ENVIRONMENTAL PERCEPTION AND MANAGEMENT: THE CASE FOR THE RURAL AREA OF AKWA IBOM STATE OF NIGERIA.

IMOH E. UKPONG* AND JULIA O. MOSES
DEPARTMENT OF GEOGRAPHY, UNIVERSITY OF UYO
AKWA IBOM STATE, NIGERIA.

ABSTRACT

Following increasing environmental activities in Nigeria and elsewhere, particularly the claims by successive Nigerian governments to have brought environmental awareness to the grassroots, this paper analyses environmental programmes participation (e.g. environmental problem identification, village clean-ups, state/federal sanitation exercise), in a rural setting among Nigerians, chosing Akwa Ibom State as a pilot case. The study elucidates the level of rural perception and traditional environmental management practices, which have always existed as components of the rural society prior to recent government programmes. A combination of random and systematic rules were used to select the study areas and obtain data. The data, obtained for non-parametric tests were subjected so Spearman's Rank correlation and t-tests.

In rural Akwa Ibom, as probably elsewhere in Nigeria, the major environmental problems are erosion, flooding and waste management. Although the government has several information channels, very few of them are available to the rural dwellers. Hence most information is spread through the village council. Environmental perception is influenced by the level of education. The more educated the people the higher their level of environmental perception. The rural dwellers, however are highly environmentally aware, consequent to traditional norms and values attached to land.

Thus the people had had environmental management techniques prior to the advent of wastern conservation standards. Governments claim of having introduced environmental awareness and management techniques to the rural areas is largely a falacy.

* Corresponding author

INTRODUCTION

The environment can be seen as the totality of space in which man operates. It includes land, water, air and vegetation. In Nigeria, land, water and vegetation have been the most recklessly abused as indicated by the number of erosion scars/gullies, silting steams/rivers and decreasing fallow years. Of recent, gas flaring in oil fields has added a new dimension to environmental pollution (Ukpong, 1995). The environmental systems therefore contain complex processes that must be mastered in finding solutions to human problems (Ofomata, 1990). Clearly, man's relationship with the environment is that of interaction with the different components of the system. To monitor these interactions, the Federal Government of Nigeria has set up the Federal Environmental Protection Agency, while the Akwa Ibom State Government has duplicated this establishment, namely Akwa Ibom State Environmental Protection Agency. As laudable as their goals may be (even if they are bureaucratic duplications), these agencies are urban - based with focus on such macro human problems as exploitation and utilization of non-renewable resoruces (fossil fuels and metal ores), the conservation of living and non living renewable natural resources (soil, water, fisheries, wildlife and forestry) and the reduction of the effects of natural disasters such as flooding, bush fires and drought. Largely, the rural landscape and peasantry are not influenced by the programmes of these agencies.

The environmental agencies may be regarded as the perceptual eye for government programmes. They may even be regarded as political strategies. In real terms, the way man tries to solve his environmental problems depends on his own perception of that environment and environmental problems. It is this difference in people's view of the environment and environmental problems that has led to the development of different management techniques by different people for the conservation of the environment.

AIM OF THE STUDY

The aim of this study is to evaluate in a rural setting, the perception and management of the environment for sustainability. The study is set in the rural areas of Akwa Ibom State, Nigeria.

To achieve the aim, environmental information channels available to the rural dwellers are assessed. Also environmental problems known to the people are analysed. The study also evaluates the management techniques

developed by the people in trying to solve these environmental problems.

It is hypothesised that information spread through the media has influenced the awareness and perception of environmental problems in the rural areas of Akwa Ibom State.

