Evaluation of Impact of Unsustainable Agricultural Practices on Rural Poverty and Environmental Resource Management in Ogoni, Nigeria

Dr. Chioma Vivienne Nwokoro, PhD
Sociology Department, Faculty of Social Sciences
Eastern Palm University
Ogboko, Ideato Imo State
Nigeria

Dr. Felix O. Chima, PhD
Professor and Director
Prairie View A&M University
Department of Social Work Education
United States of America

Abstract

To understand the relationship between environmental degradation and poverty most scholars have tried to establish links between them. Recent linkages are found in rural areas where poverty is more and where people engage in agriculture, which heavily depends on the environment. In most rural areas in Nigeria, it is observed that agriculturalists have come to abandon effective environmental resource management practices when faced with poverty. This study is informed by the fact that this dynamic has not been employed in evaluating environmental degradation in oil exploration areas in the country. Oil exploration is often blamed for most environmental degradations in the country. Therefore, this study using a quantitative approach evaluated the impact of unsustainable agricultural practices on environmental resources in Ogoni Land. The study revealed that unsustainable agricultural activities by the rural farmers and fishermen affected the ecological balance in Ogoni, thereby plummeting agricultural yields over the years.

Key words: Environmental degradation; Unsustainable Agricultural Production; Rural Poverty; Sustainable Development.

Introduction

The issue of environmental degradation and poverty was clearly addressed in the World Commission on Environment and Development (1987) report termed "Our Common Future". In this report the commission explicitly stated that Poverty is the cause of environmental degradation in most developing countries and before any effective environmental management can be achieved policy makers and government should first address the issue of poverty. After this declaration many scholars have gone out of their ways to study communities and to find the possible linkage between poverty and environmental degradation ((Nwokoro and Chima, 2017).These scholars found out that the relationship between environmental degradation and poverty is cyclical nature, which makes it an extremely complex phenomenon. Inequality or poverty tend to foster unsustainability, because the poor who rely on their environment more than the rich deplete natural resources more than the rich when they have no real prospects of gaining access to other types of resources. On the other hand, degraded environment can accelerate the process of impoverishment again when the environment ceases to provide the necessary resources for survival. Moreover, poverty can hinder the pathway of sustainable development because it will not allow programmes drawn for sustainable environmental pursuit to be achieved. Poor countries and communities tend to engage in short-term resource exploitation in expense of long-term environmental problems ahead.

Environmental degradation in the rural areas has increased over the years in Nigeria. Mortimore (1995) noted that both human activities and natural disasters have contributed to the problem. Environmental degradation such as deforestation, loss of biodiversity, loss of soil fertility, leaching of the soil, land degradation, land and water pollution, desertification, flood, drought, and erosions, are the major cited environmental problems facing the rural areas in Nigeria today. In the country, the Niger-delta communities are mostly cited as examples of environmentally degraded rural areas. Studies such as Nwokoro and Chima (2017); Osaghae (1996); Orubu (2000); Hutchful (1995), Ikein (1990); Nwankwo and Ifeadi (1991); Awobajo (1981); blame the oil industries as the perpetrators of environmental degradation in the region. Be it as it may, it is necessary to consider other factors which pose great challenge to sustainable development in these rural areas. The growing realization that rural people in Nigeria tend to pay less attention to natural resource management and conservation in their agricultural activities, have come to be the focus of most researchers in evaluating rural environmental problems. According to Vivian et al. (1994) the reason for this problem is the influence of poverty and high population density, which deter rural dwellers from effectively managing their resources. Lack of alternative livelihood and poor income generated from their occupation compel them to damn any consequence and engage in some harmful agricultural practices, which deplete the resources. In agro-based rural societies where agriculture is the major source of livelihood, poverty aggravates the depletion of resources because the people do not have adequate income to practice efficient resource conservation methods in their agricultural activities.

Ogoni land is part of the Niger delta region, which has faced various environmental problems over the years, such as massive deforestation, loss of biodiversity and decline in soil fertility. Environmental problems in Ogoni have been overly blamed on the Oil industries and their unsustainable activity. In as much as this is true, for overall evaluation of the relationship to be done, there is a need to look at the influence of other factors, which have lied dormant over the years. This is true because there has been noticeable decline in resource management of the people especially in the late 1980s when poverty rate in the country increased. Naanen (1995) showed that poverty rate in Ogoni is very high amongst the peasant farmers and fishermen

Thus, this study intends to explore the contribution of poverty and low-level resource management on environmental resources (i.e. soil and marine). To achieve this, the study has formulated two hypotheses:

1. ***Poverty encourages low-level resource conservation of environmental resources depended on for agricultural production in Ogoni land***
2. ***Lack of conservation of environmental resources encourages low agricultural yields in Ogoni Land***

The aim of this study is to bring into focus some neglected factors in the discussion of environmental degradation and poverty issues in the rural areas especially in the Niger Delta region, where oil exploitation activities have been overly blamed. This will help to guide government in drawing policy framework that will effectively manage the two problems in the country.

