

**GENDER AND ENVIRONMENTAL DEGRADATION IN
AGRARIAN COMMUNITIES OF EBONYI STATE, NIGERIA**

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**A thesis in the Department of SOCIOLOGY,
Faculty of Social Sciences,
Submitted to the School of Postgraduate Studies,
University of Jos, in partial fulfillment of the
requirements for the award of degree of
DOCTOR OF PHILOSOPHY in SOCIOLOGY of the
UNIVERSITY OF JOS**

MAY 2014

CERTIFICATION

This is to certify that the research work for this thesis and the subsequent preparation of this thesis by Eugenia Chika Akpa (PGSS/UJ/0180/06) were carried out under my supervision.

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DECLARATION

I hereby declare that this work is the product of my own research efforts, undertaken under the supervision of Professor Dennis Ityavyar and Professor Rotgak I. Gofwen and has not been presented elsewhere for the award of a degree or certificate. All sources have been duly distinguished and appropriately acknowledged.

Eugenia Chika Akpa
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ACKNOWLEDGEMENTS

My special gratitude goes first to God, Who is Father and Almighty and His only begotten Son Jesus Christ, through the Holy Spirit for His direction and inspiration, which made this work possible. I owe a lot of gratitude to my supervisors, Professors D. Ityavyar and R.I. Gofwen internationally renowned gender and development experts whose wealth of experiences immensely enriched the work and whose patience in painstakingly reading and correcting the work is second to none. I thank particularly Professors E.G. Best, E.G. Ejikeme and A.E. Idyorough, Dr. E.O. Olumedeji and Dr. Ikoh; all seminar discussions from within and outside the Department and all the lecturers in the Department whose constructive criticisms, contributions and suggestions are worthwhile in the quality of this work. May God continue to bless them. I am grateful to Dr. P. Yakubu, the Deputy Dean, School of Postgraduate Studies who facilitated my upgrading to PhD level from M.Phil and ensured that the work adhered to PG guidelines and format.

I have special thanks for my husband, Professor T.C. Akpa, who has not only provided encouragements and financial support but also typed the work and was by me at every inch of the work. I am grateful to my children, Amaka, Chike, Enyinna, Ezinne and Oluchukwu (MJ) they helped a lot. I also want to mention my mother, Ezinne Roseline Akpa, Prof. G.N. Akpa, Bros Obinna, Alloysius, Kenneth, Chinazor, Sister Appolonia and Kenechi for their continuous encouragement and support.

During the fieldwork the following persons made special contributions, Mr. James Aburo, the driver, Mr. Godwin Nwagwu, Mr. Anthony Nwonu, Mr. Godwin Aka, Mr. Lawrence Chukwu, Mr. Njoku Omoke of NPC, Abakaliki and their field assistants and Engr, D. Umahi, the Deputy Governor of Ebonyi State, for their assistance. My brothers, Mr. C. Ndubuisi and S. Ifeonu interpreted the questionnaires into Igbo language, and Mrs. A. Akpa and Miss E.N. Obinna, my beloved sisters who helped in

the transcription of the recorded discussions. I also thank my family friend and Godson Mr. C.M. Ekenta who was very useful in typing, data analysis and interpretation. To my brethren in the Lord, who supported me with prayers, I say may God continue to bless you.

Finally, I owe special thanks to my dear colleagues in the Department of Sociology of Ahmadu Bello University, Zaria. Their names are written in gold. May the Almighty God grant the heart desires of each of them. Amen.

DEDICATION

This work is dedicated to my beloved father, the late Chief Lawrence N. Akpa, a first class Headmaster of great repute, who would have loved to see my days as a well-educated woman and to my husband, Prof T.C Akpa, who took over from where he stopped.

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Abstract

Changes in gender roles and relations and environment are intricately related. Rapid increase in human population brings about massive exploitation of natural resources which in turn leads to observable effects like poor crop yield from degrading lands, water pollution, and extinction of forests. This is therefore a study of the effects of environmental degradation in agrarian communities and changing gender roles and relations. Both qualitative and quantitative instruments were used to obtain data from used for detailed descriptive and sex disaggregated analysis. Survey method was used to collect quantitative data from 129 respondents, while 24 focus groups discussion, 3 key informant interviews and 6 semi-structured interviews were used to collect qualitative data. Data generated were analyzed with descriptive statistics (frequency and percentage, and pie chart) cross tabulation and Chi square analysis using SPSS version 19. Issues raised in the study include: determination of the people's recognition of the extent and rate of degradation of land, water and forest resources, the effects it has on them and their gender roles as well as the means of coping with the problems. Results show that there is no large-scale, disaster type of degradation of the environment in Ebonyi State, but the environment and natural resource bases of rural areas are gradually degrading. Degradation has brought about low crop yield, poverty, and changes in gender roles and relations. It was also found that commercialization of natural resources by men is a major cause of this type of degradation. Efforts made by the people in mitigating the problems of environmental degradation have led to misapplication of technology, particularly fertilizers. The people depend mainly on their individual and communal efforts in mitigating the effects of the degradation because government programmes on environment are not readily available. Some of

the recommendations made are; Legal rights and economic opportunities for men and women should go hand-in-hand, thus empowering them for greater participation in meaningful and rewarding work. It is also recommended that gender be mainstreamed into every aspect of development plans, projects and actions.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

There are several environmental problems in the world today mainly caused by non-sustainable use of natural resources by human beings. The unprecedented rapid increase in human population equally means unprecedented massive exploitation of natural resources. The effects are seen in the degradation of land, soil erosion, desertification, disappearance of forests, water pollution and the extinction of various types of plants and wildlife. There had been a growing concern that environmental degradation has a wide range effect on social behaviour and thinking of both men and women. It is also apparent that there is a close relationship between environmental problem and the economy and overall developmental efforts. Earlier, the depletion of environmental resources was perceived mainly as problem for women in isolation of men. As knowledge about ways in which women participate in solving environmental problems increase, it becomes necessary to use the tools of gender analysis to re-evaluate the problems of environmental degradation. Gender has been used to explain many key issues which would otherwise not been understood using other approaches. It is a systematic effort to document and understand the role of men and women within a given cultural context such as, division of labour, access to and control over resources and benefits, social, economic and environmental factors that influence both division of labour and access to resources.

Nigeria with an estimated population of over 163 million in 2014, land area of approximately 900,000 square kilometres, is the most populous country in Africa and the 10th largest in the world (NPC, 2006). The average population density is about 120 persons per square kilometer. This varies from few persons per square kilometers in the

far Northern parts of the country to more than 1000 persons per square kilometer in some Southern rural areas (Igbozuruike, *et.al*, 1989). In the South therefore, there is obvious pressure on land, water, forest and other forms of natural resources. The country is also being rapidly deforested in the process of clearing farm land, fetch wood for fuel and ploughing for various purposes (Oladipo, 1992). The loss of vegetation cover increases soil erosion and aggravates local flooding and water pollution. These phenomena manifest themselves in the form of destructive gully erosion as is in Agulu-Nanka in Njikoka Local Government Area of Anambra State, and in Orlu and Okigwe Local Government Areas of Imo state.

In Ebonyi State of Nigeria, there are undocumented localized and extensive disaster types of environmental degradation, but there are also the gradual forms of degradation coming from long term use of land, forest and water. These types of degradation give rise to persisting poor crop yield from cultivated lands, disappearance of forests and forest resources; water bodies and sometimes in salination of drinking water (Akpa, 2000).

Unfortunately, most of the measures taken by the government to control environmental degradation focused on how to rescue the physical environment to the neglect of measures to modify environmentally harmful human activities and mainstreaming gender into some of these measures.

1.2 STATEMENT OF THE RESEARCH PROBLEM

The agrarian communities of Ebonyi State like other similar communities depend heavily on the environmental resource base, land, forest and water. Their survival also depends on the quality of soil and other land-based resources. There are few reports in literature on the nature and causes of environmental degradation in Ebonyi State. Egbu, (2000) indicated that the two main soil types in Ebonyi State (the

silt-clayey hydromorphic and the gray-sandy hydromorphic soil) have low natural fertility, are moderately drained and have strong acidity, but good for rice cultivation. In the olden days, fertilizers were not used in farming but today, they are being used to increase productivity. Most often, chemical fertilizers are applied without recourse to soil types. It is not clear whether farmers do check the suitability of a particular fertilizer before application and it is possible that indiscriminate application of fertilizer to the soil contributes to soil degradation. Edeogu, *et al.*, (2007), Duruibe, *et al.*, (2007) and Anosike, *et al.*, (2000), reported that trace elements and other nonmetallic pollutants are causes of soil and water degradation in the area.

These investigations dealt mainly with the physical aspects of environmental degradation and not with the socioeconomic causes and consequences of the degradation especially on gender in the area. Working on this perspective, Akpa, (2000) found that salination, water scarcity, deforestation due to farm clearance and fetching of fuel wood brought about a lot of socioeconomic problems on women in the area. The gap in knowledge in that work was that the role men and women play in bringing about environmental problems and the socio-economic impact of degradation on gender roles was not disaggregated. Awoke and Okorji, (2004) also indicated that there is sex discrimination in land use in Ebonyi State. Men and women participate in agricultural activities but unfortunately women do not have tenure rights over farmlands. How have women been coping with this condition? Is there land scarcity for both men and women? What is equally not clear is if the land scarcity and farming practices contribute to worsen soil degradation.

Over the years, environmental problems have not been studied along gender lines. It was assumed that both men and women make the same contributions to, and are equally affected by environmental degradation. It was also assumed that both sexes

can play identical roles in ensuring environmental protection. After some time, there came a shift of emphasis to women and environment (Southeimar, 1991, Synder, 1990 and Akpa, 2000). Their unspoken bias was that environmental problems have over bearing impacts on women. But given men's and women's roles around production and consumption, it is important to highlight the link between gender and environment rather than just women and environment for effective development. This study will attempt to understand the gender relationships surrounding men's and women's access to and control over scarce and ever dwindling environmental resources. It will assess the impact of gender on environment and vice versa. It will find out how best to use the relationship between gender and environment for the sustainable development of Ebonyi State. It will be a study on gender and environmental degradation in Ebonyi State.

The problem of who gets what, how and when is very critical in the survival of people and development of agrarian communities. It becomes worst when they are beset with scarce resources and with majority of the population living in degraded rural environment. Moreover, not all societies have legal, organizational and political frameworks or arrangements that guarantee fair access to and control over resources. Most agrarian communities in Ebonyi State for example, are structured by gender relation that conspires to render women less powerful than men. This relation result in different and hierarchical roles and opportunities for men and women, It also structures their relation with the environment, as well as with each other. This study will, by adopting the method of gender analysis, look into the roles and relationships between men and women in access to and control over resources. It will serve as a cognitive tool for restructuring and framing the interactions and relations between sexes, as well as a practical tool that cuts across needs, activities, responsibilities, resources, as well as

institutional constraints and opportunities that threaten or strengthen them (Bashaw, 2004 pp. 67-68).

1.3 RESEARCH QUESTIONS

The foregoing research problem raises the following questions:

- i. What are the nature and causes of environmental degradation in Ebonyi State?
- ii. What are the socio-economic impacts of environmental degradation in Ebonyi State?
- iii. How do these impacts influence changes in gender roles and relations?
- iv. What are the coping strategies adopted by the two genders and how environmentally friendly are they?
- v. To what extent is gender mainstreamed in government policies on environmental protection?

1.4 AIM AND OBJECTIVES OF THE STUDY

a) Aim

The aim of the study is to investigate the place of gender in environmental degradation of agrarian communities in Ebonyi State.

b) The specific objectives of the study include the following:

- i. To identify the nature and causes of environmental degradation in selected agrarian communities of Ebonyi State.
- ii. To assess the socio-economic impact of environmental degradation in Ebonyi State.
- iii. To evaluate the influence of environmental degradation on gender roles and relations.
- iv. To evaluate the environmental friendliness of the coping strategies adopted by gender.

- v. To evaluate the level of gender mainstreaming of governmental policies on sustainable environmental development in Ebonyi State.

1.5 SIGNIFICANCE OF THE STUDY

Mortimore (1989) reported that much of Nigerian's arable land is being deprived of productive potentials through overuse and unwise treatment. This is worsened by rapid population growth. High density of population as it is the case in South-Eastern Nigeria results in scarcity of farm lands and land-based natural resources such as forest, wildlife, water and water-based resources. Degradation emanating from long-term use of natural resources is insidious, gradual and had shaped the life and culture of a people. Therefore the study of how the continually worsening natural resource base is affecting the life of both men and women in the rural farming communities is paramount to socio economic development.

People generally and young people in particular are demanding higher quality environment. Also the apparent growing awareness all over the world of the close relationship between environment and other development factors demands fashioning an integrated approach towards solving the environmental problems. It is clear that as time goes on, global society will witness the exhaustion of development styles that are unsustainable in medium and long term basis, especially those that are harmful to the natural systems and are unfair to people. Therefore, proper documentation of impacts and perception of our environmental problems affords us useful data that pave the way for future development in our communities. The knowledge about ways in which different groups of men and women participate in development will continue to increase and the connection between gender, environment and development will grow in importance. Thus, this knowledge will lead to the conviction that a systematic

approach is required if environmental issues are linked properly with social and gender equity and incorporated into developmental processes.

Earlier studies (Agrawal, 1986; Dankelman and Davidson, 1988 and Akpa, 2000) that focused on women excluded the inherent relationship between men and women *vis-à-vis* the physical and socio-economic environment. It also led to lack of understanding of gender as linked to power relation operating at household, community and national levels. In this regard, environmental protection programmes and development projects have been gender- blind. The reason being that it was assumed that all the members of a family or community benefit equally from such opportunities, but experience has shown that as much as men and women contribute differently to environmental degradation, they also benefit differently from environmental protection and other development projects.

People's lives will be greatly enhanced by clearly understanding how men's and women's lives and experiences differ through the role and responsibilities ascribed to them by the tradition and the changes brought about by environment and development processes. The findings will serve as literature materials for future researchers. This work will also assist policy makers in making environmental policies because gender and poverty affects and are equally affected by environmental degradation.

1.6 SCOPE OF THE STUDY

This study is interested in gender and environmental degradation in Ebonyi State. This area was chosen for the study because it is an agrarian economy susceptible to gradual environmental degradation. The area also has some natural resources that degrade the environment.

Nigeria's environment is facing threat from disasters like desertification, drought, oil spillage, gas flaring, erosion and flooding all of which are exacerbated by

human activities. In Ebonyi State, there are some visible signs of environmental degradation in the pollution and depletion of natural resource base including land, water, forest and air upon which all life depends.