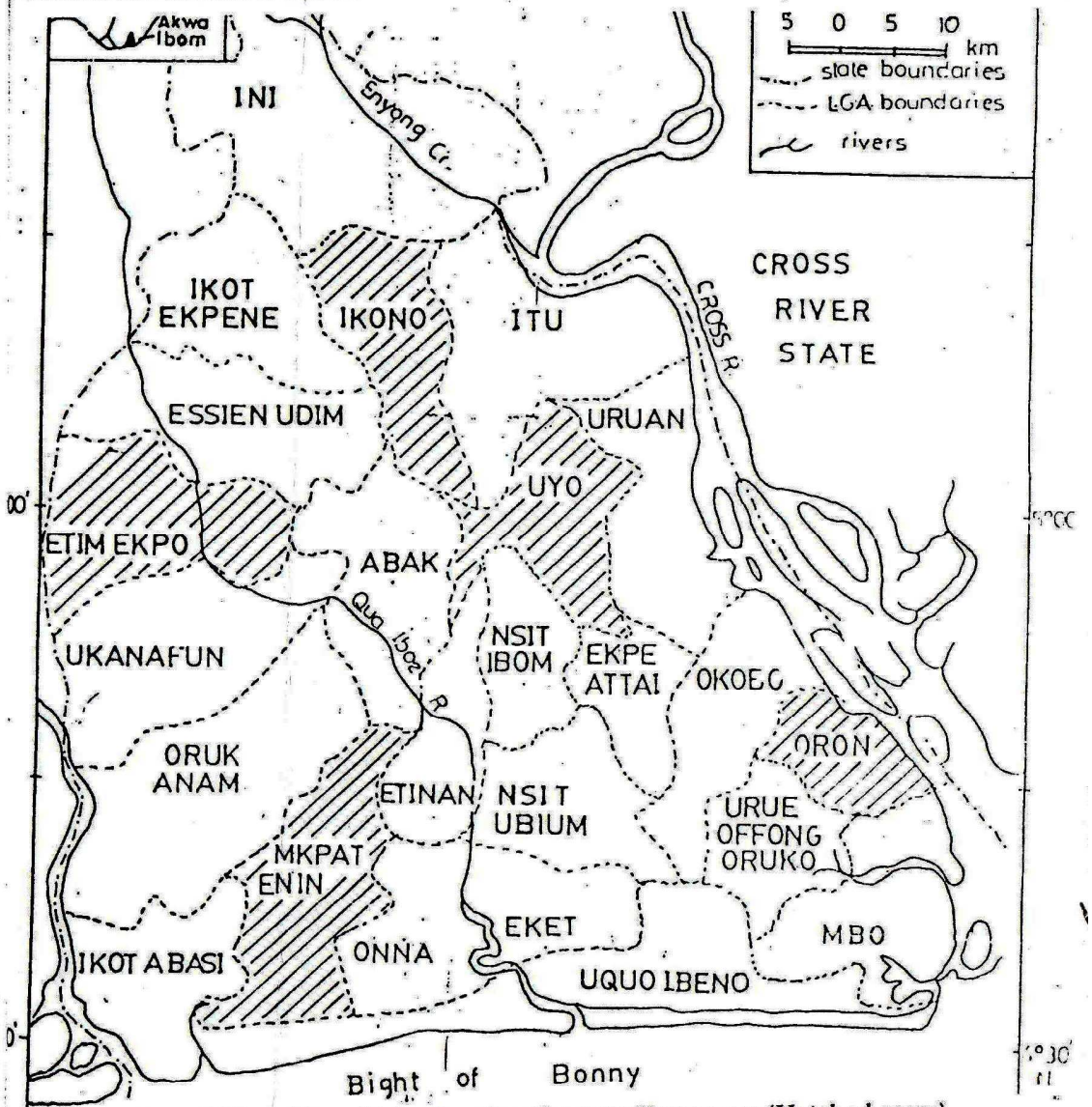

Fig. 1: Map of Akwa Ibom State showing the sampling zones (Hatched areas)

THE STUDY AREA

Akwa Ibom State, located in South-Eastern Nigeria, comprises twenty four Local Goverment Areas covering a landmass of 8412km (Fig. 1). The total population is 2,359, 736 persons, according to the 1991 Nigerian National Population census. The population density is 281 persons per square km. Therefore Akwa Ibom State falls within the high density areas of Nigeria, running from Onitsha, through Awka to Eket (Afolayan, 1978). It has a tropical rainy climate with consequent tropical rainstorms, tropical rainforest and swamp vegetation. The soils, developed on the coastal plain sands, shales and falsely beded sandstones, are rather fragile and are characterized by excessive leaching.

