 50 years and 100 years flood. Flood is a function and a product of hazard and vulnerability, (Ologunorisa, 2001). That is risk = hazard x

vulnerability. A real flood risk level requires a certain level of vulnerability. A situation of risk is due to the compatibility between hazard and vulnerability levels on the same land, the United Nations Commission for Human Settlement (UNCHS, 1981). However, the concepts of environmental sustainability and risk are applicable and useful in building the literature review of this study.

Environmental degradation is one of the ten threats officially cautioned by the high level threat panel of the International Strategy for Disaster Reduction. (ISDR, 2008) defines environmental degradation as “the reduction of the capacity of the environment to meet social and ecological objectives and needs.” The primary effects on the environment are generally stated to be in the form of desertification, deforestation, watershed degradation, soil erosion and soil fertility decline (Sanchez. 2002). The secondary effects can take the form of impoverishment / productivity decline, migration – related: health stress, vector borne disease, if the migration occurs into disease, then sanitation breaks down, chronic food insecurity (Banse, 2008).

## **2.1 EROSION**

The primary source of soil degradation in the tropics is soil erosion; it is loss of production of topsoil as a result of the transportation of topsoil by wind, rain or gravity (Beusen, 2009). Soil erosion by water is particularly prevalent in the humid tropics. Heavy rainfall occurring in tense thunderstorms result in rapid water runoff. Soil erosion sometimes goes unnoticed until it is too late for the effects to be reversed. There are many types of soil erosions affecting tropical countries but their severity differs from country to country (Salva and Allen, 1992). Common types are rill erosion, gully erosion and sheet erosion. Sheet erosion and rill erosion are most predominant forms of soil erosion in tropics. They are more detrimental to agriculture than gully erosion because of their constant and uniform action which goes on imperceptibly until they finally results in a complete removal of the arable part of the soil (ISDR, 2008).

Other related problems caused by this system are: sedimentation, sediment can contribute to road damage, accelerate bank erosion and reduce downstream water quality (Ebong, 2003). They frequently transported with eroded soil pollution or contamination of water downstream and entertainment districts of stagnant and water logging, introduction of toxic pollutants to the environment, groundwater depletion and pollution of surface and groundwater (Banse, 2008).

## **2.2 SOLID WASTE**

Solid waste has become the number one serious environmental problem facing the country with its consequent effects in the pollution of water, air and land (Uchegbu, 2002). The problem of solid waste in rural communities can never be over emphasized, virtually all our rural communities lack appropriate or adequate waste management system which lead to indiscriminate dumping of waste and as a result of the mismanagement of waste so many communicable disease such as typhoid dysentery, cholera, malaria yellow fever and relapsing fever that affects land uses are associated with improper disposal of waste (Parsons, 2005). The mode of transmission can either be through biological vectors, physical and mechanical means, air borne disease, water supply, food supply, direct contact or other means related to socio-economic status of people and their households.

## **2.3 FLOODING**

Flooding occurs throughout Nigeria in three main form coastal flooding, river flooding and urban flooding. Coastal flooding occurs in the low lying belt of mangrove and fresh water swamps along the coast. River flooding occurs in the flood plain of a river, flash floods are caused by sudden and heavy rains within a short period (Ofomata, 2000). Similarly, Chooma (2006) maintained that it is hard to stop people from building houses where they see vacant land, since rain in Zambia is seasonal many marshy areas have been built on during dry periods only to be flooded when the rains come and at the end it is the poor who lose.

Ukpong (1994) noted that the causes of land degradation are flooding and erosion menace, destructive logging of our forest, over grazing and over cropping of arable lands, strip mining in some parts of Nigeria, some known natural landslides destruction of wet land and marshes for development, land degradation with use of pesticides and fertilizer. In the same vein, Oriole (1994) carried out flood studies in Abeokuta through a careful observation method. He observed that various socio-cultural activities have promoted flooding in many Nigeria's urban and rural communities and environments such as increased paved surface and poor solid waste disposal techniques due to high level of illiteracy, a low degree of community awareness and poor environmental education, ineffective town planning laws and poor environmental management. However, Ofomata, (2000) also argued that government in various levels needs to address these issues, he concluded that flood in Abeokuta urban environment was as a result of the following factors; land use pattern, refuse disposal habits, buildings on courses of streams, the terrain, slope, gradient, rainfall amount and duration. The reviewed literature has shown a useful insight into what the paper has to reveal.