The land is depleted of its productive potentials through overuse, and/or harmful treatment. Deforestation resulting from farm clearance, uncontrolled cutting of trees for firewood, charcoal, timber and other uses, overgrazing, mining and bush burning also contributes to deforestation. There are also growing nuisance of air and water pollution which are associated with urbanization and industrialization. The springing up of salt water along the Benue Trough running through the State and increasing deposit of trace elements from mines on farmlands are other environmental problems in the State.

However this study is limited to the gradual forms of degradation coming from long term use of natural resources. The study was conducted in three out of the thirteen Local Government Areas, each drawn from one of the three senatorial zones of Ebonyi State. Emphasis was given to agrarian communities with some mineral endowment. Physical measurements are sometimes used in environmental studies, but in this study, only opinions and feelings of the people were documented. More specifically, the study looked at the place of gender in environmental degradation.

1.7 LIMITATION OF THE STUDY

The study encountered various limitations which includes the following:

- a. Getting information from the National Population Commission (NPC) on the accurate numberings of houses in the areas for the selection of respondents. This difficulty was occasioned by the fact that the population figures released were under agitations that lead to court directive not to release any of the information on the census to private individuals as the issue about it was still

being considered in the court. But after much explanations of confidentiality and the their understanding that the data is needed for research purposes, the hand written enumeration data on the information was given to me for a strict research utilization.

- b. The pilot study conducted revealed that the respondents' had difficulty in understanding the questionnaires as many of them were non literate. Based on this, the research faced the problem of interpreting the whole questionnaire into the local language of the people (*Igbo*). The researcher to overcome this problem commissioned renowned *Igbo* language graduates and teachers who painstakingly interpreted the question that was used in primary data collection.
- c. As expected, the research had the problems of easy access to respondents because of timing especially for FGD, SSI, KII sessions, transportation, accommodation, and finance. However, these problems were overcome by dint of dedication and commitment.

1.8 DEFINITION OF KEY CONCEPTS

In this section some basic concepts are defined and linked to the research topic.

i) Gender

Gender refers to the social attributes and opportunities associated with being male or female and the relationships between women and men (UN, 2012). It also includes the relationships between girls and boys, between men and men as well as those between women and women. These attributes, opportunities and relationships are socially constructed.

It is a culture relative term that changes with time and involves assignment of roles that changes from one culture to another or from one ethnic group to another.

ii) Gender Roles

Gender roles are a set of expectations as to what ought to be the appropriate behavior for men and women under particular circumstances (Idyorough 2005).

iii) Gender Equality

Gender equality refers to equal rights and equal responsibilities for women and men, and for girls and boys. Equality does not mean that women and men become the same but that women's and men's rights, responsibilities and opportunities do not depend on whether they are born male or female. Gender equality implies that the interests, needs and priorities of both women and men are taken into consideration, recognizing the diversity of different groups of women and men.

iv) Gender Discrimination

Gender discrimination refers to unequal gender division of roles. The roles are often divided according to age and sex in a society in relation to how work will be done. Unequal gender division of labour may occur where women are allotted more roles than men or women get roles that are not financially rewarded as much as those of men. Discrimination in gender division of labour occur when women get most of the burden of labour and also most of the unpaid roles but men collect high financial rewards from most of the income generating labour and are not involved in the unpaid labour. (Idyorough, 2005). In this study knowledge of gender division of labour in a community will be used to assess the gender-differentiated impacts of environmental conditions and how women and men can contribute in solving the problems.

v) Gender Mainstreaming

This is a process by which gender issues are integrated into the general developmental projects and programmes of a society without segregation. Mainstreaming in a stronger term means the transformation of the developmental

process in such a way that gender issues are well covered and protected by removing the structural obstacles (Idyorough 2005)

vi) Human Environment

Borrowing from Ecologists human environment is defined in this work as the external conditions affecting life and development of human beings, (Barthelmus, 1986). It is a system in which the effects of human activities need to remain within bounds so as to preserve the diversity, complexity, and functions of the ecological life support system (Chinsman, 1997).

vii) Environmental Degradation

Environmental degradation refers to the reduction in the quality of the environment; it can be disastrous or gradual/insidious in nature (Clever and Schrieber 1994). In the area environmental degradation affects the farmers in that when soil becomes infertile, erosion carry away top soil, forest and water resources dwindle, they need to put in more efforts to obtain the same level of production, Traditionally farmers knew and upheld their conservation practices but with environmental degradation and poverty, the tendency is to drop every environmental conservative practices and do whatever they can do to survive.

viii) Soil Degradation

Soil degradation is the loss of soil fertility without necessarily involving physical removal (Chris 2001) It is promoted by high intensity of precipitation and rate of decomposition of organic matters. Human factors of overexploitation of the dry land vegetation, over-cultivation and bad farming practices contribute to the problem in the area of study.

ix) Forest

Forest is a collection of trees. The type of forests found in some rural communities of Ebonyi State include thick forests housing mix of tall trees 30m high, for example iroko, 'akparata' and 'achi' and other herbaceous plants; evil forests used as burial ground for evil doers, oracular forests housing shrines and utilitarian forests which develop around un-used lands, river banks and around people's compound. Only members of a community are allowed to fetch resources from their neighborhood forests for fear that they might install evil spirit into a forest to torment their owners.

x) Water Source

In this study, water source refers to natural sources of water available in the study area. These sources include rivers streams, ponds (*Okpuru*), springs and wells. In the area of study most of these sources are coloured, muddy or taste salty hence not good for drinking or other domestic uses. Today government is installing boreholes and pipe borne water in the communities.

xi) Sustainable Development:

The term sustainable development was first introduced by the world commission on environmental development (The Brundtland Commission) in 1987, calling for development that "meets the needs of the present generation without compromising the needs of future generations". The Brundtland commission report highlighted the need to simultaneously address developmental and environmental imperatives. Sustainable development seeks to promote prosperity, to support a people through empowerment and to maintain the planet through improving the state of the ecosystem.

In this study therefore, sustainable development means improving the quality of human life in economically viable, socially desirable and politically effectual ways through good governance.

CHAPTER TWO LITERATURE REVIEW

In this section scholarly works in the area of gender and environment were reviewed under the various themes that make up the research problem and objectives. This is with a view to critically assess those works, identify and fill the gaps in knowledge.

2.1 THE DEGRADATION OF ENVIRONMENTAL RESOURCE BASE

Nigeria's environment is facing increasing threats from natural disasters, like desertification, drought, erosion, and flooding, all of which are exacerbated by human activities. There are visible signs of environmental degradation in the depletion and pollution of the natural resource base including land, forest, and water upon which all life depends.

Angelsen (1997) reported that resource degradation is an acute problem in rural areas, with some 60% of the world's poorest people living in ecologically vulnerable areas. The report reiterated that the situation is worst in Africa, with two-thirds of the continent being desert or dry-lands. Mortimore (1989) writing on the nature causes and rate of land degradation in the northern part of Nigeria reported that much of Nigeria's arable land is being depleted of its productive potentials through overuse, or harmful treatment. Intensive application of Chemical fertilizers on farm land according to this study has resulted into the pollution of ground water resource. Jackson (1986) further argued that large scale agricultural practices in the northern-most and semi-arid zones have resulted in the siltation of dams, water logging, salination, textural changes and the health problems of malaria and schistosomiasis among others.

Cleaver and Schrieber (1994) in explaining the gradual nature of land degradation in Sub-Saharan Africa reported that shifting or long-fallow cultivation and

transhumant pastoralism have been appropriate under conditions of slow population growth, abundant land, limited capital and technology. Then, there was a state of equilibrium between the ecological and economic systems. Farmers merely shifted to virgin lands when soil fertility declined or forage was depleted and this allows for natural reconstitution of land through vegetative growth and decay. The cause according to their study is because the scope for further expansion of cropland has narrowed due to rapid population growth, compelling rural people to remain on the same parcel of land still using their traditional production techniques. This leads according to them, to reduction in soil fertility which affects crop yield.

Ani and Donye (2005) studied land factors in agricultural production among rural women farmers in southern Ebonyi State and found out that land available for 400 respondents were not enough for meaningful agricultural production. The predominant system of land ownership among them was family, closely followed by inheritance. They suggested that legislation giving women title to land should be enforced by government since majority of the people concerned with food production are women.

In a study of Ohaozara and Ivo local government areas of Ebonyi State, Akpa (2000) found out that 86%, 94% and 98% of women from Ishiagu, Uburu-Okposi and Akaeze-Ugwulangwu zones respectively attested to land degradation. This was shown in persistent poor crop yield across a period of ten years. The FGD's were also stories of the good-old-days of better crop yields. In another study at Enyigba, a mining community in Abakaliki LGA, fourteen kilometers south of Ebonyi State's capital, lead was discovered in the surface and sub-surface soils, Human activities of deposition of compost and incineration of manure together with the natural occurrence of rocks or ore bodies with high level of lead/zinc tend to increase the level of trace elements in agricultural soils of Enyigba. They reported that in the absence of mining operations,

increased industrial activities or augmented use of manure and commercial fertilizers, it is not likely that variations will occur in their soil in the near future (Nweke et al., 2008).

Deforestation is one of the world's most pressing land use problem. This according to Dankelman and Davidson (1988 p 45) is caused by selective logging of closed forest, conversion to agricultural land, commercial timber logging, planned irrigation and resettlement, land speculation, large scale construction projects, and expansion of commercial ranches. At a local level by forest fires, growing demand for fire wood, fodder, and over grazing. The perception of forest ecosystem as having multiple functions for satisfying diverse and vital human needs for air, food and water have been changed by uni-dimensional 'scientific forestry' i.e. a calculation of timber yields to serve commercial and industrial demands. (Shiva, Bahdyopadhyay, and Jayal 1985). According to them in their study in India monoculture replaced multi-species forests, and this disturbs natural balances and human needs are no longer met. Furthermore, they reported that signs of forest degradation are shown in rural farm communities, in the fact that bushes they needed are becoming difficult to find due to land clearance. Types of fuel wood needed for cooking are scarce; fish were becoming more difficult to catch because the ponds and rivers are silting up. Too many rodents in fields, and gardens, probably because predators from the forests are disappearing, fuel wood collection are more time consuming.

Dankelman and Davidson (1988) writing on women and environment in the Third World, reported that the fuel wood 'crisis' of developing countries became apparent in 1973-74 when much of the world was gripped by the energy crisis due to the oil price shock. Then energy demand outstripped supply and the usefulness of the rural peoples' dependence on biomass was brought to light. It was noticed that even

though fuel wood is a renewable resource, it is used at an un-sustainable rate. The rate of felling old trees outstripped the rate of planting new ones. They found that the consequence was heavier for women and children who have the gender role of collecting fuel wood. Oladipo (1992) writing on the state of women and environment in Nigeria reported that it was common sight in Nigeria to see women hacking at shrubs and dead woods, sometimes with children at their back or crying under a tree. They walk long distances; spend a lot of time before finally coming home with heavy loads of wood.

Another consequence of deforestation is food insecurity. Agrawal (1986) found that lack of fuel could cause malnutrition just like lack of food. When women resort to collection of weed, straws, digging out roots and use of animals dung that do not provide continuous heat but increase cooking time, they might be forced to shift to foods that require less time and fuel to cook. By so doing nutritional values are lowered. Furthermore, the energy crisis has consequence in air pollution. The worst is the emissions from biomass fuels which poor rural women inhale while cooking. According to WHO (1984) the burning of cooking fuel envelops the indoor environment with heavy smoke and the women who do the cooking may be exposed daily to more pollutants than industrial workers. That study attributed respiratory and eye diseases, which are common among Third World women and children to wood and other biomass burning.

Fuel wood crises also affect women's income crafts and other cultural practices, women who sell firewood will suffer, pot firing, salt making, fish smoking and other businesses that involve the use of fire wood will decline. According to Sontheimer (1991) there is a crucial three-way link between cooking, energy crisis, poverty and socio-economic inequalities. This study is out to pin point the socio-economic

implications of the crisis, its complex causes and consequences on gender relations in rural communities.

Akpa (2000) investigated the disappearance of forests by asking her respondents to state the number of forests that ever existed and those still existing in their communities. She found out that up to the 1970s, 72% and 80% of respondents from Ishiagu and from Uburu-Okposi respectively recalled that they had between 4-6 neighbourhood forests. But as at 1996, 68% of respondents from Ishiagu reported that there were no more neighbourhood forests, where as 88% opined that there were between 1 and 3 still remaining. The study revealed that the type of forests found in some rural communities of Ebonyi State include thick forests housing mix of tall trees 30m high, for example iroko, 'akparata' and 'achi' and other herbaceous plants. The others are evil forests used as burial ground for evil doers, oracular forests housing shrines and utilitarian forests which develop around un-used lands, river banks and around people's compound.

She also found that farm clearance, fetching of firewood and commercial lumbering were major causes of deforestation in the research areas. These are common causes of deforestation in farming communities in most countries.

On water degradation, World Resources and International Institutions for Environment Development (1986) reported that although 70% of the earth's surface is covered by oceans and seas, fresh water is limited. It makes up less than 3% of the total water mass. The report reiterated that the amount of water available in an area is limited by the hydrological cycle and by the size of development of the local population. It discovered that whereas the amount of fresh water has not changed for centuries, water is now used very differently, and in ways which condition how much of it is available for families.

In developing countries water is used for irrigation, industrial and municipal uses and all these compete with family needs. Drinking water comes from rain, rivers, streams, lakes, springs, wells and other ground water sources. According to some climatologists, human interference with the environment may prolong dry period, and many land management practices damage ecosystem balances which greatly influence the availability of water resources (Dankelman and Davidson 1988). They also noted that over cultivation of cropland, overgrazed range turn fertile agricultural land into salty, barren deserts. Furthermore, the stripping of vegetation exposes soils to the desiccating effects of solar radiation, and eroding impact of rain. High rainfall intensity causes the soil to seal so that water flows off the land causing severe erosion and downstream flooding. The nature of water degradation may take any of the aforementioned forms. Since water sustains life, all lives dependent on natural water supplies will greatly suffer in the face of water degradation in form of water depletion, scarcity or pollution.