Literature Review

Environment and Sustainable Development: The Genesis

Global concerns about the state of the environment has deep historical roots. Initial concern for the environment was mainly limited to the developed industrialized countries. Initially, many developing countries considered environmental protection as a luxury to be tackled when the challenge of development was overcome. On this note Glasbergen and Blowers (1996:25) noted that most developing countries treated environmental protection issues as the concern of the advanced nations who they concluded can afford to protect their environment in the midst of plenty. However, gradually a global consensus on the issue of environmental degradation due to human activities emerged to supersede the simple fear of environmental constraints as an impediment to development. McComick (1989:16) on this view noted that this new outlook identified environment as a critical dimension of successful development. As a result of this view, environmental concerns grew visibly from global to regional and then to the local level. Not only the impact of development was recognized, but also the overall impact of rapid population growth and unsustainable human activities especially in the case of resource management began to receive greater attention. This is because it became clear as Ohlsson (2000:33) noted that many of these environmental problems were inextricably linked to the broader aspects of social and economic development.

Accordingly, the contemporary challenge became the need to re-examine the critical issues of environment, development and social well-being and to formulate innovative, concrete and realistic proposals to deal with them and to strengthen International co-operation on environment and development. (Leach and Mearns, 1991:15). Kramer and Sharma (1995:13) opined that global resolution of the challenges of environmental problems centered on the fact that human activities could and should be re-directed towards a pathway of sustainable development, with the environment seen not as an obstacle to growth, but rather as an aspect, which needed to be reflected in policies, if growth is to be sustained. The concept of sustainable development embodies the potential for and the need to integrate environmental protection with continuing social and economic development and the task of examining their inter-linkages.

The term "Sustainable Development" was brought into common use by the World Commission on Environment and Development (WCED) in its 1987 landmark report known as *Our Common Future.* The commission definition is meeting the needs of the present generation without compromising the needs of the future generation. This implies that capital should be preserved in the same aggregate sense with the replenishment of the losses in one area and attention focused on the need to estimate the value of the environmental resources and the protection of certain essential ecological systems. In most developing countries, the benefits from human activities have often been exaggerated and the cost of the environment neglected. Most of the time, these costs have never been built into decision making and all the short and long-term impact not carefully explored This unfortunately is the result of many environmental degradation found in these countries today.

Poverty and Environmental Degradation – The Vicious Link

Glasbergen and Blowers (1996:72) noted that by the opening of the 21st Century an unprecedented level of inequality had developed in the world; a person earning an income of $2 per day is in top half of the world income distribution. This situation is best described in the 1987 report of the World Commission on environment and Development (WCED) where it was explicitly stated that poverty is the cause of environmental degradation and for effective environmental management to be achieved policy makers and government should first address the issue of poverty. According to Leach and Mearns (1993:10) poverty is said to be both the cause and effect of environmental degradation. The cyclical link between poverty and environmental degradation is an extremely complex phenomenon. Inequality may foster unsustainability because the poor who rely on their environment more than the rich deplete natural resources more than the rich, especially as they have no real prospects of gaining access to other types of resources.

Moreover, degraded environment can accelerate the process of impoverishment, again because the poor depend on their environment for survival. Therefore, as Leach and Mearns and the influential WCED report noted, it is necessary that poverty problem in a country is first examined and possible solutions drawn for action before any meaningful environmental protection strategy can be established and achieved. Poverty hinders the pathway of sustainable development because it will not allow programmes drawn for sustainable environmental pursuit to be achieved. Poor countries and communities tend to engage in short-term resource exploitation in expense of long-term environmental problems ahead. The cost of exploiting the environment will tell on the future generation who are not yet born but awaits degraded and deteriorated environment. McGranaham (1993:33) noted that the future generation will come to bear the consequences of reckless wastages of environmental resources. They too will need them for survival and when they are not sufficient, hunger and unhealthy competition over limited resources can set in.

Environment and Sustainable Agriculture in Rural Nigeria

The importance of sustainable agricultural production system is becoming a major concern of agricultural researcher and policy makers in both developed and developing countries. Sustainability represents the last step in a long evolution that economic development must consider both the protection of natural resources and maintenance of environmental quality. Hence sustainable agriculture should be based on approaches that reduce environmental degradation, conserve resources and provide an adequate and dependable farm income through reducing poverty and associated problem of population. Titiola (1987) observed that Nigeria has pursued with vigor the exploitation of her natural resources with the purpose of maintaining its sustenance. Agricultural resources are located in the rural areas and most of them are under direct control and management of the rural population who exploit them for their economic activities in such areas as crop production, fishing, livestock keeping and logging.

Therefore, monitoring of the interaction of rural exploitation and production activities in rural areas is important in national development efforts for sustainable agricultural production. The conservation of natural resources entails a better knowledge of the limitations imposed by the natural and man-made environment as well as the need for ecological balance. Yudelman (1989) noted that the accelerating deterioration of resource base in much of Nigerian rural areas threaten to reduce production. This crisis is largely due to rising pressure of human and livestock populations on traditional shifting cultivation, the absence of appropriate technical changes, which make farmers cultivate intensively by shortening fallow period and deforestation. Some environment friendly agricultural practices such as crop rotation, shifting cultivation, bush fallowing and use of compose manure have been said to improve the quality of soil where they are ardently practiced.