### 3. METHODOLOGY

The study was carried out in Yakurr LGA which comprises of 10 wards. Yakurr is one of the LGAs in Central cross River State. Yakurr is located between latitude “5°37’ and 5°58’ and longitude “8°00 & 8°19E. It is bounded in the North by Abi and Obubra LGA, South by Akamkpa LGA, East by Obubra LGA and west by Biase Local Government Area of Cross River State (Figure 1). Yakurr records a high rainfall of about 2000mm annually. The rainfall last for about seven months from March to September, June-August records the highest rainfall. Dry season is between November to March in most cases early April. The climate is affected by two air masses, the tropical maritime and the continental air masses (Reuben, 1982). The monthly temperature covers between 21°c and 32°c with annual temperature range of about 11°c. The study Area is drained by Cross River with tributaries such as Lokpoi.

Yakurr is an agrarian community with most towns such as Ugep, Ekori, Nko engaging in commercial activities because of their proximity to express road that links the LGA to other State. this means that they inhabitant depends solely on agriculture as their major occupation.

This research was conducted in five sampled communities in Yakurr Local Government Area of Cross River State–Nigeria. Data were collected from both Primary and secondary sources. The primary sources of data include interview with the residents, questionnaires administration and personal observation for first hand information to ascertain the effect of environmental degradation on residence in the study area,

The Taro Yamene formula was used to determine the minimum sample size for the study out of the total population of 196,450. This is given as:

$$n = \frac{N}{1 + N(e)^2}$$

Where

n = sample size

N = sampled population = 196,450

e = level of precision or confidence level at 0.05 significance

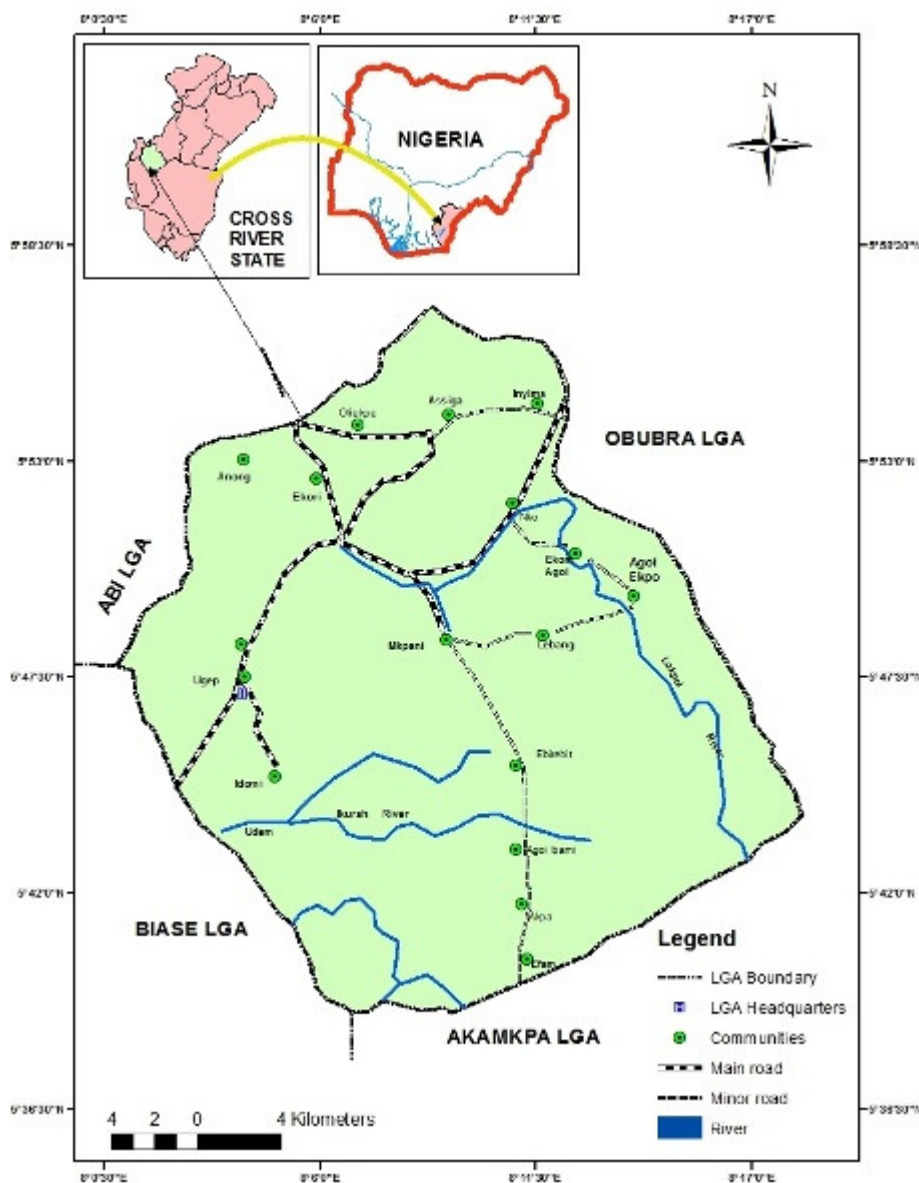
$$\text{Therefore: } n = \frac{196450}{1 + 196450(0.05)^2}$$