Traditionally in Ebonyi state people settled along river banks, because the lands were fertile, rivers were sources of aquatic foods and rivers afforded them some kind of protection from invading enemies. There were rules on how to protect rivers from pollution including prohibiting farming near rivers, use of masquerades and people to guard springs during dry seasons, prohibiting washing cloths directly in the streams and prohibiting the use of gamalin 20 poison for fishing. Today natural water sources are polluted, streams and rivers are silting up and most drinking water sources taste salty. Ofoegbu (1985) in his geological study found that the salty taste of drinking water in this area is evidence that the water table in this area was rising and that new salt springs, similar to those known in the Benue Trough are developing. The impact of this is salination of the soil. Salination according to Akpa (2000) was also said to be

responsible for the high record of poor crop yield in the old Ohaozara Local Government Area. Duruibe (2007) who studied the Ishiagu District of Ebonyi State found out that intensive mining in that area has polluted the rivers and wells making them unsafe for drinking. Anosike *et al*, (2006) who studied ten villages inhabited by Ezza farmers of Ebonyi State found out that the migrant farmers showed moderate susceptibility to *haematobium* infection with an overall prevalence of 22.1% but a high prevalence rate for *vesical schistosomiasis*. This was because they work in several rice farms and swampy areas where they contact the disease parasites. In that study, men were found to have higher prevalence than women probably because of variation in behaviour regarding water use and contact.

Anosike *et al*, (2005) discovered that lymphatic filariasis was endemic among the Ezza people with overall prevalence of 16.9%. Prevalence was found to rise with age and worse among farming age group. There was similarity in prevalence between males and females. This is because both men and women equally work on farms. So the high prevalence generally found among them can be explained by their occupational dispositions, living conditions, frequency of exposure to infectious bites from mosquitoes due to proximity to various breeding sites of the vectors. Furthermore, Anosike *et al*. (2000) saw guinea worm as a disease of poor rural communities in Ishieke in Ebonyi State where they collect water from ponds infested by water fleas called Cyclops. The occurrence of blisters on legs and hands a year after infection has important socioeconomic consequences in a population where farming is a major occupation.

The United Nations realized that women are specialist in water management- they know where to collect and how to cope when supplies are scarce. This is why it encouraged all member nations to promote full participation of women in the planning

and implementation of water projects. According to INSTRAW, inadequate water sanitation facilities constitute some of the most critical problems facing the developing world. Lack of portable water brings about the incidence of various diseases, such as cholera, diarrhea, typhoid fever and guinea worm. They argued in the International Drinking Water and Sanitation Decade 1981-90, that approximately 80% of all sicknesses and diseases can be attributed to inadequate water supply and sanitation facilities. Melchoir (1989) argued that women by virtue of their domestic functions are in constant contact with polluted water and are therefore the group most vulnerable to water related diseases.

To conclude on why and how soil, forest and water get degraded, Shiva's 1992 historical analysis of how 'nature' could be transformed from a living nurturing matter to inert, dead and manipulatable matter suitable for exploitation will be adopted. According to her, resources mean life; they are like springs that rise again and again, even if it has been repeatedly used. Her analysis highlighted nature's power of regeneration and creativity and imply that a cooperative relationship exists between humans and nature. This means that the earth bestows gifts on humans who, in turn should show diligence in order not to suffocate nature's generosity.

Like Shiva it is argued that conceptual shift came with industrialization and colonialism. Natural resources such as ore in the mine, un-quarried stones, un-felled timber become inputs for industrial production and colonial trade. With the idea of regeneration gone and the attitude of reciprocity lost its grounds, 'natural resources' no longer develop on their own. Technology has to be applied before they are developed. That is nature now depends on people, therefore, the development of people became necessary for the development of nature. The relationship between humans and nature was transformed from one based on responsibility, restraint and reciprocity to one,

based on unrestrained exploitation. This exploitation of nature according to Shiva (1992) occurs in two phases. The first phase occurs when nature's wealth was considered freely available and the second phase occurs after rapacious exploitation has created degradation and scarcity. The management of natural resources only became important in order to maintain continued supply of raw materials for commerce and industry. As the limits of nature's ability to renew is violated, real scarcity is created, soils lose fertility, forests disappear, water and air are polluted. From this analysis, most problems of environmental degradation are natural disasters caused by man in his attempt to create limitless growth and consumption.

2.2 GENDER ROLES IN ACCESS TO AND CONTROL OVER NATURAL RESOURCES

In this section, different gender roles in access to and control over natural resources were reviewed with a view to identifying similarities and differences between their expression in various places and Ebonyi State. Men and women have different gender roles and responsibilities in their own lives, families, households and communities. They have different knowledge of, access to, and control over natural resources and opportunities to participate in decision regarding natural resource use. The Gender and Development Group (World Bank, 2003) enumerated some issues to consider when mainstreaming gender into environmentally sustainable development:

What are the different responsibilities, roles and needs of women and men in sectors related to sustainable development such as food production, water and sanitation, forest resources and energy?

Do women and men value or use a particular natural resource for different community needs? What impact does this use have for sustainable management and

environmental protection? Who are the main stakeholders in resource management and use? Understanding men's and women's relationship to the environment play an important role in developing solutions to more sustainable use of natural resources.

In most parts of the world, men play greater roles than women in exploitation of natural resources for commercial purposes-logging, grazing livestock, fishing, mining and extracting various tree products. Both men and women are involved in economic activities in agriculture. Cloud (1985) identified five general patterns reflecting men and women's responsibilities in agriculture as follows:

- a) Separate crops, under this pattern, men and women have responsibility for production and disposal of different crops (e.g. men cash crop, women food crop).
- b) Separate fields-here the same crop may be produced by men and women but in different plots.
- c) Separate tasks-here men may take care of land preparation and planting, women weeding and harvesting.
- d) Shared tasks-here men and women may undertake joint responsibility for the same tasks or the same crop.
- e) Women-managed farms-here women manage farms and make the day-to-day decision due to the long absence of men (due to widowhood, divorce or out migration).

These identified patterns obtain in Ebonyi State. The only exception is that in polygynous homes, the husband merely shares plots of land to the wives who are expected to manage and use the produce of the farm to take care of their children and husband as well. Saito (1994) writing on the gender dimension of agriculture in Sub-Saharan Africa, noted that a typical farm household in sub Saharan Africa is a complex

institution. This is because there are distinct units of production within the household. Some of the units are managed by men, some by women and others jointly managed. In addition, the separate own-account of men and women frequently has more than one line of production. For instance a woman may tend family plots and also engage in petty trading. In other parts of the world, households are single economic units with common goals, resources and benefits.

The practice in Ebonyi State is that family members have separate and sometimes competing own-account activities. Exchanges of goods and services are allowed between husbands and wives. Individuals join cooperative societies where they enjoy rotational labour services of other members. There is also elaborate arrangement to the extent that an individual can decide on the disposal of his/her produce, how much to sell, retain, consume, process, or store. In the rural areas a set of rights and obligations reflecting biological differences, social and religious norms and customs dictate the division of labour, land and proceeds between the two genders. These divisions tend to favour men more than women.

These traditional patterns are changing in Ebonyi State, the organization of farm labour and production responsibilities vary widely. The gender division by tasks is also breaking down and more women are taking on tasks previously done by men. While the traditional men cash and women food crop distinction is still common, in practice, fewer crops are now produced exclusively by men or by women. For example firewood collection is no longer purely women's gender role; men also participate in it especially where it has attained commercial status.

This identifies what resources individuals can command to carry out their activities and the benefits they can derive from them Overholt *et al.* (1991). Access to resources does not necessarily imply the power to control them because to control a

resource is to impose one's own definition upon the others resources. Access can be determined by others, but control implies that one is the determining force. Access and control over use is different from access and benefits derived from the mobilization of resources. Women may always access the use of resources but may not always realize the gains from their use. For example in Ebonyi State, men own palm trees, but women process the palm oil and sometimes, the income goes to their husbands and at other times are used for subsistence in the family.

Women's access to and control over natural resources have received considerable attention internationally and locally as witnessed in the Beijing Declaration and Platform for Action in 1995, The Nairobi Forward Looking Strategies for the Advancement of Women in 1985 and the Twenty-Third Special Session of the General Assembly of Women in 2000. According to Bashaw, these attempts have been characterized by a mix of rhetorical and political dimensions which are far from the critical questions of locating where power really lies. She argues that it is only when access to and control over resources is problematized, that disparities in who has real control over the produce of the land stand out.

Meinzen-Dick, Feldstein, and Quisumbing (1997, p1) in a discussion paper posited that property rights to resources such as land, water and trees play fundamental roles in governing the pattern of natural resources management, as well as the welfares of individuals, households and communities who depend on the resources. To them property rights involve far more than titles and pieces of paper specifying ownership of a defined piece of land or other resources. It encompasses a diverse set of tenure rules, and refers to individual's capacity to stand behind his/her claims to a benefit stream.

Unfortunately, the focus of property analysis has often been on the rights held by a household, and the *de facto* or *de jure* male household head, without recognition of

how these are differentiated between individuals, based on gender, age and other intra-household characteristics.

On the issue of gender and land, land rights have received the greatest amount of attention. As a fixed and generally enduring asset, it is easier to define the boundaries of the resource unit. Land as a productive resource is of immeasurable value in rural farming communities. The World Bank (2001) in its World Development Report summarized the broader importance of owning land as follows:

- a) Access to and control over land shapes equity because land is still one of the major assets held by households.
- b) Influences efficiency because land is one of the economy's productive assets;
- c) Land underlines sustainability of resource use, it is important for agricultural production and the provision of nationally important ecosystem services;
- d) Land affects governance because there is a strong link between land tenure and the prevention of conflict.

There are various types of land-community land (ancestral land, usually owned by all), communal land (under-developed forests, usually owned by nobody but can be owned by any person who first cleared it); institutional land (usually allocated to traditional institution, emirs and chiefs) individual land (usually acquired by an individual and can be inherited by the immediate family depending on customary practice).

Men and women acquire land in many ways-through property inheritance, purchases and transfers from the state. Research shows that at each of these junctures, women face more obstacles than men. This may be due to male preference in

inheritance practice, male privileges in marriage, gender inequality in land market or male bias in state land redistribution programs (Deere and Leon, 2001) Anthropological work on women's interest in land has tended to agree that women did have some significant interests under customary land tenure. This has been eroded by agrarian change and largely out-migration, colonial and post-colonial processes and policies (Tsikata, 2004) According to this paper, processes of differentiation and individualization of land rights and shortages have resulted in the increasing concentration of land in the males hands. On the other hand, the growing incidence of divorce, single parenthood, male labour migration and the increase in the avenues of formal education, means that more women have to take greater responsibilities in catering for family members especially in the rural areas. Therefore, they need to have more access to and ownership rights over the natural resource base particularly land to carry out their responsibilities.

In Ebonyi State, women's access to land is determined by their status as girls, wives and as widows. In contrast, men have more abiding rights as members of one family. Men are also in charge of decisions about allocation and disposition of land. Furthermore, with the erosion of inheritance rights, marriage was and is still increasingly becoming the most important source of access to farm land for women. Access acquired through marriage is usually weaker than that acquired through family membership. This is because; access to a husbands land depends on marital residence, continued existence of that marriage, the goodwill of the husband and the size of the land he is entitled to (Tsikata, 2004). Insecure access to resources (land) can contribute to environmental degradation because people who farm on borrowed lands are unlikely to invest in soil enrichment, terracing or other environmental practices to protect the land (Giovarelli and Duncan, 1999).

The Nigerian land use Act of March 29, 1978 is the current land law applicable throughout the country. The main objectives of the Act are to verify land tenure systems in the country and make land easily accessible to the government and individuals with little or no hindrance (Aluko, 2005). According to him this act has seemingly introduced gender equality in land matters, but since it still recognizes the place of customary systems of land allocation, and indigenous system does not admit that land can ever be without an owner, there is always persistent confusion either in theory or practice of rights over land. One can convincingly argue that land continued to change hands outside government regulatory mechanisms, in accordance with native laws and customs. This means that the customary overlords still continue to wield the power of control over and management of land resources in the rural areas. At the same time, vesting ownership of land in the state makes it exceedingly difficult to locate the place of radical (paramount) title to land even in the urban areas. The argument of Aluko, (2005 p 10) comes in handy here, ‘what is needed is not land nationalization, but changes in practices that had reduced women’s land rights under the customary systems as well as has introduced insecurity of land tenure’.

On gender and forest, forests provide food, fodder, fuel wood, construction wood and organic fertilizer. Going by gender division of labour, men and women have different roles and responsibilities in relation to forest resources. Men engage in physically labourious and heavy work such as felling trees while women engage in collecting and fetching fodder, fruits and fuel wood. Men and women have different rights over forest lands. Even where women have usufruct rights to forestland, their access to forest products may not be guaranteed. This is because forest usufruct right does not mean ownership and control over trees and different forest products. This is confirmed in an FGD report in Okpe (2005) when an old woman compared the old and

new patterns of access to forest resources “In the olden days, if you gave somebody land, the person owned the trees in it. Today if you give somebody land, the person does not own the trees. When my elder brother was alive, if they gave land to anybody they gave the land with all that was in it. Today it is not like that. Since some other people started coming home in modern days, land has changed. That is what they are telling us now”(Okpe, 2005: p 38).

Another woman in the same study reacting to the same issue had this to say; “when I was a young girl in this village, we went from tree to tree, picking locust beans that had dropped, and you could even use sticks to pluck down the ones that are almost falling. We didn’t see anybody asking us questions like: ‘is this tree yours’? ‘Who permitted you to pick them? Now, even before the bean is ready the so-called owners will climb the trees and shake it until every single pod has dropped. But I have not heard of anyone who planted any of the trees, they were just there expanding on their own” (Okpe, 2005: p 42).

In some parts of Ebonyi State, private ownership of land and purchase of land, confer rights to use the trees on that land. Also different members of the community or household may have established usufructory rights to different parts of forest resources. For example, while men tap palm wine from palm trees, women process palm oil from palm fruits. Also, non-timber products from trees are often women’s responsibilities, but the trees itself often belong to men. In Ebonyi State, women comb thick utilitarian forest in search of fallen woods to chop up as firewood and also pick fruits from such forests.