CONCEPTUAL BACKGROUND

Differences exist in individuals' perception of environment and environmental problems. Simply put, perception is the way in which an individual attaches value, intrinsically, to his environment. Purdom and Anderson (1983) believe that the way a man perceives his environment reflects his own previous education, experience, lifestyle and interest. Perception has also been found to be influenced by physiological and sociological factors. These factors include differences in age, sex and education. As stated by Folarin (1991), people may also interprete their environment in terms of their moods, personalities, ethnic background, religious faith and cultural experience. A person's needs and goals in the environment also affect the interpretation of the environment.

Man's influence on the environment depends on his perception of it. In the olden days when environmental awareness had not grown, environmental degradation was a common feature in many parts of the world; which was a reflection of man's perception of his environment during that time. The state of man's environmental perception changed with John Perkins Marsh in the United States who demanded an organized protection of the nation's forest at a time when people generally considered forests as inexhaustible. In his book *Man and Nature: Of physical Geography as Modified by Human Activities*, Marsh suggested the possibility and importance of restoring and improving wasted regions. Later, Darling (1966) published the *Future Environment of North America*, and Thomas (1972) published *Man's Role in changing the Face of the Earth*. All these works emphasized the need for proper environmental conservation and management for sustainability.

The importance of environmental management lies in the interrelationship of human and physical factors. Abegunde (1990) maintains efficient management approach to the utilization of the available resources is indispensible to a better environmental quality.

METHODS OF STUDY

The data for this study was collected from five representative zones, using the systematic random sampling method. This method was used to select samples from the entire population of Akwa Ibom State of Nigeria based on regular groupings. From these procedure, five village groups emerged: these are Nnung Udoe Itak (Ikono Local Government Area) on the Northern axis; Ekim (Mkpat Enin Local Government Area) on the Southern axis; Uruk Ata (Etim Ekpo Local Government Area) on the Western axis; Oron (Oron Local Government Area) on the Eastern axis and Anua Obio (Uyo Local Government Area) on the Central axis. These five villages are coded in table 1.

TABLE 1
SAMPLE VILLAGE GROUPS, ZONES AND THEIR CODES

S/No.	Samples Villages	Zones	Codes
1.	Nnung Udoe Itak	Northern Zone	N. Z.
2.	Ekim	Southern Zone	S. Z.
3.	Uruk Ata	Western Zone	W. Z.
4.	Oron	Eastern Zone	E. Z.
5.	Anua Obio	Central Zone	C. Z.

The selection, theoretically showed an acceptable spatial distribution of rural areas for comparative analysis.

Four- hundred structural questionnaires (100 questionnaires/grid square) were administered, based on random selection of four areas enclosed by 1x1km grids in each of the five zones, making a total of two thousand questionnaires. This number, successfully completed and retrieved from respondents, represented a 100% response. Oral interviews were also conducted for additional information but were not statistically tested. As the responses were given numerical values corresponding to verbal responses, the Spearman's Rank correlation (based on the relative rank of the values) was used for the analysis of the questionnaire data.

RESULTS AND DISCUSSION

6.1. ENVIRONMENTAL PERCEPTION IN THE RURAL AREAS

The common contemporary environmental perception is that man and environment are inseperably linked and that the environment has all the essential ingredient necessary for the survival of the individual and society. Therefore, the environment should be sustainably managed to conserve these essential ingredients to meet the needs of future generations. Theoretically, when rational considerations of the environment are exceeded, recklessness, then abuse sets in, determined either by ignorance or by overriding economic gains. Therefore, the future generation stands to lose, if perception is commercialised.