$$= 399.9$$

$$\approx 400$$

To make room for losses, 25 per cent of the sample was added which brought the total number of questionnaire to 500 and 451 were retrieved. (Table 1)

Data on the effect of degradation, periods of the effects, and human induced factors of degradation and causes of degradation in the study area were captured in the questionnaire. A total of Four hundred and fifty one (451) questionnaires were distributed to respondents. Both stratified and random sampling techniques were employed in the selection of respondents. The wards formed the strata from which the five communities were sampled. Respondents were randomly selected for the distribution of questionnaire. Respondents were interviewed in other to assess their views on the effect of environmental degradation on residence in the study area.



**Figure 1: The Study Area**  
**Source:** Adapted from the Cross River Survey map, 2011

Several forms of degradation were elicited from the people. The data were subjected to weighted index to find out the most serious environmental problems in Yakurr LGA. A five point likert scale was used to ascertain the most significant effect of environmental degradation in Yakurr LGA. The likert scale was then transformed to a weighted index of 1 to 5. The index was then used to determine the level of significance of the effect degradation. The factors were considered relative to average, hence those below average were considered weak (not significant) and above average considered strong (significant) reasons.

#### 4. Result:

##### 4.1: Distribution of Questionnaire

**Table 1: Distribution of Respondents in the study area**

S/N0.	Affected area	No. of Questionnaire distributed	N0. Of respondents	%
1	Yakurr	98	88	19.5
2	Ugep	116	105	23.3
3	Ekorì	93	85	19.1
4	Agoi Ekpo	88	76	16.9
5	Agoi Ibami	105	96	21.3
	<b>Total</b>	500	<b>450</b>	100.0

**Source:** Data Analysis 2014

Table 1 shows the distribution of respondents across the sampled communities. Out of the 500 questionnaire distributed, 450 were retrieved. The table indicates that 19.5% of respondents were in Yakurr. The distribution further shows that 23.3% were from Ugep, 19.1% from Ekorì, 16.9% from Agoi Ekpo and 21.3% in Agoi Ibami.

##### 4.2 Respondents affected by degradation

**Table 2: Respondents views on the effects of degradation**

S/N	Looses	N0. of respondents	%
1	Affected by Degradation	391	86.7
2	Not Affected	15	3.3
3	Indifferent	45	10.0
	Total	451	100.0

**Source:** Data Analysis, 2014

The Table 2 shows the respondents' views on the effect of degradation which indicates that 86.7% of the respondents responded that they have been affected by environmental degradation, while 3.3% responded that they are no effects of environmental degradation and



10% were indifferent. This shows that many inhabitants face the effects of environmental degradation as shown above is the major source of the high rate of poverty in the area.