The general trend in forest resource use is that women gather them for food, fuel, fodder, herbs for medicine, raw materials for small scale income generating activities whereas men gather wood for selling and for construction (Jacobson, 1992,

WEDNET, 1991). The pattern and intensity of use also vary according to gender roles. While women gather for household use in smaller quantities, but on continuous manner, men's pattern of use even though not as continuous, may have more impact on the forest condition (Byers and Sainju, 1993). The forgoing expositions are meant to posit that the differential access to and control over forest and trees can have several negative impacts. For example where women do not have access and control over forestland, their workload and time consumption is more as they have to walk to distant forests to gather the forest products. This according to Mehta, (1991) in her study of Tehri Garhwal India, adds to women's drudgery and puts their security at risk, in unfamiliar forests. Lack of tenure right can also lead to unaccountability due to lack of sense of ownership, which in turn can lead to neglect and degradation of the trees and forests. Again since user rights over trees do not confer automatic rights to the grounds below the trees, this frequently leads to women losing their rights to trees, thus affecting their household's livelihood (IFAD, 1999

On gender and water, there are several signs of water degradation requiring gender analysis on water sustainability. Water tables are falling, lakes are shrinking and wetlands are disappearing (Postel, 1992). Therefore there is need to assess the role and knowledge of men and women as users and managers of water. In most rural areas it is usually women who collect water for household use while men tend to assist when water is to be collected from great distance and with modern means of transportation. Their different roles and responsibilities make for differential incentives for investing time, labour, and capital in water related activities.

Water resources are inherently mobile and transitory. Rights are usually defined in terms of access to and use of water over time, rather than over ownership of a particular unit of water. However, the source of water, local streams, irrigation systems,

bore holes or other single point sources will affect its accessibility and the kinds of rights 'available' (Meizen-Dick *et al.*, 1997). Water rights, they further argued, are often accorded based on ownership of irrigated or riparian land near rivers. Often the establishment of land rights confers the rights to other resources on the land, such as water. In terms of access, there are unequal opportunities and access for men and women to use water for income generation (Merrey and Baviskar, 1998). Women are not considered as independent farmers and so do not or have less access to irrigation water. But due to their responsibility for water collection for household need, easier accessibility is more directly important for them. Better and easier access to water is the key to reducing women's drudgery.

Property rights to resources such as land forests and water play a fundamental role in governing the pattern of natural resource management, as well as the welfare of individuals, households and communities who depend on those resources. However, these rights go beyond titles and pieces of papers specifying ownership of such property to include adverse set of gender issues revolving around tenure rules, access to and use of resources. It is important to note the difficulties involved in studying the impact of property regimes on environmental sustainability. How do you find appropriate indicators of sustainability or data on changes over time? Even where data exist it is difficult to link the changes to property regimes. For example, is a change in the range due to the property regime or to other physical conditions (drought)? How do you observe ground water or trace the interaction between the surface and ground water used to establish causes of water degradation. (Meizen-Dick, 1997) Notwithstanding, without property rights to manage resources or exclude others from using them, it is difficult. It is equally difficult for users to sustain the resource condition.

2.3 THE IMPACT OF ENVIRONMENTAL DEGRADATION ON GENDER

Just as men and women differ in the way they use and manage environmental resources, they are also differently affected by the degradation of natural resources. Soil degradation, deforestation, water scarcity, exposure to industrial and agricultural pollutants affects men and women differently. The Population Reference Bureau (PRB, 2001) enumerated several ways in which environmental degradation affect gender as explained below:

When resources are depleting, the amount of time and energy devoted to household activities may drastically increase. Men will spend more energy and time on commercial activities like wood logging for house construction materials and women will devote more effort in terms of time and energy in collection of fruits, fuel wood and medicinal herbs.

Women and children are particularly affected by smoke from biomass fuels, because they spend more time indoors than men. World Bank (2001) reported that a study in Gambia, found that infants exposed to smoky stoves are six times more likely to have acute respiratory infections than those who were not exposed. It further reported that studies in India, Nepal and Papua New guinea, show that non-smoking women who have cooked on biomass stoves for long exhibit a higher prevalence of chronic lung disease (asthma and bronchitis). Exposure to high levels of indoor smoke is also associated with pregnancy related problems such as still births and low birth weights in infants.

Men and women are forced to change their family's dietary practices in the face of soil infertility, fuel wood, and water scarcity. This they do by eating raw or partially cooked food that could be less nutritious or even toxic, by eating leftover meals or by skipping meals altogether. Females are known to suffer more than males in cultures where they are expected to eat last.

Exposure to certain agricultural and industrial chemicals and organic pollutants increases women's vulnerability in pregnancy and childbirth and can lead to childhood illnesses and mortality. WHO (1994 p. 317-321) reported that in central Sudan, pesticide exposure was linked to 22% of hospital stillbirths. About 35% of prenatal deaths was due to the exposure of women farmers to pesticides (Taha and Gray, 1993) Exposure to pesticides has been linked to testicular cancers and lower sperm counts (Alejandro *et al.*, 2001) People's sources of economic livelihoods and health are affected in all these findings. In Ebonyi State, health problems of lymphatic filariasis, schistosomiasis and guinea worm which may result in deformity could also pose some reproductive risk to both men and women (Anosike, *et al.*, 2005).

The literature reviewed show that apart from the large scale type of land degradation, soil degradation and erosion of top soil are insidious processes. They are gradual and so not readily apparent to farmers until the effects are severe and irreversible with the means traditionally available. They deplete the soil of nutrients, diminish its moisture retention capacity, and reduce the depth of the rooting zone for annual crops. The most visible sign of soil degradation in farming communities is poor crop yield. Earlier scholars may not have been soil scientists to have been able to establish a causal relationship between the rate of soil infertility and soil type. Even though the present study will not test soil in a laboratory, it will identify gender issues that surround access to and control over the use of farmland and use the findings to establish a relationship between the rate of soil degradation and the nature of gender relations in the research area. The gap yet to be filled is the contribution of men and women to environmental degradation and the effects on their gender roles. This study will not focus on women alone. It will investigate the contributions of men and women to land, forest and water degradation and the socioeconomic impact on them. A gender

analysis employed in this study will show how rights, responsibilities and resources tend to be allocated either within household or community. This approach will highlight the complementarities and conflicts of interests, roles, and resource uses. It will throw more light on men and women's relationship to land and forest ownership and control in Ebonyi state and their contributions to land, forest and water degradation.

2.4 THEORETICAL FRAMEWORK

This section will review some of the social sciences theories on gender inequality as well as on environmental degradation. The structural functionalist, structural Marxist and the eco-feminist framework will be reviewed.

2.4.1 Framework on Gender Inequality/Differences

The Social Biologist (G. Murdock, Tiger and Fox,) – a group of early functionalists has explained gender differences in the society. They argue that the biological differences between the sexes are the necessary and effective causes of the division of labour by sex in all societies; that women are naturally inferior to men and this is inherited from our primate ancestors. This according to them informs how tasks are assigned to men and women in the society (Ityavyar, 1992). Tiger and Fox (1972) evoked the concept of bio-grammar and projected it as the most important determinant of sexual division of labour in society. The bio-grammar programmes men for politics and economic activities outside the homestead, while it assigns women only reproductive and domestic responsibilities (Ityavyar, 1992). Parsons (1959 and 1955), the father of modern functionalism sees the role of women within the context of the family. According to him, a woman has an expressive role, while a man has instrumental role in the family. A woman's expressive role provides warmth, security

and emotional support which are necessary ingredients for socialization. The man's instrumental roles lead him to stress and anxiety. The expressive female heals the tension of the instrumental male by providing the later with love, kindness and friendly understanding (Ityavyar, 1992 p.12).

On gender inequality, the traditional Marxists (Max and Engels) argued that socialism is the more fundamental answer to female oppression in the society. Equality between the sexes can only be achieved in a socialist society where the forces of production are commonly owned, the wives ceases to be merely producers of heirs for husbands' wealth, because there will be no private property to be inherited. With the transformation of means of production into social property, wage-labour will disappear as well as the proletariat (Ityavyar, 1992 p21).

The socialist/radical feminists, in the work of Firestone (1970) had argued that historically women have borne the greater burden for the perpetuation of the species. It is from the biological inequality of the sexes that gave rise to case-like system in which men receive "ego gratification" and enjoy creature comfort from their domination of women. Biological inequality has been extended to socio-economic inequality. The natural act of procreation even conspires against women in that without a man's' orgasm conception cannot take place. These feminists argue that sex inequality stems from these facts and not from the mode of production or existence of private property as Marx and Engels claimed. They advise that women must go beyond nature to ensure liberation. Even though they may have explained why men dominate women, they have not provided a plausible explanation of how women's and men's roles are socially constructed in the society.

The Marxist feminists are out to blame the biological and material explanation of gender inequality on the society. Mitchell, (1974) suggested that the capitalist mode

of production and the ideological mode of patriarchy must be analyzed separately. Hamilton (1978) suggested that both Marxist and feminist accounts must be used in the analysis of women in society. The second (feminism) is rooted in the study of how biological inequalities and differences are transformed into their social meanings and institutionalized. The first, requires a socialist revolution, the second, working on the preconditions of developing technology requires an overturning of that which have been considered natural (Hamilton, 1978 pp 91-92). There should be a blend between Marxism and feminism such that while Marxism deals with the social relations of women and men within a given mode of production feminism will concentrate on forms of patriarchal ideology within a given mode of production.

2.4.2 Framework on Environmental Degradation

Structural Functionalism

Functionalists see society as functioning in the same way as an organism whose parts function to attain consensus or order in the organism. The various parts of a society are intricately interrelated and interwoven to form a complete system. They examine any part of the society, in terms of its contributions to the maintenance of the social system. These contributions are important in the maintenance of the functional pre-requisites, that is, the societal basic survival needs which must be met.

Robertson (1980) argued that industrial revolution radically changed human being's way of life. In the pre-industrial agricultural societies, most people were poor and depended on the land for subsistence. This social order was transformed by industrialization which created new jobs, making a high standard of life possible for a larger proportion of the population. Thus industrialization is functional, but its rapid consumption of resources and environmental pollution are dysfunctional. More people

demand various goods, but there are few mechanisms to cushion the negative effects of these increased demands.

In relating the functionalist assumptions to the problem of environmental degradation, the “Gaia” hypothesis was proposed in 1969 by James Lovelock. This hypothesis seeks to explain the survival of life on earth by treating organic and physical environment as two parts of a single system (“Gaia”) in which the biotic component acts as regulators. So the system can control and repair itself. (Yakubu, 1999 p.24) In effect the earth is seen as a super-organism, a single homeostatic system with controls that maintain all global conditions. Without the “Gaia” regulation, conditions on earth will become very extreme. Temperature will become too hot or too cold if human beings affect the Gaia mechanism. This could possibly initiate sudden catastrophic changes that may destroy the environment or the earth as a whole. In other words, the functionalists see environmental problems as deriving from social disorganization brought about by rapid change.

According to the Gaian hypothesis “humans play the role of pathogens, a kind of virus threatening the planets vital life’s functions” (Gore 2007 p 216). Humans are presented here as contagiously destructive. If that is the case, is the hypothesis suggesting that to solve the problems, human beings should be eliminated from the earth? Beyond its moral unacceptability, another problem with this perspective is its inability to explain in a way that is either accurate or believable, who should and how the solutions for the crisis it describes could be found. This perspective is criticized as defining the relationship between human beings and the earth almost solely in physical terms- as if humans were nothing more than humanoid bodies genetically programmed , having no intellect or freewill with which to understand and change the script we are following” (Gore, 2007 p217-218).

This was the old Deep Ecologist, Cartesian approach to the human and environment story in which humans are believed to be separated from the environment and the environment is seen as nothing more than an inanimate collection of resources that could be exploited anyhow. This misperception according to Gore (2007) has led us to a crisis. There should be a healthy relationship between human beings and the environment in which they are to play the role of good stewards and faithful servants. This framework partially explains the traditional causes of environmental degradation, therefore other theories will be needed to further explain the issues of environmental degradation.

Structural Marxism

Marxism offers a radical alternative to functionalism. It begins by saying that in order to survive, man produces food and material objects. To accomplish this, man enters into social relationship with other men because production is a social enterprise. Production also involves other technical components known as their forces of production, including technology, raw materials and scientific know-how employed in the process of production. The forces of production and the social relation of production form the economic base or infrastructure of the society. The other aspects form the super structure and are often shaped by the economic base. Karl Marx the proponent of this theory said that a major change in the economic base will produce a corresponding change in the superstructure. He further argued that there are two social classes in the society which involve the exploitation of one class by another and this creates a fundamental conflict of interest between the social classes. Since it is the dominant or ruling class that often holds the economic power and because the economic base determines the super structure, the dominant ideology is often the ideology of the dominant class. The ruling class ideology distorts the true nature of the

society and serves to legitimize and to justify the status quo. However contradictions in the economic base will eventually lead to disintegration of the system and the creation of a new society. (Haralambos and Heald, 1980)

In attempt to make this theory relevant to the topic under study, the environment can be likened to the dominated class, while human beings are likened to the dominant class. Human beings through their activities have had an unequal relationship with their environment. They have overexploited environmental resources with little regard for replenishing it, and this has led to the degradation of the environment.

Al Gore drawing from this framework has argued about the United State that “ our civilization is holding more tightly to its habit of consuming larger and larger quantities every year of coal, oil, fresh air and water, trees, topsoil, and the thousand other substances we rip from the crust of the earth, transforming them into not just the substance and shelter we need but much more that we don’t need. Huge quantities of pollution, products for which we spend billions on advertising to convince ourselves we want, massive surpluses of products that depress price while the products themselves go to waste and diversions and distractions of every kind. We seem increasingly eager to lose ourselves in the form of culture, society, technology, media, and the rituals of production and consumption, but the price we pay is the loss of our spiritual lives”(Gore 2005 p221). His argument is that man’s obsession to exploit his environment has instead of bringing him satisfaction left him with a feeling of emptiness after generating so much environmental problems which he has to grapple with.

Whereas all threats to the environment used to be local and regional, several are now strategic. The loss of one and a half acres of rain forest every second, the sudden

thousand fold acceleration of the natural extinction rate of living species, the ozone hole above Antarctica and the thinning of the ozone layer at all latitudes, the possible destruction of the climate balance- all these suggest the increasingly violent collision between human civilization and the natural world” (Gore, 2005 p.223)

Drawing from the theory of the dysfunctional family, Gore posited that environmental problems go beyond the way individuals relate with nature, but that it equally has to do with the way we collectively determine our mutual relationship to the earth. In the family, before the scientific era, children easily locate their place in the world because they could define themselves in relation both to their parents and to a God who was clearly present in nature. But during the scientific era God is presented as having receded from the natural world to an abstract place, the patriarchal figure (the father) effectively became God’s viceroy, entitled to exercise godlike authority when enforcing the family’s rules. Children and even women started getting confused about their own roles in the family system.