However, to increase farm yield and because of the increasing population, these practices are not ardently practiced in some rural areas. This results to some natural disaster occurrences such as erosion and marshes. Poor people may be relatively more dependent on their environment, but better off people actually consume a greater amount of them. Inequality between income groups has also shown to reinforce environmental pressure. For instance, small-scale farmers are compelled to utilize marginal land when landowners who occupy the best agricultural lands displace them. This is an important driving factor in analyzing the relationship. Leach and Mearns (1996) also emphasized that in the presence of inequality, many local common property management schemes breakdown. This in turn results in negative impacts on the most vulnerable. For a full account, the effects of economic growth on poverty and environment need to be evaluated on household levels. The effect on individual household members of a deteriorating environment can be identified. In particular, children and women are most vulnerable to poverty and environmental degradation.

Poverty in Ogoni Land

Some ethnic groups because of their minority nature have largely remained marginal in the distribution of power and hence the entrenched discrimination they face. Such discriminatory tendencies affect access to jobs, provision of schools, social facilities, infrastructural development and other economic opportunities including source of livelihood. Ogoni is mostly rural with many parts hardly integrated into modern economy; hence not all the survival activities are monetized to give reliable income. Robinson (1996) in her study, described the nature of Ogoni subsistence livelihood by stating that "*Families continue to produce directly varying proportions of their food for consumption and are not entirely dependent on the market"*

Farm labour, according to her provides supplementary incomes for a growing number of poor peasants' families and attract between 100 and 150 naira a day (just within the UN poverty line indication of 1$ per day). Oil ventures which supposed to boost exports and cause overall development, has only benefited the foreign and Nigerian elites, in expense of those who bear the burden of environmental destruction from this venture. In a study carried out by Ben Naanen in the year 2003 of Ogoni socio-economic life, he noted that the Ogoni economic activities mostly farming and fishing have faced drastic changes over the years. He found out from his report that about 60% of Ogoni people were living under the United Nations poverty line indicator of 1$ per day (i.e. equivalent of 150 naira in the then exchange rate). He stated the following:

"*out of 20 families we sampled in two pilot communities in Ogoni, four had an average income of about N8, 000 per annum or approximately 60 dollars at the prevailing exchange rate. Four had average income of N5, 000 naira per annum and while two "rich men" in the survey had an average of about N74, 000 or 341 dollars equivalent"*

These indicate extreme poverty despite being one of the major oil producing areas in the country. Poverty is endemic in Ogoni, because of indiscriminate oil exploitation activities which are very unsustainable, and gross effects of economic downturn which has since plummeted the survival strategies of many people residing in rural areas in Nigeria.

Research Design and Methods

The research is a survey study which attempts to explore the impact of poverty and level of local resource management on natural resources and how they contribute to decline on agricultural productivity of the Ogoni people. To get these facts, the researcher carried out a survey research on the agricultural activities of the Ogoni people in order to find out how the rural agriculturalists in Ogoni impact on the resources due to poverty, which has been noticed to be rampant in the area.

To find the level of resource management, the researcher had to investigate the way the rural farmers and fishermen manage the resources they depend on for livelihood in their various agricultural practices. The respondents' agricultural yield is also investigated to see if the practices adopted impact negatively on output and thereby affecting the livelihood pattern. Poverty impact is measured in terms of decline in agricultural productivity, which manifest in low-income generation from their occupation. Also, income poverty is also used to evaluate impact of this factor on resource management and conservation. To obtain adequate information for the study the researcher adopted both the primary and secondary sources of data collection. A survey research technique was used in collecting the primary data for the study. This is because it is the best way for collecting information when the units of analysis are human beings (Visser et al., 2000). For the purpose of this study the interview, questionnaire and semi-participant method were the primary sources of data used for this study. The secondary data used include literature, seminar papers, official documents and reports, Internet web pages that are relevant to the study.

1. Questionnaires:

Questions were both open and closed ended and respondents were given opportunity to give their opinion about some issues in their own way. Questionnaires were distributed and retrieved accordingly without much problems. They were distributed to the respondents who are local farmers and fishermen informed and organized by their leaders in each community selected for the study. The questionnaire is divided into two parts – T***YPE A is for farmers while TYPE B*** **is for fishermen**. In this way, questions are asked in accordance to the occupation and to afford respondents answer to their separate occupations. This was to enable easier analysis of the questionnaire.

2. Interview Method:

The researcher carried out unstructured interview with the town's chiefs, some members of farmers and fishermen co-operative and the oldest fisherman in Kpor Community.

3. Observation Method;

This source had to be obviously used because the researcher has to observe the activities of these rural farmers and fishermen in order to get appropriate information.