#### 4.3 Vulnerable seasons of degradation

**Table 3:** Most susceptible period to the effects of Degradation

S/N	Period	N0. of respondents	%
1	Rainy season	323	71.6
2	Dry season	128	28.4
	<b>Total</b>	<b>451</b>	<b>100.0</b>

**Source:** Data Analysis, 2014

The analysis in the Table 3 above shows that 71.6% of the respondents are susceptible to the effects of degradation in rainy season, while 28.4% face degradation in dry season. This means that degradation is highly faced during rainy season than other times.

#### 4.4 Perceived causes of degradation

**Table 4:** Perceived causes of environmental degradation

S/N	Causes	N0. of respondents	%
1	Natural causes	153	33.9
2	Man-made causes	298	66.1
	<b>Total</b>	<b>451</b>	<b>100.0</b>

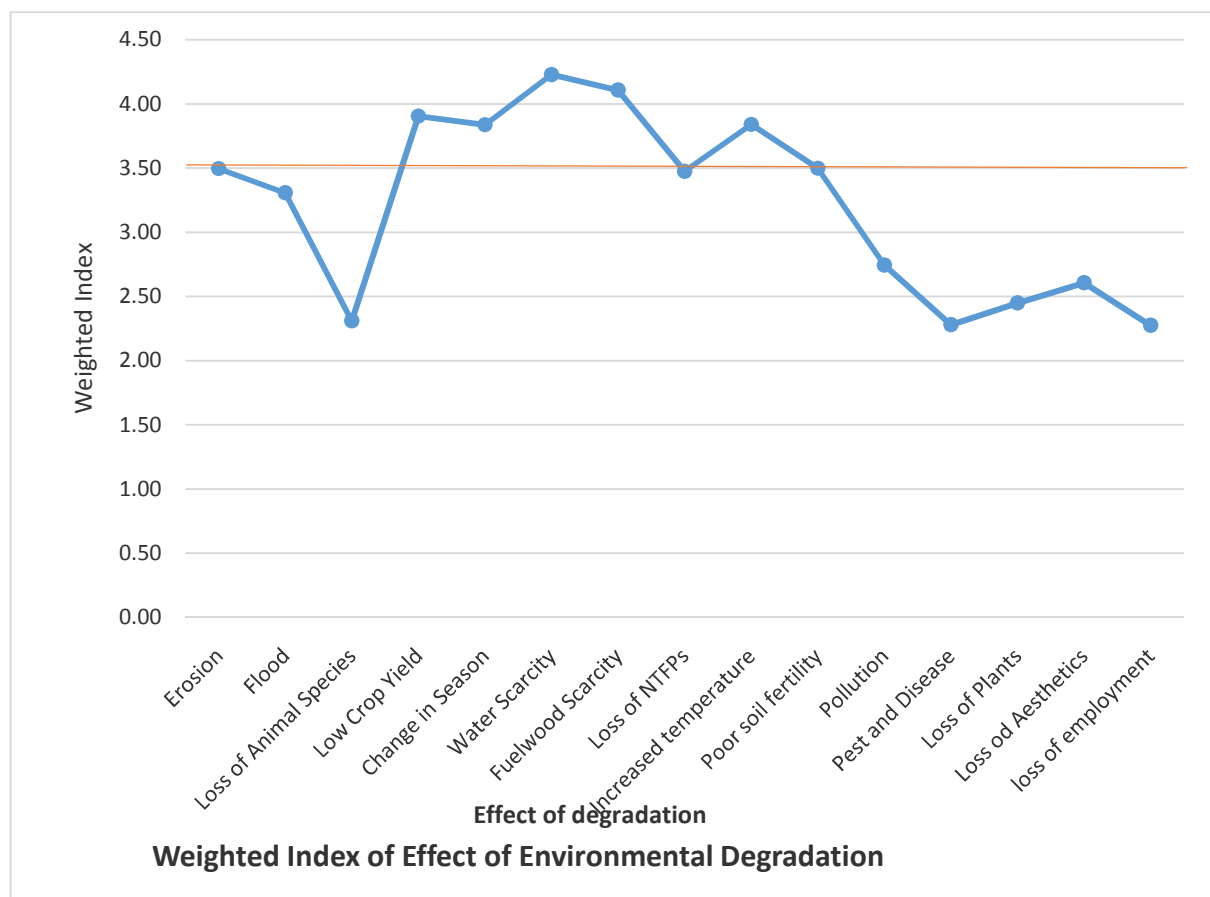
**Source:** Data Analysis, 2014

The analysis in the Table 4 shows that 33.9% of respondents perceived the causes of the high rate of environmental degradation as a result of natural processes due to extremities in the especially the weather system. However, 66.1% of the respondents perceived the causes of environmental degradation from anthropogenic (man-made) activities on the environment example; bush burning, poor solid waste disposal methods and deforestation among others.

#### 4.5 Effect of degradation

A Weighted index reflects the relative importance or significance of factors. A weighted average was use to compare and rate the factors. Those factors or items below the average are assumed less significance, while those above the average are rated as significant. The result of the weighted index was on a scale of 1 to 5 (1 less significant effect of degradation and 5 very significant effect). Figure 2 shows that water scarcity and scarcity of firewood are the most significant effect of environmental degradation. This means that access to water and energy is a significant challenge to the residence of Yakurr LGA due to environmental

degradation. Moreover, low crop yield, change in season and increased temperature are significant effect of environmental degradation. Others include erosion and nutrient depletion, loss of Non-Timber Forest Products (NTFPs), Flood, loss of plants among others. These factors are considered very strong effect on the residence of Yakurr. From the data on Table 4, most of the respondents opined that degradation is caused by environmental degradation.