The fathers were accorded godlike authority to enforce rules and along the line the strongest rule that emerged was that the rules cannot be questioned. The way these rules were enforced was through teaching the separation between mind and body and suppressing the feelings and emotions that might otherwise undermine the rules. Similarly one of the ways capitalism secures adherence to its rule is by teaching separation of people from the natural world and suppressing the emotion that might allow us to feel the absence of our connection to the earth. Many dysfunctional rules internalized during infancy and early childhood is extremely difficult to change. This is why most rules on gender relations have subsisted. But borrowing from Gore (2007 p.237). “if the global environmental crisis is rooted in the dysfunctional pattern of our civilizations relationship to the natural world, confronting and fully understanding that

pattern, and recognizing its destructive impact on the environment and on us, is the first step towards mourning what we have lost, healing the damage we have done to the earth and to our civilization, and coming to terms with the new story of what it means to be a steward of the earth.

In other words, to the structural Marxist, environmental problems come as a result of the way we relate with the natural world as individuals as well as the way we collectively determine our mutual relationship with the earth. If we see it as a provider who needs no care, then the problems will remain until that symbiotic relationship is established. Our relationship with the earth may never be healed until we are willing to stop denying the destructive nature of our current pattern of development. This theory, will address human activities as causes of environmental degradation, but because it does not emphasize gender dimensions of these activities and the extent to which each gender role causes degradation, it is not adequate for addressing the core issues of this work.

Eco-Feminism

Ecofeminism was coined by a French woman called Francoise d'Eubonne. It was developed in the 1970's as a theory that link the feminist politics and scholarship around inequalities of income and opportunities, the uneven division of labor, and the lack of regard for unpaid work, with environmental issues, and their differential impacts. (Smelser and Baltes, 2001). Their initiators were concerned that economic and political gender equality, without due regard for ecological concerns, would result to doubling the burden the environment has to bear if women emulated men's dominating attitudes towards the environment. They argue that the society has to reassess its practices and values and particularly to value the more feminine principles of

cooperation and care, social and economic changes that are necessary to have a healthy egalitarian partnership with the natural world (Archambault, 1993)

Ecofeminism as an evolving body of thought that can be used to feed into formulation of third world theory on gender and environment is a preferred perspective used in this study. The assumptions are as follows:

- a) There are important connections between the domination and exploitation of women and the domination and exploitation of nature.
- b) In patriarchal terms, women are seen as being closer to nature and men closer to culture. Just as nature is seen as inferior to culture, so women are to men.
- c) Because the domination of women and nature has occurred together, women have a particular stake in ending the domination of nature.
- d) The feminist movement and the environmental movement both stand for egalitarianism. So the two should together evolve a common perspective, theory and practice.

In the eco feminist argument therefore, the connection between the domination of women and that of nature is seen as basically ideological, as rooted in a system of ideas and representations, values and beliefs, that places women and the non-human world in non-hierarchical ways (Agrawal, 1997: pp66-78). There are two main strands of ecofeminism; the cultural ecofeminism and social or constructivist ecofeminism. (Smelser and Baltes, 2001) We will turn to the social eco feminist school for insight.

Social or Constructivist Eco-feminism

This strand of ecofeminism was pursued in Europe. They do not believe that the essence of what is female (if it actually exists) makes women inherently closer to nature than men; instead it is because women are subjugated by a society dominated by

men (which also dominate nature). This experience of domination and consignment to roles and jobs which are less abstracted from nature expose them more than men, to environmental hazards and places women closer to nature. Men conversely are more likely to take on roles and jobs which distance them from nature and so have less exposure to environmental degradation (Smelser and Baltes, 2001). In other words, because patriarchy dominates both women and nature, women's roles are also aligned to nature's roles, while men's roles are distant from nature.

The Indian economist, Bina Agarwal, took this school a step further in her 'feminist environmentalism' by emphasizing the role of women as 'critical agents of change' but observed that the gender differences in the use and management of natural resources were not so much gender-related to certain socio-culturally determined differences in the roles, tasks, rights and duties of men and women. According to her, the relationship between people and environment is determined by the way in which production, reproduction and distribution are organized in a society (Thapa, 2005)." In so far as there is a gender and class based division of labor and distribution of property and power, there will be differences in people's interactions with nature, the effects of environmental change on people and their responses to it" (Agarwal, 1992).

She further argued that the idea of women occupying different positions from men is related to their gender roles and not to an inborn affinity with the environment. For example, women support a clean environment because they are concerned about the future of their children as care givers and not because of their biologically determined sex. If men were to fulfill the same role, they would be the ones demanding a clean environment for their children. She also distinguished between the type and quality of resources and linked it up to various classes of women, thus, giving room to possibility of both complementary and conflicting interests. This implies that in

attempting to improve gender relationships, attention must be given not only to physical circumstances (quality and quantity of natural resources) but also to distribution of these resources to social groups (age groups, patrons and clients, landowners and landless) and women themselves. We should always ask the questions, what interests are at stake in relation to a natural resource and what alternatives exist for sustainable development

Agarwal concluded that the women/nature link has been socially and culturally constructed, not biologically determined. She calls for struggles over material as well as symbolic resources and suggests as a two-pronged strategy, the need to grapple with groups who control resources and ways of thinking about resources, with the help of the media, education, religion and legal institutions. By this suggestion, a transformative rather than a welfarist economic development approach is implied. This approach tends to emphasize gender relations rather than biological relations between men and women and the environment. This is a preferred approach to analyze the effect of gender relations on patterns of distribution of responsibilities and division of labor, access to and control over resources, the impact of these relationships on environmental degradation and *vice versa*. This approach will allow for an identification of differences between groups of women and men, which a focus on women alone could obscure. This social or constructivist ecofeminism is adequate in guiding this work because it emphasizes gender relations more than biological relations.

Adopting this approach to environmental protection, conservation and development will guarantee sustainable environmental development which the study is intent on.

CHAPTER THREE METHODOLOGY

This chapter presents the general guiding principles and techniques for this study. It covers the research design, research setting, population of study, sampling procedure, instrument and procedure for data collection; method of data analysis, quality control and ethical consideration.

3.1 RESEARCH DESIGN

This is the plan or outline for a research project which provides the researcher with a guide line towards solving the research problem. For this investigation the Cross-Sectional Research Design was adopted with which to cover both the quantitative and qualitative interests of the study. The quantitative survey entailed the collection of data on more than one case and at a point in time in order to collect a body of quantifiable data in connection with the variables, which are then examined to detect patterns of association. The qualitative aspect entailed interviewing of quite a large number of people and at a point in time based on their retrospective accounts of factors that influenced them in the past (Bryman, 2008).

The survey was used to establish the socio-demographic context within which the in-depth qualitative study of the relationship between gender and environmental degradation in agrarian communities of Ebonyi State was conducted.

3.2 RESEARCH SETTING

This study deals with gender and environmental degradation in Ebonyi State. Ebonyi State was created on October 1, 1996, with Abakaliki as its capital. The State was carved out of the former Abia and Enugu States. It derived its name from the River Ebonyi, and is located in the southeast geopolitical zone of Nigeria. It is bounded to the North by Benue State, to the West by Enugu State, to the East by Cross-River State and

to the South by Abia State. Ebonyi State has an estimated population of about 2, 535, 344 million people in 2013 on a total land area of 5,925 square kilometers. The State lies approximately between longitudes 7°30' and 8°30' East and latitude 5°40' and 6°45' North (NPC, 2006).

There are 13 Local Government Areas (LGA) in the State namely: Abakaliki, Ebonyi, Izzi, Ishielu, Ohaukwu, Ikwo, Ezza South, Ezza North, Afikpo South, Afikpo North, Ohaozara, Onicha and Ivo. The State is also divided into three senatorial zones namely: Ebonyi North comprising Abakaliki, Ebonyi, Ishielu, Ohaukwu and Izzi LGAs; Ebonyi Central made up of Ikwo, Ezza North, Ezza South LGAs and Ebonyi South made up of Afikpo North, Afikpo South, Ivo, Ohaozara and Onicha LGAs. The people of Ebonyi State are of Igbo stock. However, there are non-Igbo speaking indigenes including the Okpotos and the Ntezis in Ishielu LGA.

The area is drained by the tributaries of the Ebonyi river and has a land area of approximately 5,935 square kilometers lying between latitude 7°30' and 8°30'E and longitude 5°40' and 6°45'N (Awoke and Okorji, 2004).

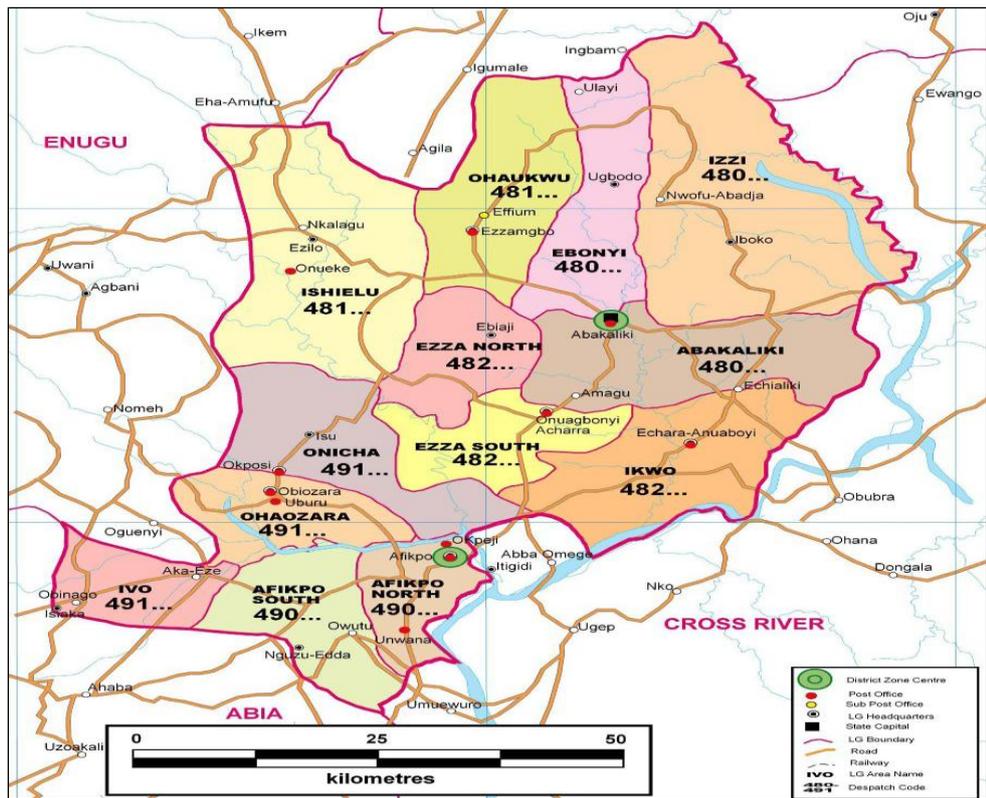


Fig. 3.1: Map of Ebonyi State Showing the Local Government Areas

Two main soil types are found in the State. These are the silty-clayey hydromorphic soil and the gray sandy-clay hydromorphic soil. The former has a brown loamy top horizon which overlies a reddish-brown silty clay sub-soil. The soil is moderately to imperfectly drained, with a moderately low natural fertility. With appropriate agro techniques and regular application of fertilizer this soil can produce good yields of wide variety of crops such as cassava, vegetables, plantain and groundnut. The soil type in addition to poor fertility, strong acidity and lack of nutrients, suffers from poor drainage. Due to excess moisture, it is suitable for rice cultivation. Ebonyi State experiences moderate sheet erosion, except in areas like Afikpo and Izzi where erosion is more pronounced. Ebonyi State falls between the rainforest and savanna belt of South-Eastern Nigeria.

The vegetation is characteristically sparse bush with predominantly dwarf shrubs and grass with abundant palm trees particularly in the Southern and Central geopolitical zones of the State. A satellite map of the area presented in fig 3.2 shows that Ebonyi State area has fewer forests than the surrounding areas. To the east are the mangrove forests of the coastal regions and Cross-River sheds. To the south is the dense vegetation of the Niger Delta area. To the west the forests are surrounding the *Udi* Hills. Towards the north is the Benue River area. This type of vegetation shows that there exist problems of forests which must have been completely lumbered and taken over by secondary vegetation and weed.

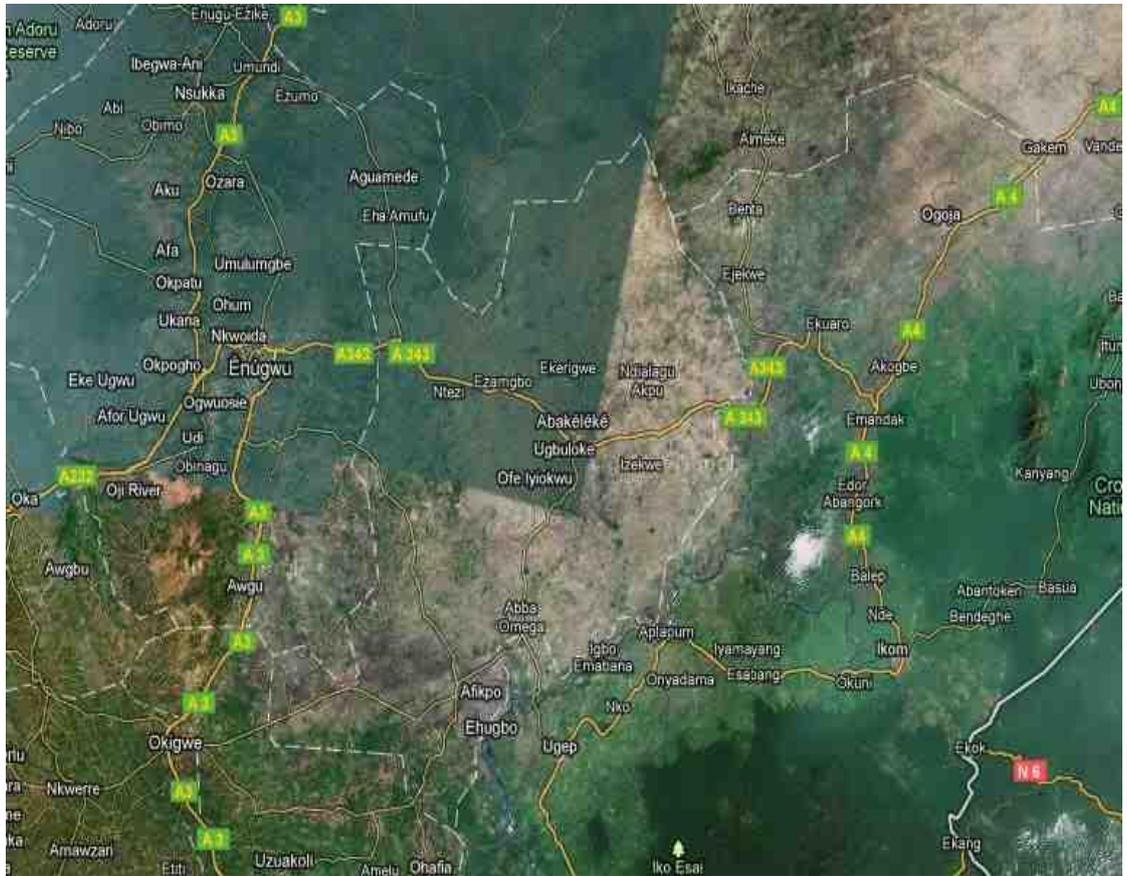


Figure 3.2: Satellite Map Showing Ebonyi State

The State is blessed with salt lakes at Uburu, Okposi and Oshiri, zinc and lead at Enyigba, as well as kaolin and lime stones at Ishiagu, Afikpo and Nkalagu. Agriculture is a major industry in Ebonyi State. Idachaba (1993) reported that about 80% of the people of Ebonyi State are small holder farmers. Small holder farmers have been described by Agbilibeazu (1984) as those farmers who produce on small scale for subsistence and cultivate more than 5 hectares of land annually on the average. These small holder farmers are also multiple croppers who cultivate more than one type of crop on a piece of land in an irregular manner (Francis, 1986; Forbes, 1992).