4. Sampling Procedure

Our empirical universe constitutes the indigenes of Ogoniland in Rivers State of Nigeria. Under the present dispensation, Ogoniland is divided into four Local Government Areas – Gokana, Khana, Tai and Eleme, each of which consists of several communities with common cultures and economics practices. Hence, it will not be necessary to investigate every town or community. Our investigation was based on selected communities, especially where agriculture is the main economic activities for the people. Economic activities of most Ogoni communities are either farming or fishing, so a purposive sampling method was used to select those communities where both fishing and farming thrive as their main source of livelihood. Subsequently eight communities were selected from the four Local Government Areas that make up Ogoni land. The studied communities were:

LGA	Communities
Khana L.G.A	Bane and Gwara
Gokana L.G.A	B-Dere and Kpor
Tai L.G.A	Kpogho and Gio
Eleme L.G.A	Onne and Ekporo

The target populations were the farmers and fishermen. A total of 200 farmers and 200 Fisher men were selected for the study. From each of the eight communities fifty persons were selected using purposive sampling method. The questionnaires (type A and B) were shared amongst the fisher men and farmer participants. There were just 12 interviewees studied.

5. Data Analysis Procedure

The focus of this study is to test relationship between variables formulated inform of hypotheses. Simple tables and percentage were adopted for analysis of field data and the Chi square test value calculated as:

$$X^2 = \Sigma \frac{(O - E)\,2}{E}$$

Where X^2 is the calculated Chi square value
Σ is summation
O is the observed frequency
E is the expected frequency

The Chi square critical value is determined using 0.05 level of significance

Test of Hypotheses, Interpretation and Discussion of Results

In this section the analyses of data collected from the field and test hypotheses are done. Data from fieldwork are presented and discussed. The Chi square is the analytical technique for testing hypotheses 1 and 2. The aim of this analysis is to determine the impact of poverty and level of environmental resource management on agricultural livelihood of Ogoni people and to show the relationship between environmental degradation and poverty in Ogoni. Because agriculture has been noted to impact on the environment in most rural areas, the agricultural ventures of the Ogoni, which are farming and fishing were examined. Eight communities were selected purposively with the understanding that farming and fishing are the major sources of livelihood for majority of the people. The communities studied include:

Gokana L.G. A	Kpor and B.dere
Khana L.G. A	Bane and Gwara
Tai L.G. A	Gio and Kpogho
Eleme L.G. A	Ekporo and Onne

A total of 400 questionnaires were administered to both fishers and farmers in the eight communities. However, only 285 (140 fishermen and 145 farmers) questionnaires were retrieved.

Table 3: Sex Distribution of Participants

Occupation	Sex	No. of Respondents
Farming	Female	85
	Male	60
Fishing	Female	----
	Male	140
	TOTAL	285

Source: Researchers' field data

Table 4: Income level of participants

Occupation	**Sex**	**Income level**	
Farming		Less than 1 dollar per day	More than one dollar/per day
	Female	60	25
	Male	40	20
Fishing	Female		
	Male	100	40
	Total- 285 respondents	200	85

Source – Researchers' field data

Test of Hypotheses

The following hypotheses were formulated and tested in this section:

1. ***Poverty encourages low-level resource conservation of environmental resources depended on for agriculture in Ogoni land***
2. ***Lack of conservation of environmental resources encourages low agricultural yields in Ogoni Land***

Data Presentation for Testing Hypothesis 1

Data presentation for testing of hypotheses is done for the purpose of demonstrating the level of resource conservation in agricultural activities of both farmers and fishermen in Ogoni and also to show how poverty contribute to the low-level resource conservation in the study location. **Table 4** shows that from the respondents' views, poverty is endemic amongst the agriculturalists. Research questions from the questionnaires are used for data presentation and discussion of results. Questions adopted from questionnaires TYPE A and TYPE B, indicating the two categories of respondents are used for the presentation.

Type A (Farmers):

Question 1

Do you Practice Bush Fallowing?

The response to this question is analyzed below according to the various communities studied.

Table 5: Responses to the Practice of Bush Fallowing

Response	Bane	Gwara	Kpor	B.dere	Gio	Kpogho	Onne	Ekporo	Total	%
YES	15	17	26	11	13	9	11	12	114	78.6
NO	5	4	7	3	4	1	4	3	31	21.4
TOTAL	20	21	33	14	17	10	15	5	145	100

Source: Researchers' Field Data

Discussion of Result:

Agricultural practices such as Bush-fallowing, crop rotation and cover cropping which are acknowledged by agricultural and soil scientists as favourable agricultural practices are used as indicators. From table 5, one can see that about 78.6% (114 out of 145 respondents) of participants indicated that they practice bush fallowing.

However, the length of fallow period is used in determining the level of resource conservation amongst the respondents. Another question was asked for this purpose below.

Question 2:

"How long do you allow the land to lie fallow after each harvesting?"

With this question a sharp difference was discovered amongst those who indicated they practiced this agricultural method. Spatial intervals were used to indicate length where a period of 3 years and above is considered adequate and less than 3 years considered inadequate. This is because Animal and Soil Scientists Okezie and Okeke (1987) noted that a period of 3 years is an average and conducive length for fallow. Therefore, 3 years is used as the minimum length for fallow. Below is the response to this indicator.