**Figure 2:** Weighted Index of effect of degradation on Residence of Yakurr LGA

**Source:** Data Analysis, 2014

**4.6 Discussion**

The ever increasing human population in the world has prompted his continuous exploitation of resources to satisfy man’s need. The result revealed that many persons have been affected by the impact of environmental degradation. A total 86.7% have been affected by environmental degradation in one way or the other. Sanchez (2002) confirmed this that the primary effects of degradation on the environment are generally stated to be in the form of

desertification, deforestation, watershed degradation, soil erosion and soil fertility decline. This are also the product of human activities.

Environmental degradation is a seasonal phenomenon that always occur mostly during raining season due to rampant flooding and erosion induced by human activities with minimal effects during dry season. The effects are mostly effective in the rainy season, where 71.6% of the respondents are susceptible to the effects of degradation. For instance Beusen (2009), has discovered that the primary source of soil degradation in the tropics is soil erosion; it is loss of production of topsoil as a result of the transportation of topsoil by wind, rain or gravity. Hence rainy season is usually the season for most activities especially that has to do with tillage. The high rate of activities in the dry season such as deforestation, bush burning, excavation, dumping in flood plains likely have a synergistic effective in the dry season. For example the blocking of flood plains will increase flood in the rainy season.

Furthermore, 33.9% of respondents observed the causes of the high rate of environmental degradation as a result of natural processes on the contrary, 66.1% opined that human activities caused the greatest degradation. In a good example Uchegbu (2002) has said that solid waste has become the number one serious environmental problem facing the country with its consequent effects in the pollution of water, air and land

The degradation are more detrimental to agriculture for instance gully erosion because results in a complete removal of the arable part of the soil (ISDR, 2008). This affects crop yield leading to starvation. The weighted shows that the significant effects include scarcity of water and energy. Thus, having negative impact on the people as its affects their livelihoods. In most cases disruption of buildings, loss of properties, destruction of farm lands and roads among are the major direct effect felt by man. Man's activity on the environment can be said to be a reversible reaction where his action affect the environment and the reaction of the environment affect man back.