The popular Abakaliki rice is cultivated throughout the State. Other food crops include yam cassava, maize, cocoyam, cowpea and groundnut. Cash crops such as oil palm, cashew, cocoa and rubber are also cultivated. The presence of large arable land, rivers and streams has made farming very attractive. Fishing is also carried out on commercial level particularly along the Aboine River which crosses the North-Central and the Cross River which passes the southern part of the State. Livestock farming is also common. This includes the traditional rearing of animals such as goats, pigs, chickens, cattle, horses and pets. There are small-holder cattle ranching in Onicha, Ohaozara and Ishielu LGAs.

Apart from farmlands the State is blessed with some natural environmental resources, such as brine (salt) granite, lead- zinc-copper sounds limestone, barytes, kaolin, marble stone, Gypsum, False Gold/Gold, crude oil (dormant). The presence of these resources will also help in determining the communities to be studied. Climatically, Ebonyi State is semi Savannah with seasonal variations, hot mild cold weather and mixed grid vegetation. The mean annual rainfall is between 1,500mm and 1,800mm naturally the climate is atypical hot humid type characterized by high rainfall, high temperature and sunshine with marked seasons, the rainy and the dry seasons.

Rural settlements are dispatched over much of the farm lands. In almost every community, there are vast unoccupied areas set aside as farmlands and somewhat removed from the settlement. The village is the traditional unit of settlement. Each homestead is made up of houses in an oblong form around a compound. The house of the head of the household is separated from those of his wives and adult members of the household. Each wife is responsible for the recurrent upkeep of her children while the husband is in charge of capital expenditure such as provision of farmland and seed crops.

3.2.1 Topography of the Research Area

It is necessary that the topography of the research area be presented in an environmental study such as this. This was investigated during the transect walk within the communities. Two main soil types were found in the State, these are, the silt-clay-wet soil and the grey sandy soil. The two soil types are between moderately-to imperfectly-drained with brown loamy top. Natural sheet erosions were found. Wastes from excavations mixed with tailings are scattered indiscriminately especially in Enyigba and Ndufualike area. Plate 1 is a pictorial presentation of broadcast of tailings and excavations around mining sites in Ebonyi State.



Plate 3.1: Broadcast of Mine Tailing on Farmland in Ebonyi States
Source: Survey, 2011

The type of farms in Ebonyi State also affects the topography of the area. There are four types, the small cone-shaped mounds for planting yams and other crops upland, the large cone-shaped mounds typically found in swampy areas also for planting yams, the inverted dish-shaped mounds for planting cassava and the tilled flat farms for planting rice in the swampy areas too. A typical farm-holding contains about 1000 small mounds of about two square meters each. Some rich families can own farms of one hectare or above. This research was carried out at the beginning of the rainy season when new farms were being cultivated, thus the scenery was that of tiles of grey mounds. However, presence of mine tailing has affected the colour of the farms as shown in Plate 2. Careful examination of the Plate 4.2 shows different colours of lands due to broadcast of different strata of mine tailing not taken care of at Enyigba.



Plate 3.2: Farms built on mine tailing in Ebonyi State

The vegetation is characteristically sparse bush with predominantly dwarf shrubs and grass interspaced with palm trees particularly around homes. There are also evidence of secondary forests around river banks with signs of logged wood stumps and bamboos. Few forests were sighted, but none of them could be described as thick dense forest like the ones found in the coastal areas of the country. There were evidences that most of the forests are being encroached upon. The encroachments were done for the purposes of building homes, roads and for various developmental projects as shown in Plate 3.



Plate 3.3: Picture of Oviaani forest taken during the 2011 survey

Two main rivers were sighted in the research area, they are, Ebonyi River and Esu River, both share the same features like muddy colour, narrow banks and a lot of floating debris. Other sources of water found in the area are streams, and ponds. The ponds “okpuru” are major sources of drinking water for people in the northern and central zones of the state. There are signs of dwindling size of the streams due to silting mediated by erosions and trees were found around the banks as shown in Plate 4.



Plate 3.4: Picture showing a river in Uburu

Source: Field Survey 2011

3.3 POPULATION OF STUDY

The target populations of study are adult male and female members of the selected agrarian communities aged 20 years and above. This population was considered to have adequate knowledge of the changing environment and their socio-economic impact on gender roles and relations. However, the key informant interviews targeted heads of departments of health and environment. They were so targeted to gain government insight on environmental degradation in selected L.G.A.s. This population depends on the environmental resources for their livelihood, since they are full-time or part time farmers. Some of the men live and work as farm labourers who engage in inter community migration to sell their labour particularly during the rainy season. The women work hard to ensure their marriages and families subsist.

3.4 SAMPLING METHOD AND PROCEDURE

Multistage sampling method was used to determine the sample size. It is a complex form of clustered sampling used frequently when a complete list of all members of the population does not exist or the geographical area is too large to manage. In the method, it may not be necessary to use all sample elements, instead the researcher may randomly select elements from each cluster. Constructing the clusters is the first stage. Deciding what elements within the cluster to use is the second stage and subsequent clusters and stages may follow.

For this study the first stage in the clustering is the grouping of Ebonyi State into three major clusters, following already existing three senatorial zones of the State - Ebonyi North, Ebonyi Central and Ebonyi South. The second stage is the grouping of the senatorial zones into council areas. Already, they are four council areas in Ebonyi North senatorial zone, made up of Abakaliki, Ebonyi, Izzi, and Ohaukwu LGAs. The Ebonyi Central senatorial zone comprises of four council areas, Ezza North, Ezza

South, Ishielu and Ikwo LGAs. While the Ebonyi South senatorial zones comprises of five council areas, Afikpo North, Afikpo South, Ohaozara, Onicha and Ivo LGAs. The third stage is the selection of a local government from each group of council areas. A local government with a particular environmental resource endowment that is critical to degradation was purposively selected from Ebonyi North, Ebonyi South and Ebonyi Central. Abakaliki was purposively selected because of the existence of lead as was reported by Nweke *et al.* (2008). They found that the presence of lead/zinc in the surface and sub-surface soil of Enyigba causes increase in the level of trace element in the agricultural soil leading to poor crop yield. Ohaozara was selected because of massive salt deposit which also reduces soil fertility (Akpa, 2000) Ikwo North LGA was selected because of water degradation that is associated with guinea worm, vesical schistosomiasis and lymphatic filariasis infestation (Anosike *et al.*, 2005 and 2006, Edeogu *et al.*, 2007). The fourth stage in the sample selection is selection of a town from a local government area. Enyigba, Ndufu Alike, and Eweze-Uburu were purposively selected because they are reported in literature as areas endemic in environmental degradation.

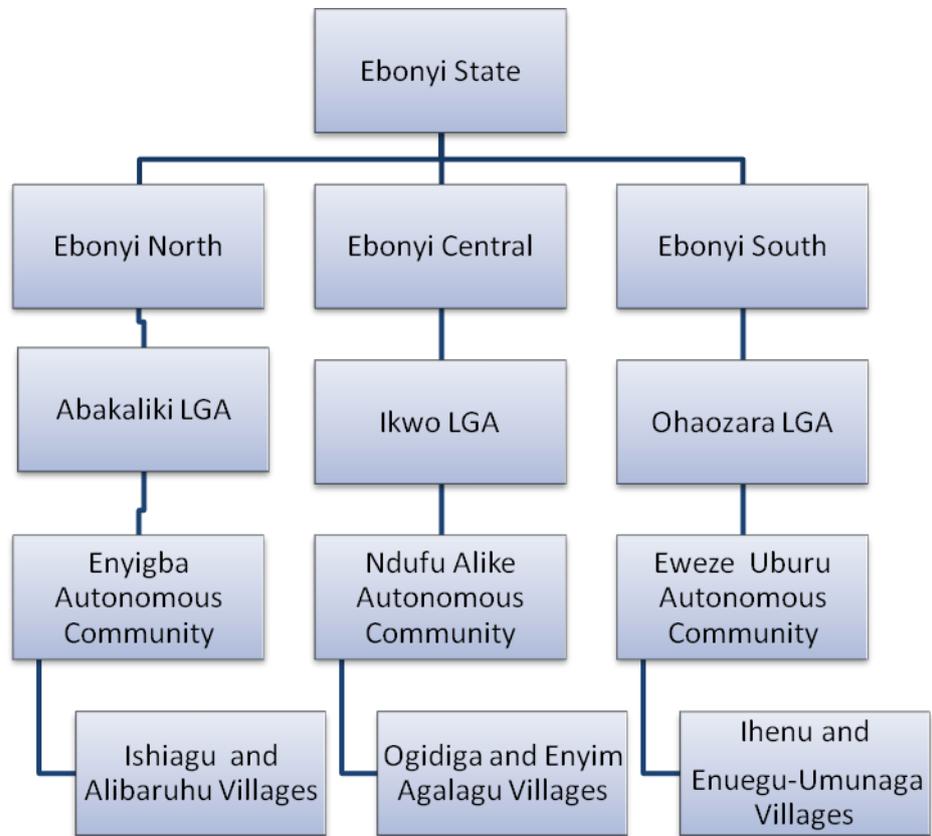


Fig. 3.3: Organogram showing the Multi-Stage Cluster Sampling Method

Source: Field Survey, 2011

To do the household listing, a list of enumeration areas was obtained from the National Population Commission (NPC) Abakaliki. From the list, the locality and enumeration area codes were obtained as shown in Table 1. Enumeration was done by research assistants who identified compounds with numbers from 1 to the maximum as indicated in Table 3.1.

Table 3.1: National Population Commission Codes and Compounds Sampling Frame

S/No	Locality		Enumeration Area		Number of compounds (number of households Drawn)
	Name	NPC Code	Number	NPC Codes	
1	Ishiagu Enyigba	000004016	3	1006 1008 1010	156 (50)
2	Alibaruhu Enyigba	000004017	2	1012 1014	132 (50)
3	Enyim Egalagu Ndufu Alike		6	0450 0452 0454 0456 0458 0460 0464	216 (50)
4	Ogidiga Ndufu- Alike		5	0466 0468 0470 0472	202 (50)
5	Umunaga Egugwu	000003007	4	0216 0218 0220 0222	164(50)
6	Ihenu, Eweze- Uburu	000001001	5	0002 0004 0006 0008 00010	182 (50)
Total			25		1052 (300)

Source: Abakaliki NPC, 2011

A sample of 50 respondents was chosen from each locality by simple random sampling of the recorded compounds. The household of the compound head, who is traditionally the eldest man, was selected in each of the sampled compound. The choice of male and female respondents was made by alternating the sampled household.

The choice of number of respondents was based on the finding that each locality has an average of 172 compounds giving a total of 1052 compounds in all the areas under study. Using a statistics of $p = 0.50$, $t = 1.96$ and margin of error = 0.05 as recommended in the Table for categorical data evaluation (Bartlett, et al., 2001), 50 sample compounds were drawn from each locality giving a total of 300 persons.

Table 3.2: Cochran's Table for Determining Minimum Returned Sample Size for a Given Population Size for Continuous and Categorical Data

Population size	Sample size					
	Continuous data (margin of error=.03)			Categorical data (margin of error=.05)		
	alpha=.10 t=1.65	alpha=.05 t=1.96	alpha=.01 t=2.58	p =.50 t=1.65	p =.50 t=1.96	p =.50 t=2.58
100	46	55	68	74	80	87
200	59	75	102	116	132	154
300	65	85	123	143	169	207
400	69	92	137	162	196	250
500	72	96	147	176	218	286
600	73	100	155	187	235	316
700	75	102	161	196	249	341
800	76	104	166	203	260	363
900	76	105	170	209	270	382
1,000	77	106	173	213	278	399
1,500	79	110	183	230	306	461
2,000	83	112	189	239	323	499
4,000	83	119	198	254	351	570
6,000	83	119	209	259	362	598
8,000	83	119	209	262	367	613
10,000	83	119	209	264	370	623

Survey: Adapted from Bartlett, *et al.*, 2001

3.5 INSTRUMENTS OF DATA COLLECTION

This study collected data from the sampled communities from May to June 2011 using the under listed procedures:

- Location of critical areas (observation method through transect walk)
- Impact study using survey, focus group discussion and semi structured interviews.
- Obtaining gender segregated samples by comparing and contrasting the identified impacts on men and women.
- Triangulation of the following methods; transect work, survey, Focus Group Discussion (FGD), Semi-structured interview, and Key Informant Interview (KII). The reason for method triangulation is to ensure that valid and reliable evidence are gotten at the end of the study.

3.6 PROCEDURE FOR DATA COLLECTION

3.6.1 Transect Walk

A transect walk was conducted to locate the critical areas of environmental degradation within a sampled community. Transect walk entails walking through major roads in the community and visiting areas of identified interest. This method is a participatory learning appraisal instrument (PLA) used to identify key issues about the study from people in their natural setting. During the walk, unstructured questions were asked to community members around the observed signs of degradation or other sites identified. The questions are to establish the nature, causes and trends of the degradation observed.