In the rural areas of Akwa Ibom State, the environment has always been perceived as a system organized by God and therefore has to be protected. The belief implies that life on earth exists in the form of associations of organisms which are linked with one another in unity in the environment. Every group of organism adapts to different environmental conditions and interacts as component elements. At the centre of this community of beings is man, specially blessed by God to control and lead others. It is, therefore, taboo, by the tradition of these people, to exterminate the peripheral beings so graciously placed under man by God.

The people in the rural areas of Akwa Ibom State have therefore always understood the environment in which they live in. They perceive the environment as being created especially for the well being of mankind. As such they regard the environment as a legacy, handed to the people to maintain, control and conserve for their present use and for the utilization of future generations.

Historically, people in the rural areas of Akwa Ibom State have always treated the environment as an integral part of their day to day existence. They had an organic conception of nature in which the biotic and abiotic components were intricately interwoven. Farms were traditionally regarded as sacred, to be maintained and harnessed for their continuity. Therefore, past rural belief made environmental protection a necessity for the rural areas of the State. For instance, ancestral spirits were believed to reside in "protected" forests. For this reason, any form of exploitation was forbidden in such ancestral groves. This situation remained unchanged until the colonial era and the introduction of western (European) beliefs and

practices. The western practices held that nature could be tamed and that the environment could be scientifically controlled. New technologies were introduced to subdue and conquer the environment which once held sacred relevance to the people. However, these activities began to threaten the existence of man and alter the general environmental perception by the people. Man then saw himself under that situation as an environmental conserver if nature must be disrupted for his benefit. The instinct of modern conservation was born: That means exploitation should be carried out only within reasonable limits which permits the renewal of these resources.

Due to population pressure on land in the rural areas of Akwa Ibom State, vegetation in the watersheds were increasingly being cleared and hitherto forbidden sacred forests exploited. In many villages the traditional sanitation exercises and the weekly clean-ups were no longer practiced. The consequence of these "recent" activities was the deterioration of the rural environment and increase in environmental problems.

6.2 ENVIRONMENTAL PROBLEMS IN AKWA IBOM STATE

The major environmental problems facing Akwa Ibom State are erosion, flooding and inefficient waste management. Akwa Ibom State consists of a limited landmass with a very high population density but this little landmass is being taken away by erosion.

Flooding is a regular occurrence in different parts of the state each year. It disrupts socio-economic activities, impedes transportation, hampers communication, displaces people and destroys agricultural lands.

Waste management is of recent gravity particularly in the rural areas. Solid/liquid wastes from small-scale and cottage industries contaminate the environment, causing pollution and general degradation. Therefore, the problems of erosion, flooding and waste management are of direct concern to the State government and indegenes as a whole.

In an assessment of what constitutes the greatest environmental problem in Akwa Ibom State, erosion ranks highest in severity: 60 percent in the northern zone (N.Z.), 55 percent in the southern zone (S.Z), 50 percent in the central zone (C.Z.), 40.5 percent in the eastern zone (E.Z.) and 37.5 percent in the western zone (W.Z.). Flooding and poor waste management ranked next in severity (Table 2).

TABLE 2
ENVIRONMENTAL PROBLEMS IN AKWA IBOM STATE

	Problems	Zones				
		N. Z	S. Z.	W. Z	E. Z.	C. Z
1	Erosion	60.0	55.0	37.5	40.5	50.0
2	Flooding	30.0	32.5	25.0	38.0	25.0
3	Waste Management	10.0	12.5	37.5	21.5	25.0
	Total	100.0	100.0	100.0	100.0	100.0

Perception of environmental problems in the rural areas of Akwa Ibom State has presumably resulted from information disseminated through various sources to the people. In an analysis of the level of environmental perception through information channels available in the rural areas, it was however found out that the sources of information available to the people in each zone depended on its location.