Table 6: Response to the length of fallow period

Response	Bane	Gwara	Kpor	B.dere	Gio	Kpogho	Onne	Ekporo	Total	%
Below 3 years	12	11	20	9	10	6	7	9	84	73.7
3 years	2	4	4	2	2	2	2	2	19	16.7
More than 3 years	1	2	2	---	1	1	2	1	11	19.6
Total	15	17	26	11	13	9	11	12	114	100

Source: Researchers' Field Data

Discussion of Result

From table 6 above, there was a remarkable finding. Though most of the respondent (from table 5 above - 78.6% i.e. 114 of 145 respondents) affirmed that they do bush fallowing, a startling percentage, precisely 73.7% (84 persons out of the 114 respondents) of participants affirmed that they do not practice longer period of fallow. The appalling discovery is that the fallow period is quite short, as some indicated they practice fallow period less than 1 year. According to Fomara and Tilman (2008) efficient soil conservation is ensured by the adoption of some viable agricultural practices such as found in the bush fallowing method. Bush fallowing ensures the renewal of soil fertility over the period allowed for fallow. During the fallow period, the microorganisms that play their role in soil regeneration are allowed efficient time of carrying out their function. The soil regains its water table and can withstand natural shocks such as erosion and over flooding, which can lead to marsh and swamp formations.

The researchers went further to find out the reason why these farmers do not practice longer period of fallow. For the response to this, 75.1% out of the 84 who don't practice longer fallow period, indicated that they cannot go into longer period of fallow because they cannot afford to buy another land for cultivation should they leave the present to lie fallow a longer period. Interestingly, from our field data we found out that 100 out of the 145 farmers have income below poverty line of 1$ dollar per day (see table 4). Also, 60 out of 100 respondents who indicated this were women. Furthermore, very crucial to this discovery is the fact that a great percentage of these farmers (who are mostly women) indicated that they have no other means of livelihood except their present occupation. Table 7 below shows the response to the question about alternative livelihood, which is considered necessary in evaluating poverty-environmental degradation problem

Question 3:

"Do you have alternative livelihood apart from your present occupation?"

Table 7: Response to Alternative Means of Livelihood

Response	Bane	Gwara	Kpor	B.dere	Gio	Kpogho	Onne	Ekporo	Total	%
YES	6	4	8	5	6	2	4	6	41	28.3
NO	14	17	25	9	11	8	11	9	104	71.7
TOTAL	20	21	33	14	17	10	15	5	145	100

Source: Researcher's Field Data

From table 7 above we can see that about 71.7% (i.e. 104 persons) of 145 respondents (i.e. farmers) indicated that they have no other livelihood apart from their present occupation. This has an implication on the way resources are utilized and conserved. When there is no alternative livelihood. They find it difficult to practice longer period of fallow. Moreover, from the interview source we were able to find out that the poverty alleviation programme did not last in most of the communities in Ogoni land and most of the people don't even know what it means.

Type B (Fishermen)

The questions were asked to find out the level of resource conservation.

Question 1

Do you use chemicals or carbide for harvesting fishes?

Table 8: Response too Use of Chemical for Harvesting Fish

Response	Bane	Gwara	Kpor	B.dere	Gio	Kpogho	Onne	Ekporo	Total	%
YES	10	17	21	17	12	10	9	11	107	76.4
NO	5	3	6	6	3	5	3	2	33	23.6
TOTAL	15	20	27	23	15	15	12	13	140	100

Source: Researcher's Field Data

Discussion of the Result

According to table 8 above, out of 140 respondents 76.4% or 107 Fishermen indicated they use this harmful method in catching fishes. From their responses, the reason for using this method is because it is more convenient and yields more catches. The use of these dangerous methods destabilizes the food web and marine eco-system balance. Chemicals also degrade the marine habitat by leaving toxic substances, which makes the habitat unconducive for the fishes and other aquatic lives to survive. When the food web is disrupted there is the tendency of fishes leaving the particular fishing area in search of a better habitat. Some sensitive species can even go into extinction because of these harmful methods. This consequently affects the livelihood earnings of the fishermen in the long run. All these methods have negative impacts on livelihood earnings of the fishermen in the long run.

Test of Hypothesis 1

"There is a significant relationship between poverty and low-level resource conservation of environmental resources depended for agriculture in Ogoni land"

To test hypothesis I, data derived from tables 6, 7 and 8 above were used for drawing the contingency table.

Table 9: Contingency Table for Testing Hypothesis 1

Responses	Farmers (O)	(E)	Fishermen (O)	(E)
Agree	18	8.8	2	11.2
Strongly disagree	52	60.3	85	76.7
Disagree	9	9.7	13	12.3
Strongly Disagree	3	2.2	2	2.8
Undecided	2	3.1	5	3.9

Calculated X^2 = 20.53
df (4) at 0.5 level of significant = 9.49

Interpretation of Result from the Test of Hypothesis 1:

From our computational analysis, calculated chi-square value 20.53 is more than the critical table value, which is 9.49. Based on this we accept our hypothesis that says - ***Poverty encourages low-level conservation of environmental resources depended for agriculture in Ogoni land.*** From the above analysis we can see that poverty indeed compels these agriculturalists to ignore or adopt harmful agricultural methods in their activities. Poverty limits people's options and induces them to deplete resources faster than is compatible with long- term sustainability. The World Bank (1995) stated that a declining natural resource base, largely caused by poor people deprived of access to other means of livelihood, exacerbates the conditions of the poor by limiting their already restricted production possibilities. Pearce and Warford (1993:72) argues that poverty encourage rural agriculturalists to opt for short-term measures in order to satisfy immediate needs (discount rates) or wants (survival strategy). This agriculturalist according to them duly ignore more environmentally appropriate practices that are friendly to the environment. In turn this degradation leads to poverty. This factor further prevents investments in human capital such as children's schooling, thereby reinforcing poverty even to another generation.