3.6.2 The Questionnaire

The major technique for the survey was the questionnaire. A total 300 questionnaires were administered to the literate in English or as interview schedule in Igbo language to the non-literate. However, 291 questionnaires were retrieved and found relevant for statistical analysis. The questionnaire consists of open and close ended questions covering a number of issues surrounding the objectives of the study. Four Research Assistants, who are field workers in NPC, Abakaliki, were employed and trained by the researcher and paired male and female to administer the questionnaires. Questions addressed the causes of environmental degradation and other social outcomes of environmental degradation such as population pressures, adverse health effects and migration. Issues relating to coping strategies gender roles and local policies concerning environmental degradation were also addressed. The questionnaire is presented in Appendix 1.

In order to strengthen the survey data some qualitative methods were used because they are easy to apply and can gather richer data.

3.6.3 The Focus Group Discussion Method

A total of 12 FGDs were conducted. In each of the six communities studied (Ishiagu-Enyigba, Alibaruhi-Enyigba, Enyim-Egalagu Ndufu-Alike, Ogidiga-Ndufu-Alike, Umunaga-Egugwu and Ihenu,-Eweze-Uburu), a male and a female group was constituted. The criterion for constituting the groups were purely sex and marital status, such that each community had one male and one female group of married people aged 25-60 years. Approximately 82 people were involved in all the FGD's with approximate 13hrs 20 minutes spent in the discussions.

The issues discussed in the FGD guide revolved around environmental resources found in the community, ownership of resources, causes and consequences of

the degradation of those resources, coping strategies across gender, the role of government, individuals and the communities in environmental protection. The researcher facilitated the FGD's and was assisted by two trained assistants, one served as the note taker and the other was in charge of the tape recorder.

This technique was adopted for the following reasons. Focus Group Discussion allows the researcher to develop an understanding of the reason why people feel the way they feel. It clarifies misconceptions and is capable of generating a wide variety of views in relation to a particular issue. In one-to-one interviewing, interviewees are rarely challenged but in FGD, individuals will often argue with each other and challenge each other's views. This has the advantage of putting the researcher in a better chance of eliciting more realistic accounts of what people think, and the ways people collectively make sense of a phenomenon and construct meaning around it. This is a strong point in symbolic interactionism which is not found in quantitative methods.

3.6.4 Semi-Structured Interview

Semi structured interviews were conducted with 6 persons (one male and one female in each senatorial zone). These were opinion leaders in their communities selected after due consultation with the traditional leaders (the Eze). These opinion leaders were older members of the community, men and women leaders who have particular knowledge of and can provide information on the communities, and on gender issues based on their cultural or leadership status in the community.

This technique was chosen because of the researcher's ontological position which suggests that people's knowledge, views, understandings, interpretations, experiences, and interactions are meaningful properties of the social realities that the research questions are designed to explore. This work is interested in explaining gender differences and their roles in environmental degradation. It focuses on opinion leaders

for insight on events, practices and situations which have taken place in the people's lives, communities and state.

3.6.5 Key Informant Interviews

Key informant interviews were conducted with three officers from the Health/Environment Departments of the selected LGAs namely: Abakaliki LGA, Ikwo LGA and Ohaozara LGA. They were mainly health/environment officers. The interviewee from Abakaliki and Ikwo were males while the one from Ohaozara was a female. They had knowledge of the environment of their various local government areas as well as governmental policies and programmes in the area.

3.7 METHODS OF DATA ANALYSIS

Two main methods of data analysis were used; the quantitative and qualitative analysis, that is, inferential and descriptive analysis methods. The data were sorted to determine which are related or helps to explain certain situations relevant to understanding the subject under inquiry. The variables were broadly categorized as independent and dependent variables. The independent variables are those that describe the socio demographic characteristics of the respondents and consist of personal details and asset bases. The dependent variables are those that identify nature and causes of environmental degradation, (land, water, and forest degradation) in the area. Other sets of dependent variables are those that evaluate the socioeconomic impact of degradation, those that describe the perception of gender roles and coping strategies and those that deal with policy and the effects of policy on environment. Gender analysis was achieved when data was segregated to know which gender is more affected, and by so doing obtain a gender sensitive solution to environmental degradation for sustainable environmental development in Ebonyi State.

The data obtained was edited, coded, and organized for computer analysis using the SPSS package. After obtaining descriptive statistics regarding measures of central tendency and dispersion, inferential statistics were then used in analyzing results. Cross tabulation, chi-squared and regression analysis of relationship between variables were also done.

Field notes and tapes used in collecting qualitative data from FGD KII and SSI were transcribed. The transcripts were read and emerging patterns of inferences were created, contrasting views highlighted and overall conclusions drawn around the thematic issues that formed the objectives of the study. The emerging patterns of inferences were modeled to know if it is males or females that degrade the environment more in the process of playing out their gender roles and the major reasons for changing gender relations then juxtaposed with the findings from the quantitative analysis.

3.8 QUALITY CONTROL

The word “quality” is usually used on products. In social research the product is the result of the research. In order to get high quality research result multilevel activity is necessary, according to developed standards and the whole research process. Even the best analysis will not correct mistakes made during the research realization. The basis for reliable result is high quality field work. So, for this study quality was ensured in the following elements:

Trained and experienced field workers, interviewers and note takers, whose work were verified and evaluated. Research assistants with a minimum qualification of a Bachelor’s degree in social sciences courses were recruited for the survey. They were given adequate training by the researcher to ensure they understood the basis of the

research. There were also role-plays on the questionnaire, FGD, Semi-structured and Key Informant interview Guides.

In order to ensure that the research is realized according to eco-feminist theoretical principles, the sample design has equal representation of the sexes. The FGD has equal representation of both sexes and their views were collected separately to avoid undue interferences between sexes. The researcher compared the various views and drew conclusions in the course of data analysis.

The research assistants were instructed to check through each questionnaire to ensure that the respondents answered all the questions. In case of no response, the assistants were asked to encourage the respondents. If in the end there are no responses or the responses do not meet the desired criteria, they were reported in the analysis. The research assistants were sent back to the field to ascertain issues that were not clear from the questionnaires.

For quality data analysis, the Statistical Package for Social Science (SPSS) version 20 was used for the descriptive statistics and Chi square analysis.

3.9 ETHICAL CONSIDERATION

The following ethical principles were observed in executing this research. The researcher

- i. ensured that valid, informed consent of a respondent was obtained before individuals participate in the research.
- ii. took reasonable steps to identify and remove barriers to participation by respondents and discussants.
- iii. avoided personal and social harm to participants.
- iv. protected the confidentiality of information about research participants and their identities.

CHAPTER FOUR

PRESENTATION OF DATA

This chapter presents both the quantitative and qualitative data collected in the course of the fieldwork carried out in the months of May and June, 2011. It consists of the Socio-Demographic data, core data on land, forest, water degradation, the socio-economic impact of degradation on gender roles and relation, coping strategies and gender mainstreaming of government policies on environment in the study area.

4.1 SOCIO-DEMOGRAPHIC DATA OF THE RESPONDENTS

This section presents both personal details (Table 4.1) and asset base of respondents (Table 4.2). The variables in the tables presented determine the social status of the respondents, which are likely to influence their views on subsequent issues of environmental degradation and changing gender roles and relations. The findings presented in Table. 4.1 were generated from survey data.

Table 4.1 shows an almost equal representation of males 146(50.2%) and females 145(49.8%) in the sample. It shows that majority 126(43.3%) of them are aged 40-50 years. Majority 245(84.2%) were married and very few 1(0.3%) each were divorced and separated respectively. The study was specifically designed to target married men and women in their household. The very low level of divorce and separated cases shows that marriages subsist a lot in the area of study.

The data shows that men 244(83.8%) are the dominant heads of the family. Even though this is expected, the 47(16.2%) females that head families have serious gender role implication for the study in the face of environmental degradation.

4.1: Socio-Demographic Data of the Respondents

Characteristics	Frequency (n = 291)	Percentage
Sex		
Male	146	50.2
Female	145	49.8
Age		
Below 30yrs	29	10.0
30-39yrs	69	23.7
40-50yrs	126	43.3
Above 50yrs	67	23.0
Marital Status		
Married	245	84.2
Single	20	6.9
Divorced	1	0.3
Separated	1	0.3
Widowed	23	7.9
No response	1	0.3
Headship of Family		
Male	244	83.8
Female	47	16.2
Number of male children		
1-4	197	67.7
5-8	55	18.9
9 and above	4	1.2
No response	35	12.0
Number of Female Children		
1- 4	202	69.4
5 -8	48	16.4
9 and above	4	1.2
No response	37	12.7
Level of Education Attainment		
No formal	101	34.7
Primary	93	32.0
Secondary	37	12.7
Tertiary	60	20.6

Source: Field Survey, 2011

Table 4.1 also shows that the number of male and female children per a family cluster around one to four. One can observe that 67.7% families have up to 4 male children while 69.4% families have up to 1 to 4 children. This is an asset in a farming community where farming depends predominantly on use of human labour. Much as majority 130(44.7%) indicated that none of their male children live outside the village, a large number 88(30.2%) have two or more male children living outside. This further strengthens their asset base, especially if those children remit money to their parents. When it came to availability of house helps 205(70.4%) indicated that they have no house helps. In agrarian communities it is difficult for parents to release their children as helps to other families since they will also be used as farm labourers. The people prefer sending their children as house helps to people in cities where they will learn other trades and skills.

Finally, table 4.1 shows that there are more people with no formal 101(35.0%) education followed by those with primary 93(32.0%) level of educational attainment. Put together, the table shows a very high 194(66.6%) low level of educational attainment in the area of study. For a better understanding of the gender issues in the socio-demographic data on education a cross-tabulation of the data on education and sex is presented in table 4.2.

Table 4.2: Distribution of Respondents' Level of Educational Attainment by Sex

Education Level	Sex Count		
	Male	Female	All
No formal	43(29.5)	58(40.0)	101(34.7)
Primary	39(26.7)	54(37.2)	93(32.0)
Secondary	21(14.4)	16(11.0)	37(12.7)
Tertiary	43(29.5)	17(11.7)	60(20.6)
Total	146(100.0)	145(100.0)	291(100.0)

Source: Field Survey, 2011

Table 4.2 shows the descriptive statistical analysis of level of educational attainment by sex in the study area. It is observed from the sex-disaggregated data that more women 58 (40.0%) had no formal and primary education 54 (37.2%) education respectively. The trend changed at higher education level with more men 21 (14.4%) having secondary education. More men 43(29.5%) had tertiary education than women 17(11.7%).

Table 4.3 gives further result of the survey on asset base, and the aim is to further describe the socio-economic status of respondents. The table was generated from the survey data.

From the table majority of the respondents has farming as major 186 (63.9%) and also as subsidiary 189(65.0%) occupation meaning that farming is a predominant occupation of the people. The method of farming is mainly by hiring labour and by self and family members as was indicated by 132(45.5%) and 121(42.0%) respectively. Mechanized farming is rare in the area. Table 4.3 shows that the respondents are of medium 145(49.8%) and low 137(47.1%) income level. From the qualitative data the people also expressed their dislike for their extent of poverty and neglect by the government.

The table also shows that 97(33.3%) own only one farmland, 90(30.9%) two farmlands, while only 86 (30.0%) own three or more farmlands. Majority 163(56.0%) obtain land by inheritance followed by 65(22.3%) who obtain land through their husbands.

Table 4.3 Asset Base of Respondents

Asset	Frequency (n = 291)	Percentage
Main Occupation		
Farmer	186	63.9
Trader	29	10.0
Civil servant	56	19.2
Others	18	6.2
No response	2	0.7
Subsidiary Occupation		
Farmer		
Trader	189	64.9
Craftsman	64	22.0
No response	17	5.8
Level of Income		
High	6	2.1
Medium	145	49.8
Low	137	47.1
No Response	3	1.0
Number of farm land owned/accessed		
One	21	7.2
Two	90	30.9
Three or more	86	29.6
No Response	18	6.2
Means of Obtaining Land		
By inheritance	163	56.0
Renting	41	14.1
Leasing	10	3.4
From relatives	7	2.4
From husband	65	22.3
No Response	5	1.7
Main Method of Farming		
Mechanized farm implement	30	10.3
Hire labour	132	45.4
By self and family members	121	41.6
Others	3	1.0
No Response	5	1.7

Source: Field Survey, 2011

A cross-tabulation of the data on number of farmlands owned by sex is shown in Table 4.4. This is to buttress gender and land ownership pattern. Table 4.4 shows that of the 86 (31.5%) of respondents who own multiple lands (3 or more), 57 (39.9%) are men whereas 29 (22.3%) are women. Ownership of farmland in agrarian community is an asset that determines ones socio-economic status. The qualitative data categorically showed that women do not own land in their own right by inheritance and to have few women indicating that they have three or more farmland shows that they must have accessed land through buying, renting or their husbands.

A male discussant from Umunaga-Uburu confirmed this when he said, '*Women do not own lands; instead her husband's lands are her own*'. In an FGD with women farmers from Umunaga a discussant captured the fact that women do not own land when she said:

Our husbands are truly the owners of the land, even if you want to build a house as a woman, they will give you land but that will be in the name of a man. Even if you are farming 10 bags of rice, they will give you but you must be under a man to cultivate that land in his name.

Table 4.4: Sex Disaggregated Data on Ownership of Farmland in the Communities

No of farm lands owned (Traditional Measure)	SEX		
	Male	Female	All
One	47(32.9%)	50(38.5%)	97(35.5%)
Two	39(27.3%)	51(39.2%)	90(33.0%)
Three or More	57(39.9%)	29(22.3%)	86(31.5%)
Total	146(100.0%)	145(100.0%)	291(100.0%)

Source: Field Survey, 2011

The means of obtaining land is an important issue in gender analysis of impact of environmental degradation, because a lot of discrimination exists in this area in the name of culture. For example, a male discussant opined that, *'as a mark of respect, a woman can give money to her husband to buy her land in his name'*. A woman from the community in support of the argument in a Semi Structured Interview said *'whatever property a woman owns belongs to her husband'*. This means that a woman cannot own, use or dispose a piece of land which she managed to buy with her money. This is exploitation. From the Focus Group Discussion and Semi-structured Interview, it was established that women do not own land through inheritance, but assess land through their husbands or other male relations, they can also buy, rent or lease farmlands from other owners of land. Men who do not have enough land also buy, rent or lease land.

Generally, these measures of asset base show that the people in the area of study have low socio-economic status and this will definitely have implications on gender and the environment.

4.2 CORE RESEARCH FINDINGS

In the absence of physical measurement, the nature and causes of degradation can be ascertained by individual awareness of changes in the environment in the course of their use of natural resources and their relationship with the environment. The results presented in this section are from survey and qualitative instruments.