## **5.0 CONCLUSION**

Environmental degradation stems from human use of resources in the environment. Sometimes the resources are utilized lasciviously without a rethink on the aftermath of such actions the impact affect human livelihood. Apart from livelihood the deterioration of environment has also led to various kinds of man-made disasters and natural calamities. Environmental degradation is one of most serious problems faced by man. Negatively impact such as disruption of buildings, loss of properties, destruction of farm lands and roads and other infrastructures among others impose a high cost of living. The paper concludes that

most human activities such as bush burning, logging and extensive agriculture in the study area are the cause of the degradation affecting the availability of water, energy, soil and other resources.

### **5.1 RECOMMENDATIONS**

The paper recommends the following:

- i. There should be introduction of legislative measures to prevent the incidence of bush burning on the environment and reduce deforestation as well as greenbelt disappearance.
- ii. Ecological restoration through afforestation and reforestation of eroded lands can be effective through positive attempts of reclaiming and controlling gully corridors within the affected areas
- iii. There should be construction of surface drainage channels to accommodate the heavy and flash runoffs during the wet season. This will reduce rampant gully erosion and flooding in the area.
- iv. Environmental awareness is necessary to educate the people on the dangers their activities on environment

### **REFERENCES**

- [1] Banse, I. (2008) Environmental Hazard: Oxford University Press.
- [2] Beusen, F. (2009) Environmental Degradation and Human Disease: Lecture Slideboom.
- [3] Chooma, B. (2006) Surface Water Drainage in Urban Areas. London, Earthscan Publication.
- [4] Cunningham, A.O. (2004) Environmental Change: A Global Concern, 8th Edition, McGraw Hill New York.
- [5] Ebong, M. O. (2003) the Perception of Residential Quality: A Case Study of Calabar Nigeria. Third World Planning Review Vol – 5 (3).
- [6] International Strategy for Disaster Reduction (ISDR) (2008), Disaster Risk Reduction Strategies and Risk Management Practices: Critical Element for Adaptation to Climate Change. Submission to the UNFCCC Adhock Working Group on Long Term Co-operative Action. Accessed at [www.unisdr.org/risk-reduction/climate change ISDR paper pdf](http://www.unisdr.org/risk-reduction/climate%20change%20ISDR%20paper.pdf).
- [7] Kates, R. W. and Karsperson, J. X. (1983) Comparative Risk Analysis of Technological Hazard: Proceedings of National Academy of Science.
- [8] Miller, L. R. (1998) Global Extent of Soil Degradation, In Soil Resilience and Sustainable Land Use. Greenland, CAB International, Wallingford USA.

- [9] Nigeria Environmental Study/Action Team (NEST, 1999) Nigeria's Threatened Environment: A National Profile, Ibadan, A NEST Publication.
- [10] Ofomata, C.E. (2000) Factors of Soil Erosion in Enugu Area of Nigeria, Nigeria Geog. Vol.8
- [11] Ologunorisa, E.T. (2001) Disaster Incidence and Management in Nigeria. Research Review Vol. 24. No.2.
- [12] Oriole, O. (1994) Strategies for Combating Urban Flooding in Developing Countries: Case Study of Ondo. The Environmental Vol. 14, N0. 1.
- [13] Parsons, F. (2005) Food Production and Environmental Impact: Technical Background Document 11, World Food Summit, FAO, Rome.
- [14] Salva, D. and Allen, A. (1992) Soil Erosion and Agricultural Productivity, In world Soil Erosion and Conservation, Cambridge University Press, Cambridge.
- [15] Sanchez, S.J. (2002) Soil Degradation. A Threat to Developing Countries Food Security by 2020 Food, Agriculture and the Environment Discussion Paper 27 IFPRI, Washington.
- [16] Smith, K. (1996) Environmental Hazard. London, Routledge publication
- [17] Uchegbu, S.N. (2002) Environmental Management and Protection. Precision Printers and Publishers, Nigeria.
- [18] Ukpong S.J. (1994) Baseline and Nigeria Environment Problem Analysis SIRF, Calabar. UNCHS (1981) Our Common Future (Bruntland Report) New York: Oxford University press.
- [19] Wold Development Report (WDR, 2004). Conservation and Management of Forest and Wildlife Resource in the Tropics.