Data Presentation for Testing Hypothesis 2:

This data presentation is done for the purpose of showing the relationship between the level of resource management in agricultural activities of both farmers and fishermen in Ogoni and decline in agricultural productivity. The questionnaire format – TYPE A and TYPE B, indicating the two categories of respondents are used for the presentation. Table 10 shows responses to the state of agricultural yield (fishing and farming) in Ogoni.

Table 10 – Response to state of agricultural yield

Occupation	Sex	Income level		
Farming		Agricultural yield is high	Agricultural yield is low	No response
	Female	20	65	-
	Male	25	35	--
Fishing	Female	--	---	--
	Male	25	115	--
	TOTAL- 285 respondents	70	215	--

Source – researchers' field data

Farmers (Type A)

To determine if the farmers conduct appropriate resource (soil) management in agricultural activity, the constant practice of bush burning which have been pointed out as one of the most harmful agricultural method to the soil. Below is the table showing the response of farmers to the use of this method.

Research Question:

1. *Do You Practice Bush Burning?*

Table 11 – Response to Practice of Bush Burning

Response	Bane	Gwara	Kpor	B'dere	Gio	Kpogho	Onne	Ekporo	Total	%
YES	16	18	28	11	14	8	10	13	108	74.5
NO	4	3	5	3	3	2	55	2	37	25.5
TOTAL	20	21	33	14	17	10	15	15	145	100

Source: Researcher's Field Data

From table 11 above, out of 145 farmers that responded to this question 74.5% or (108 persons) affirmed that they practice bush burning, while 25.5% (37 persons) indicated they do not practice it. Also, we found out that the reason why they adopt this method is because they conceive it as a faster and cheaper method of clearing field for agriculture. To examine the impact of bush burning on soil fertility, we went further to determine how many farmers out of the 108 respondents, constantly practice bush burning in their agricultural activity. This is to enable us test if there is a relationship between the practice of this harmful agricultural method and decline in agricultural yield. Okezie and Okeke (1997) argues that constant bush burning method aggravates degradation of the soil and reduces the output. The table below shows their response:

Research question:

How often do you practice bush burning?

Table 12: Response to Practice of Bush burning

Response	Bane	Gwara	Kpor	B.dere	Gio	Kpogho	Onne	Ekporo	total	%
After every fallow period	12	11	20	9	10	6	7	9	74	68.5
After 2 fallow period	2	4	4	2	2	2	2	2	20	18.5
After 3 fallow period	1	2	2	---	1	----	1	1	8	7.4
After more than 3 fallow periods	1	1	2	---	1	---	--	1	6	5.6
Total	16	18	28	11	14	8	10	13	108	100

Source: Researcher's Field Data

From the above table 12, one can see that 68.5% or 74 persons out of the 108 that practice bush burning indicated that they practice bush burning after every fallow period. Fomara and Tilman (2008) point out that constant practice of bush burning reduces the fertility of the soil by increasing acidity of soil and destruction of microorganism that are involved in soil cycle and regeneration. This consequently affects the ability of the soil to produce more yields in the long run. They also noted that other favorable methods of clearing bushes for agriculture such as the use of mowers and tractors as well as manual labour help to improve soil fertility by mixing the soil with cleared remnants bushes, which add more nutrients to the soil. However, to afford these equipment or pay for manual labour to help clear farmland is usually difficult and this compels these farmers to adopt this hazardous method in clearing bushy land for farming.

He also commented that bush burning causes desertification and exposes soil to further natural disasters such as erosion and flooding. Bush burning also reduces the quantity of bio-diversity who play important role in soil replenishment and recycling.

Fisher Men (Type B)

To determine level of marine resource management in fishing activities, the fishermen were asked if they use explosives and chemicals in harvesting fishes. These questions were asked because the use of these two methods has become rampant amongst fishermen in the country and have cause degradation to marine habitats and thereby reducing fish catches (Titiola 1987).

Table 13: RESPONSE TO THE USE OF EXPLOSIVES IN FISHING ACTIVITIES

Response	Bane	Gwara	Kpor	B.dere	Gio	Kpogho	Onne	Ekporo	Total	%
YES	10	17	21	17	12	10	9	11	107	76.4
NO	5	3	6	6	3	5	3	2	33	23.6
TOTAL	15	20	27	23	15	15	12	13	140	100

Source: Researcher's Field Data

From table 13, we can see that 76.4% or 107 persons out of the 140 respondents affirmed that they use explosives (dynamites). To determine level of resource base management we went further to get data on those who use explosive more often in their fishing activity.

Research question:

Do you use explosives often in harvesting Fishes?