Table 3 shows that in the areas around Uyo (C.Z.), more information is spread through radio/television and newspapers than in the other zones. That is, 52 percent of the C.Z respondents agreed that information about environmental problems is spread through the media, compared with 35 percent (E.Z.), 32.5 percent (W.Z.) and negligible percentages for S.Z.) and N.Z. This could be because of the C.Z's proximity to the state capital where education level is generally higher and the sources of information easily available. For example, in N.Z. which has an extreme location, 75 percent of the respondents agree that information is spread through the village council. Individual or group efforts by government officials, rather than any observed trend accounted for variable information spread across the sampled zones.

TABLE 3
SOURCES OF INFORMATION AVAILABLE TO THE PEOPLE PERCENTAGE IN SAMPLES

Sources of Information	Zones				
	N. Z	S. Z.	W. Z	E. Z.	C. Z
Radio/Television	7.5	7.5	30.0	30.0	37.5
Newspaper	8.0	5.0	2.5	5.0	14.5
Village Council	75.0	50.0	57.5	59.5	19.0
Governmenent Official	9.5	37.5	10.0	5.5	29.0
Total	100.0	100.0	100.0	100.0	100.0

It is pertinent to note that apart from C.Z., the source of information in environmental awareness is the traditional village council. Although the government official ranks ghigh in S.Z. (37.5%), this appears to be a quirk from an enterprising government agency/extension agent. The analysis shows that radio/television, newspaper and the government official accounted for far less than 50 percent of environmental information dissemination in the rural areas of Akwa Ibom State. It is obvious that few people own radio sets, read newspapers or interact with the relevant government officials outside the urban centres.

There was a relationship between the sources of information/ perception and the educational level of respondents in each zone as shown in Table 4.

TABLE 4
LEVEL OF EDUCATION IN EACH SAMPLE ZONE

Level of Education	Zones				
	N. Z	S. Z.	W. Z	E. Z.	C. Z
No Formal Education	24.5	20.0	17.5	30.0	10.0
Primary	40.0	30.0	50.0	30.0	20.5
Secondary Education	28.5	25.0	27.0	22.5	28.0
Post Secondary Education	7.0	25.0	5.0	17.5	41.5
Total	100.0	100.0	100.0	100.0	100.0

Where the literacy rate was high as in the central zone (C.Z.), people generally received information more from the media than where the education level was low. The study, therefore, confirmed that the level of environmental perception or awareness increased with increase in literacy rate. This is so because, the more educated an individual is, the more curious and environmentally aware he is likely to become.

7. ENVIRONMENTAL MANAGEMENT IN THE RURAL AREAS

7.1 Environmental Sanitation Exercises

As a measure to reduce the environmental problems of waste management in Akwa Ibom State, the second Saturday of each month is set aside for the state environmental sanitation exercise, while the las Saturday is for the national sanitation exercise. Information about the sanitation exercises are spread through the media and the village councils. There is an indication of a positive response to these exercises in the rural areas. Table 5 gives the percentage participation in these exercises by the people.

The large percentage of participation, with the exception of C.Z., in the environmental sanitation exercise tends to indicate that environmental awareness is high in the rural areas of the state.

TABLE 5
PERCENTAGE RURAL PARTICIPATION IN STATE AND NATIONAL ENVIRONMENTAL SANITATION EXERCISE

	Zones	Number of People	Percentages for Each Zones
1.	N. Z.	240	60.0
2.	S. Z.	230	57.5
3.	W. Z.	290	72.5
4.	E. Z.	250	62.5
5.	C. Z.	170	42.5

Based on this observation, the hypothesis that information spread through the radio, television and newspaper has influenced the level of awareness and increased the perception of these problems in the rural areas is tested. Rural perception of environmental problems through the information channels (radio, television, newspapers) is therefore correlated with percentage participation in environmental sanitation exercises in these areas using the Spearman's Rank method and the significant relationships between the two sets of variables assessed (Table 6).

The correlation between rural peoples' perception of environmental problems through the media and participation in the state and National sanitation exercises is extremely low (rho = 0.05), indicating that it is not statistically significant.