Table 14: Percentage Response to use of explosives in Fishing

RESPONSE	TOTAL	%
YES	69	64.5
NO	38	35.5
TOTAL	107	100

Source: Researchers' Field Data

Test of Hypothesis 2

Lack of conservation of environmental resources encourages low agricultural yields in Ogoni Land

To test ***hypothesis 2*** the responses of farmers who practiced bush burning and fishermen who use explosives in fish harvesting are used to draw the contingency table.

Table 15: Contingency Table for testing hypothesis 2

Responses	Farmers (O)	(E)	Fishermen (O)	(E)
Agree	25	15.1	5	14.9
Strongly Agree	64	67.8	17	67.2
Disagree	14	12.1	10	11.9
Strongly Disagree	3	9.04	15	9
Undecided	2	4.0	6	4

Calculated X^2 value = 12.7
Critical table value of X^2 at 0.05 level of significance = 9.49 (df 4)

Interpretation of Result on Test of Hypothesis 2

From the analysis, the calculated chi-square value - 12.7 is more than the critical table value, which is 9.49. Based on this we accept our hypothesis, which states that ***lack of conservation of environmental resources encourages low agricultural yields in Ogoni Land***. From the observation and data collected we found out that the reason for decline in resource productivity is because resources are not well managed. The use of explosives and bush burning deplete the natural habitat and reduces the quality of the resource base. From our interviews we discovered that over the years there has been considerable decline in agricultural yield, and this asserts the view of Okezie and Okeke (1997) that bush burning impact a long-term effect on the soil. The use of favourable methods of bush clearing gives the farmer the opportunity of making compost manure from debris of bushes cleared and thereby improve the nutrients of the soil.

In the case of the fishermen we found out that the constant use of these explosives definitely reduced the number of catch per day. An important factor that encourage low level resource management as found out from our interview data is the absence of traditional regulations that effectively guide the use of marine resources. From the interview conducted with the oldest fisherman in B-dere we got the information that the traditional regulations have given way for some modern fishing processes, which our informant commented are disastrous to the marine habitats. For instance, in the olden days fishermen practiced some traditions of appeasing the gods of the water where they pledge their loyalty and vows to preserve nature's gifts, offered to them. Unfortunately, this practice no longer exists. According to the interviewee, this tradition no longer exists, the much they do is to pour libations into water to appease the gods for another harvesting period. This was interesting as it came from the oldest man (109 years old), who has seen three generations and can best inform us on the factors which have given rise to low level resource management found in the study location over the years.

CONCLUSION AND RECOMMENDATIONS

Conclusion

From the study we can see that poverty and resource management are crucial factors, which often neglected, impact negatively on the environment. It is therefore necessary that government should put in place its ecological house to look into this nexus of environmental degradation-poverty relationship and initiate possible solutions to the problem of poverty which is the cardinal factor causing the trend in most rural areas. From the study we have discovered that other factors such as resource management and poverty definitely impact on environment in rural areas where agriculture is the major economic activity for majority of the people. These factors aggravate depletion of resources depended on for livelihood and therefore puts a great challenge in sustainable livelihood of the rural people. Owing to these observations we make the following recommendations which gears in combating incessant resource depletion in rural agro-based societies and which take cognizant of the contribution of important factors such as poverty, resource management and population density.

Recommendations

Rational use of natural resources is the only means to maintain and improve human conditions. Concern over the environmental aspects of natural resource use and management emanates from unprecedented rate of population growth and persistent poverty in the rural areas. In order to meet demands of livelihood and sustenance, Nigerian agriculturalists have been compelled to put additional pressure on the production system.

Such pressures often exceed the capacities of the ecosystem to bear. What has therefore been advocated worldwide is the concept of integrated resource management and population control. The achievement of this objective requires series of concerted efforts and reorientation embodied in appropriate policies and programs. According to Munasighe and Mohan (1993: 21), there are two primary variants of the policy approaches commonly taken to address environmental degradation. The first is ***Conservationism***; an environment-centered approach that is based largely on the assumption that human activities are detrimental to nature and that thus seeks to control those activities. The Second is a more people-centered approach, emphasizing the human costs of environmental degradation, has been advanced in recent years. This approach, often called ***Primary Environmental Care (PEC***), assumes that human activity is not necessarily or inherently detrimental to nature, and that, given the opportunity, people will often manage their environment sustainably because it is in their best interests to do so. To address the links between poverty and the environment, the country needs to improve its policy and institutional frameworks, and also put in place more supportive and coherent policies for poverty reduction. Given the complex and multidimensional nature of the poverty-environment nexus it is inevitable that approaches to addressing emergent problems must encompass a broad agenda of policy and institutional issues. These issues can be grouped into three main areas of action:

(i) Improving governance (grass root governance)
(ii) Protecting and expanding the environmental asset base of the poor
(iii) Improving the livelihood of the people affected by poverty

It is necessary that government addresses the issue of poverty as it pertains to unemployment and underemployment, which contribute to increasing population in the rural areas. From our interview source we found out that this migration started manifesting in the late 1980s when the country started experiencing high poverty rate, which appallingly remained high over the years. Also, this migration coincides with the period of the Structural Adjustment Programme, which laid emphasis on agriculture as a resourceful means of alleviating poverty. This programme encouraged people to go back to agriculture. Unfortunately, it didn't impact a change in the standard of living of citizens as most of the policies and plans drafted for the programme failed to address appropriately the issue of poverty. However, this does not imply that engaging in agriculture is considered harmful, but to reduce unsustainable agriculture to the minimum level since it has negative implication on sustainable livelihood for both present and future generation.