TABLE 6
SPEARMAN'S RANK ORDER OF RESPONSES

	Zones	Perception (X) through information channels: Radio/TV, Newspapers	Participation (Y) in environmental sanitation exercises	RX	RY	d	d^2
1.	N. Z.	15.5 (4)*	60.0 (3)*	4	3	1	1
2.	S. Z.	12.5 (5)	57.5 (4)	5	4	1	1
3.	W. Z.	32.5 (3)	72.5 (1)	3	1	1	1
4.	E. Z.	35.0 (2)	62.5 (1)	2	2	0	0
5.	C. Z.	52.0 (1)	42.5 (5)	1	5	-4	16
	Total						19

(*) Numerals in parentheses indicate rank order R Using Spearman's Rank correlation formula:

$$r_s = 1 - \frac{6 \sum d^2}{n^3 - n}$$ where d is the difference in ranking and n is the number of cases, 5 in this case:

r_s = 0.05.

Further, a students t-test value of 0.09 obtained for the Spearman's Rank coefficient confirmed the correlation as not statistically significant at any confidence level. It is then concluded that there is no significant relationship whatsoever between information spread through the media and the increased participation in environmental sanitation exercises in the rural areas. This goes to confirm our preliminary observation that in the rural areas of the state, the people participate in environmental sanitation exercises because cleaning up exercises are not new in the area. Indeed such exercises have been the tradition in these areas even from the olden days. Thus, increased participation is not a result of information spread through the media.

The implication of this finding is that a clean environment is rooted in cultural and traditional practices. Environmental purity can hardly be achieved through a one-minute radio advert, a corner news item in the local tabloid or a twenty - minutes presidential address of an urban - based conservation outfit performing for the television cameras. Environmental management programmes should seek learning from the grassroots rather than in the bureaucratic boardrooms: How did the rural people imbibe the culture of environmental cleaniness? Why is this culture lost as soon as people migrate into the urban centres? The solution, perhaps, lies in environmental education, not to the aged, but right from infancy in the so-called civilized urban homes and schools, to inculcate the desire for clean environment into the young as they grow into adulthood.

7.1 Erosion and Flood Control

The State Government has tried to provide measures for the control of erosion and flooding which are becoming major environmental problems in the rural areas of the state. These are supposedly done through the provision of good drainage systems to control flooding, educating people on the cause of these problems and tree planting (Table 7).

TABLE 7
PERCENTAGE RESPONSES FOR SOLUTION TO ENVIRONMENTAL PROBLEMS, BASED ON FIELDWORK

	Zones	Solution to erosion/ flood control through tree planting	Solution to environmental problems through educating	Solution to erosion/flood problems through provision of good drainage
1.	N. Z.	37.5	20.0	40.0
2.	S. Z.	12.5	15.6	37.5
3.	W. Z.	15.0	35.0	47.3
4.	E. Z.	25.0	10.0	55.0
5.	C. Z.	25.0	47.5	77.0
	Mean Value	23.0	25.6	51.4

Apart from these measures from the government, environmental management techniques developed by the people in the rural areas are also used to combat erosion and flooding. For example, collection pits for flood waters and hump sediment traps are common features of village paths. As majority of the people in the rural areas are farmers, environmental awareness has led them to incorporate some of these techniques into their traditional farming systems. For example, experience has taught the farmers that severe erosion and downstream flooding are caused by frequent and incessant weeding of land close to the watershed. They know that this exposes the soil to the dessicating effects of the sum and to the erosive impact of rain. They also know that high rainfall causes the soil to lose permeability. Knowing these, weeding frequency is now regulated so as to quicken the regeneration of vegetation. Minium or no-tillage system is practiced. In this method, the crops are planted directly into the seedbed without tilling the soil. Where the soil is tilled, it is minimal. Experience has taught the people in the rural areas that soil tillage results in a breakdown of soil structure and reduces the soil's resistance to erosive agents.