References:

Aigbokhan, B. (2000). *Poverty, growth and inequality in Nigeria: A case study*. Kenya: African Economic Research Consortium

Akibinu, A. (2003) *Industrial Reorganization for Innovation: Current Knowledge on Small and Medium Enterprises Clusters in Western Nigeria.* Nigerian Institute of Social and Economic Research (NISER).

Awobajo, S. (1981). An analysis of Oil spill incidents in Nigeria 1976–1980, *Proceedings of the 1981 Seminar on the Petroleum Industry and the Nigerian Environment, Warri, Nigeria*.

Fornara, D. and Tilman, D. (2008). Plant functional composition influences rates of soil carbon and nitrogen accumulation. *Journal of Ecology,* **96**(2), pp. 314-322.

Glasbergen, P. and Blowers, R. (1996) 'Environmental Problems in an International Context'

in Glasbergen, P. and Blowers, A. (eds) *Environmental Policy in an International Context.* London: St. Edmunsdbury Press Limited, pp. 1-28.

Ikein, A. (1990). *The impact of oil on a developing country.* United States: Praeger Publications Inc.

Kramer, R., and Sharma, N. (1995). *Valuing tropical forests: methodology and case study of Madagascar.* The World Bank.

Naanen, B. (2003). Progress of the Ogoni People in Nigeria towards the attainment of the International Development Targets (IDTs) for Poverty, Education and Health, *Draft Report for the Indigenous Peoples and Socioeconomic Rights' Expert Workshop Commonwealth Policy Studies Unit*

Nwokoro, C.V. & Chima, F.O. (2017). Impact of Environmental Degradation on Agricultural Production and Poverty in Rural Nigeria. *American International Journal of Comptemporary Research,* 7(2), pp.1-9.

Orubu, C. (2006). Water resources, environment and sustainable development in Nigeria. *Journal of Human Ecology,* **19**(3), pp. 169-181.

McCormick, J. (1993) 'Environmental Politics' in Dunleavy, P. et al (eds.) *Development and British Politics.* London: Macmillan, pp. 267-284

McGranahan, G.; Songsore, J. and Kjellen, M. (1996) 'Sustainability, Poverty and Urban Environment Transitions' in Pugh, C. (ed.) *Sustainability, the Environment and Urbanization'.* London: Earthscan, pp. 103-133.

Munasinghe, M. and Mohan, C. (1993) *Environmental Economics and Sustainable*

Development. Washington D. C: World Bank.

Naanen B. (1995). Oil Producing Minorities and the Restructuring of Nigerian Federalism: The Case of the Ogoni people. *Journal of Commonwealth and Comparative Politics*. 33(1), pp.45–78.

Nwankwo J and Ifedi C. (1987). *A critical analysis of oil spill incidents in the Nigeria*

Petroleum Industry. Proceedings of the 1987 Seminar on the Petroleum Industry and the Nigeria Environment. Pp. 16.

Okezie, D and Okeke, A. (1997). Flaring of associated gas in oil industry: impact on growth, productivity, and yield of selected farm crops – Izombe flow station experience. Paper presented at the Nigerian National Petroleum Corporation (NNPC) Workshop, Port Harcourt.

Oldenman, L. (1994) 'The global extent of soil degradation' in Greenland, D. and Szaboles, I.

(eds.) *Soil Resilience and Sustainable Land Us.*, Wallingford: CAB International, pp. 99-118.

Osaghae, E. (1996) The Ogoni Uprising: Oil Politics, Minority Agitation and the Future of the Nigerian State. *African Affairs*. 94 (1), pp.325-344

Pearce, D. and Warford, J. (1993) *World Without End: Economics, Environment and*

Sustainable Development. Newyork: Oxford University Press.

Titiola, K. (1987) *Agricultural Production and Sustainable Development in Nigeria.* Lagos:

Flaghan Printing Press.

United Nations Environment Program (UNEP).2003. Agenda 21. New York: United Nations Environment Program

Visser, P., Krosnick, J. and Lavraskas, P. (2000). *Survey Research.*

Leach, M. and Mearns, S. (1991) *Poverty and Environment in developing countries: An*

overview study. Brighton: IDS

World Bank Report (1995). Towards the Development of an Environmental Action Plan for Nigeria. World Bank, Washington, DC.

World Commission on Environment and Development (WCED) Report (1987). *Our Common Future.* Oxford: Oxford University Press.

Yudelman, M. (1989) Sustainable and equitable development in irrigated environments, in

Leonard, H. et al (eds.)., *Environment and the Poor: Development Strategies for a Common Agenda, U.S.-Third World Policy Strategies,* Washington, DC: Overseas Development Council.