Other soil conservation practices incorporated into the farming systems are practices that raise the soil's organic matter. For example, weeds removed from the farm during the rainy season are buried in the ground. During the dry season, they are used as mulch to conserve the soil moisture and reduce insolation. Soil quality is also enhanced by addition of ash from kitchen fires. Ahn (1979) believes that ash raises the pH of soils when applied in appreciable quantitites. In addition to these is the practice of aggroforestry in which trees and shrubs are grown in association with crop and livestock on the compound land. According to Young (1994), the

practice of aggroforestry increases inputs through litterfall and nitrogen fixation and also improves physical properties including soil water holding capacity. Even the traditional agricultural practices such as the Bush Fallow and the Block Farming systems enhance vegetation succession thereby preventing erosion. These practices are however limited by shortage of land due to population pressures, such that soil fertility restoration is never completely achieved.

Village conservation pressure groups, such as at Nnung Udoe Itak (N.Z.) are used to protect the natural forest ecosystem which is fast being destroyed by erosion. The group makes sure that nobody cultivates, collects fuelwood and building materials (in the form of ropes and bamboo), medicine and fodder from certain forests. Violation of the village laws attracts heavy fines.

7.3 Water Management

In rural Akwa Ibom State, a number of water sources are available for different purposes, depending on water quality. Water management include quality maintenance through control of pollution. Human waste deposition within the vicinity of water sources and washing of materials around wells, boreholes and lakes are forbidden. Vigilantes are used to enforce these laws. Traditionally, a day is set aside, once in three months, for the cleaning of streams. Fences or checks are constructed around the watersheds to prevent runoff carrying sand and silt to block the streams. Vegetation around the streams are maintained in many areas to avoid siltation of the streams.

Generally, the rural people acknowledge water as the basis of life and are deeply concerned about water quality and the water environments. This concern is based on the fact that diseases such as cholera, typhoid, guineaworms and hepatitis are now appreciated as transmitted through, or related to, water borne agents.

8. CONCLUSION

On a global scale, environmental problems are increasing in magnitude thereby causing great concern to the different governments of the world. In Akwa Ibom State, the major environmental problems are erosion, flooding and problems of waste management. Although the government has several

REFERENCES

Afolayan, A. A. (1978), "Population" In: Oguntonyibo, J. S. et al (eds). *A Geography of Nigerian Development.* Heinmann edu Bks. Ibadan.

Abegunde, M. A. A. (1990), "The Ecologist Approach To Land Resource Management For Rural Development in Nigeria" In: Ayeni, B. and Faniran A (eds). *Geographical Perspectives on Nigeria's Development.* Proceedings of the N.G.A. Conference.

Ahn, P. M. (1979), *West African Soils,* Vol. I. (4eds.) Oxford, O. U. P.

Darling, F. F. (!966), *Future Environments of North America; Transformation of a continent,* The Conservation Foundation, U. S. A.

Folarin, B. A. (1991), "Review of Empirical; Research on Ecologically Relevant Behaviour, In: Olowu, A. A. (ed.) *Environmental Psychology.* Shaneson, Ibadan.

March, J. P. (1864), *Man and Nature: Of Physical Geography Modified By Human Activities.* U. S. A.

Ofomata, G. E. K. (1990), "Geography and The Nigerian Environment". In: Ayeni, B and Faniran A (eds.) *Geographical Perspectives of Nigeria's Development.* Proceeding of the N.G.A. Conference.

Purdom, P. W. and Anderson, S. T. (1983), *Environmental Science,* Columbus, Charles Merril.

Thomas, L. (1972), *Man's Role In Changing The Face Of The Earth.* Chicago Press. U. S. A.

Ukpong, I. (1995) Incipient Soil damage in an oil field near the Kwa Iboe River Estuary, Akwa Ibom State, *Ibom J. Soc. Issues* (in Press).

Young, A. (1994), *Agroforestry For Soil Conservation* C. A. B. International Wallingford, U.K.