4.2.1 Nature of Land degradation in Ebonyi State

When land degrades, farmers are the critical group that feels the effects and are the ones who can establish through experience, the existence of land degradation. Respondents were asked if they are aware of signs of land degradation in their communities and an overwhelming, 89.0% (259) said yes, while only 10.0% (29) said no. This is collaborated by the findings in the key informant interview.

In answering the question on the nature of land degradation, a key informant interviewee, the Head of Department of Health, Abakaliki Local Government Area said:

Talking in respect of land degradation, I will say to the ordinary eye, unschooled eye may not know that a lot is happening to the land on which they are cultivating. But judging from record of harvest before now it is very obvious that there is a lot of degradation. Usually before now, we used to harvest yam, as mighty as human beings sometimes we use NTA and the rest of them in filming the yam but now we discover that very few people harvest yam that will measure more than two feet long and that is an indication that the land is deteriorating in quality and that will affect the yield not only in yam but in other products. Also it could also be translated to rice which is one of the major crops in this place, yield are fast degrading which is an indication that the soil is wearing out.

The researcher asked the respondents to list some of the signs of land degradation they observed in their various communities. This was an open-ended question which could be difficult to analyze but which can suggest variables of interest to the people and can touch on the root of the problem.

Table 4.5: Respondent's List of Signs of Land Degradation

Suggested signs	Frequency	Percent
Reduced soil fertility (shown in shortage of food and declining vegetation)	168	57.7
Erosion	36	12.4
Mineral Deposits in the Soil	28	9.6
Flood	8	2.7
Climate change (shown in low rainfall or too much heat)	4	1.4
Excess labour	4	1.4
Scarcity of good land	4	1.4
No Response	39	13.4
Total	291	100.0

Source: Field Survey, 2011

Table 4.5 shows that majority 168(57.7%) of the respondents see reduced soil fertility and shortage of food as an outstanding sign of land degradation followed by erosion 36(12.4%). Other signs include; the polluting effect of minerals as a result of mining 28(9.6%). Those that have lesser importance are; effects of flood, dryness of land and excess labour. These were also mentioned as observable signs of land degradation in their various communities.

This is corroborated by excerpts from qualitative data.

When asked the signs of land degradation in their community, a woman leader in Umunaga-Uburu in an SSI said:

The men take the lead in farming while their wives follow them. When the land was still fertile enough, for example, if you plant 2 bags of rice, you can harvest up to 40 bags but presently, if you harvest 10 bags, you will thank God. In terms of yam cultivation, we no longer harvest much when you plant yam, you only get small pieces of yam. In the olden days, you sell out of your harvested yams to plant for next season but nowadays, you go borrowing money to buy yam seedlings for planting.

Another woman in an FGD at Alibaruhu, Abakaliki Local Government Area supported the idea when she said:

When our husbands cultivate a large expense of land, they will not harvest much due to poor soil fertility. Sometimes we might plant like 5000 yam seedlings and during harvest, we will harvest the same size of yams we planted. Is that business? It draws us back.

The officer in-charge of environment in Ikwo Local Government Area in a KII also provided more signs when he said:

I can say that eh, if you come to Ikwo Local Government Area, land degradation has been affecting most of part of Ikwo, especially Ndufualike. If you come to Ndufualike there is lots of erosion, scattered everywhere. There is lots of land pollution that affect most of the area you might have passed or come across particularly in Ndufualike area, that eh..... even... our farmers cannot cultivate the land because of that degradation and preferable erosion that is affecting the land and with that type there is a low eh yield of crop in the area.

The researcher asked the respondents to give a general appreciation of the nature of land productivity. Their views were as presented in Figure 4.1.

Figure 4.1 shows that majority 214(73.5%) of the respondents said, land productivity is declining, 61(21%) said it is just adequate (moderate). Few 13(4.5%) believes that the productivity of their land is increasing and even fewer number 3(1.0%) did not respond, thus it is an established fact that the people are experiencing difficulties from degradation of their land through low productivity of the land.

The severity of impact of poor crop yield and timing of the decline was presented in figure 4.2.

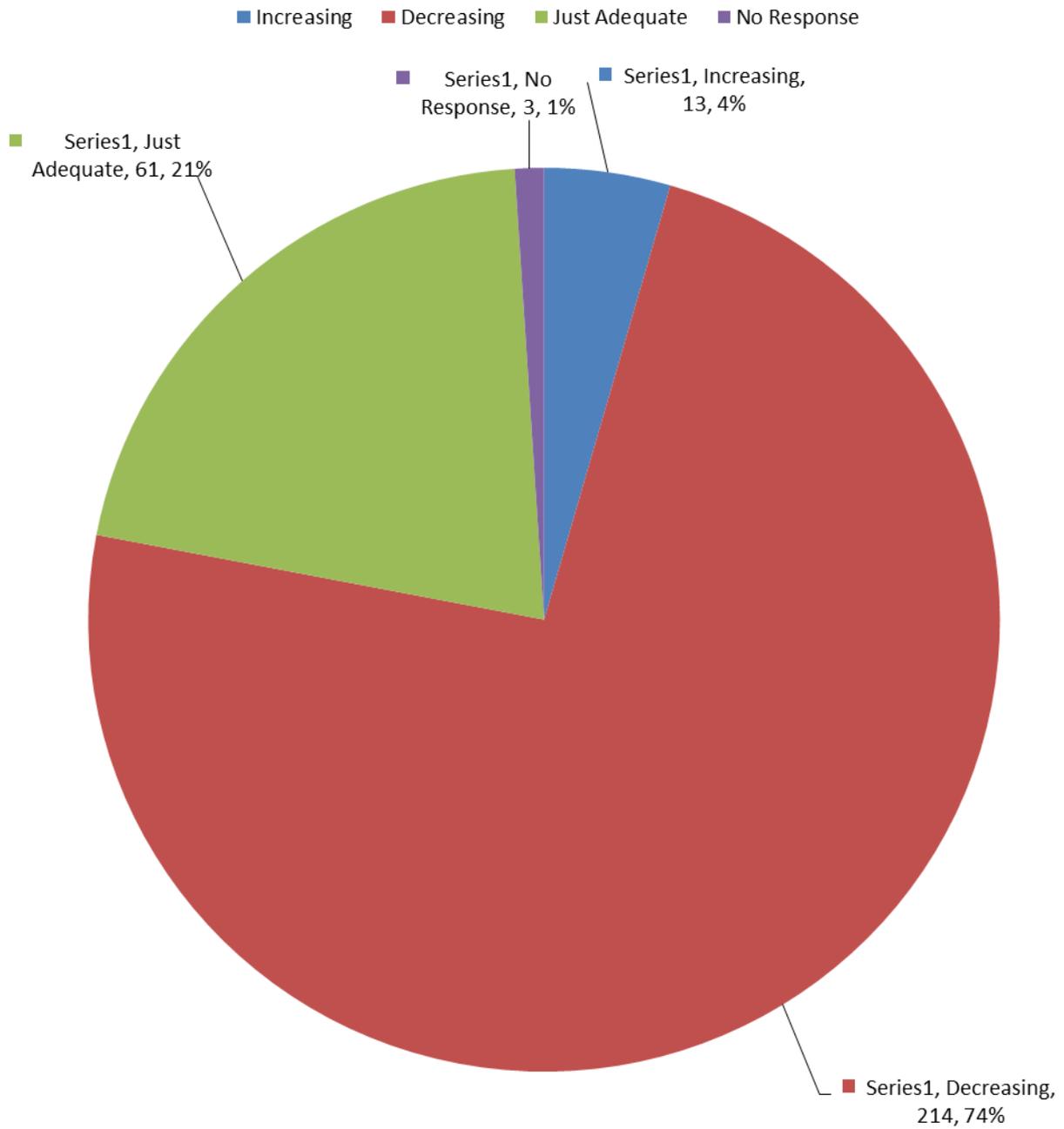


Fig. 4.1: Respondents' Views on Rate of Land Productivity

Source: Field Survey, 2011

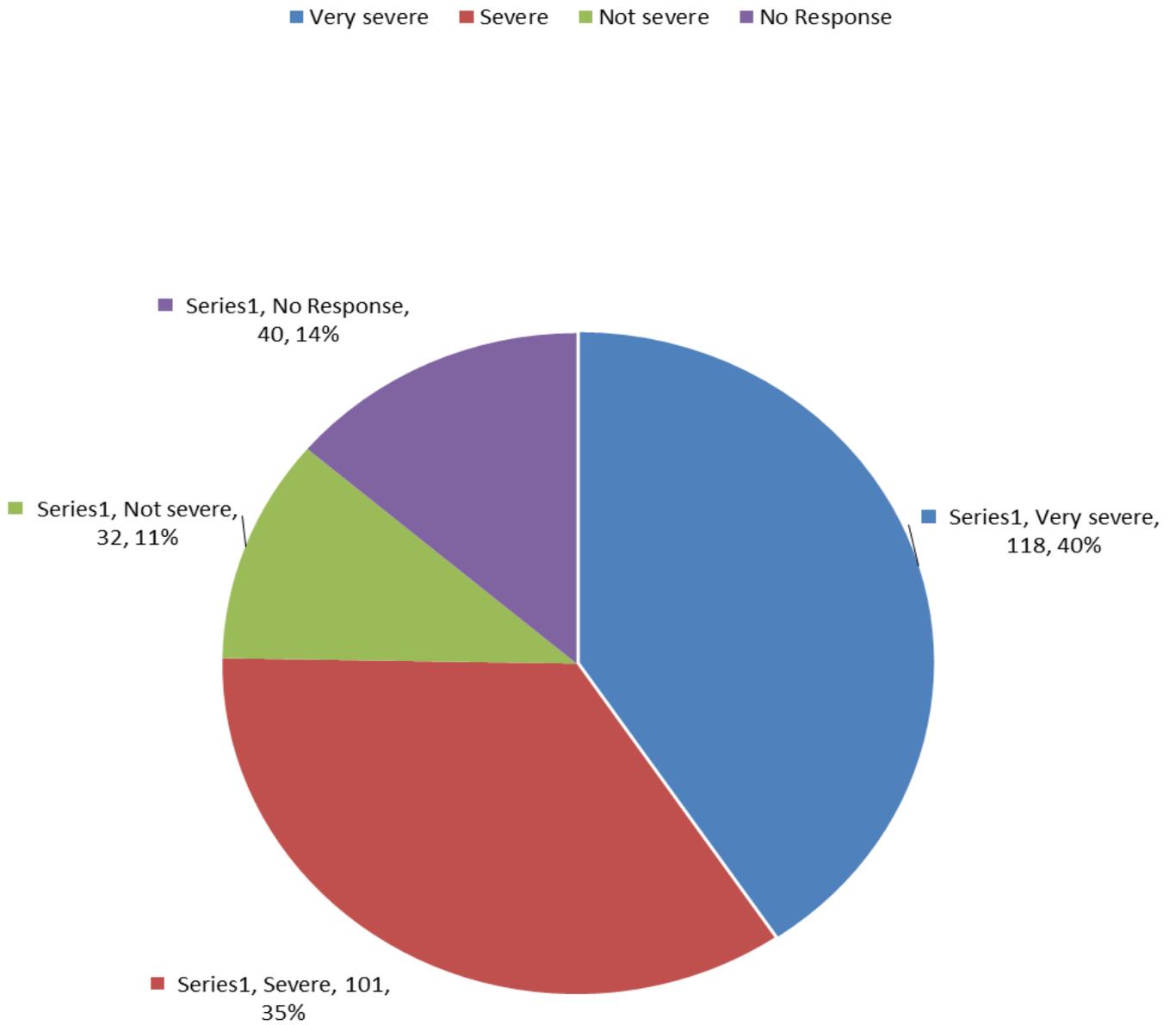


Fig . 4.2: Respondents' Views on the Rate of Severity of Decline in Land Productivity

Source: Field Survey, 2011

Figure 4.2 shows that as much as 118(40.5%) see the decrease in productivity (land degradation) as very severe, another large number of the respondents 101(34.7%) ranked the decrease as just severe and 32(11.0%) see the decrease in productivity as not severe. In response to a survey question on the timing of the decline in land productivity, 147(50.5%) respondents believe that the decline in productivity has been on for the past 10 years and 29.2% believe that the decline in land productivity had been on for 20 years. Some qualitative data supports this.

A woman from Ishiagu-Enyigba said in response to FGD question on when degradation of soil started: “I cannot say exactly when it started but since I became matured, I knew the land to be degraded”. In a semi-structured interview, with a retired police officer in Ogidiga in Ikwo Local Government Area, he said in reaction to timing of degradation of land:

...we started to feel it when they started this mining here, which have not taken long. Before the civil war, mining here was so intensive. By that time, it was so strong, after the civil war, the miners packed away totally, but now, mining has started again.

From the quantitative and qualitative data, it was gathered that the nature of degradation in the study area is not the acute type, but is the chronic and gradual degradation of the topsoil over a period of time.

4.2.2 Causes of Land Degradation in Ebonyi State

Data on causes of land degradation were sourced from survey instruments and from FGD. The data are presented in Table 4.6 and from excerpts from qualitative data.

Table 4.6: Respondents suggested Reasons for Declining Land Productivity

Suggested Reasons	Frequency	Percent
Over cultivation of land	66	22.7
Bad Farming Practice	62	21.3
Mining	52	17.9
Natural Causes	25	8.5
Lack of Input	10	0.3
Grazing	8	2.7
Land tenure system	5	1.7
Few Extension workers	1	0.3
No Response	62	21.3
Total	291	100.0

Source: Field Survey, 2011

Table 4.6 shows that a major cause of land degradation is over cultivation of land 66(22.7%). This is closely followed by bad farming practices 62(21.3%) and mining activities 52(17.9%) a closer look at their responses shows that the causes of land degradation in the area are all related to human activities. This is corroborated from excerpts from qualitative data.

A male focus group discussant from Umunaga, Uburu said:

Yes, the major factor is lack of fallowing, if the land is not allowed to fallow, you will continue to cultivate one piece of land every year. The change on the crop also affects yield. When the same variety of rice is cultivated on a piece of land always, the yield will start dropping, you take care of land the way you take care of children. The land is over used.

When asked, why people are overusing the land, a male FGD discussant from the same Unumaga, Uburu said:

It is due to lack of fertile land. The land gets exhausted just like human beings. In the olden days, we used to go to the farms far away but this days, everybody wants to cultivate the land close to them because they don't have the strength to go further afield.

Commenting on the cause of poor crop yield, another male discussant added:

..... Another problem is that due to delay in supply of fertilizer and lack of finance to get them, it may be too late to apply them. Again, people are no longer strong enough to cultivate their own farms let alone offer their labour to work on other people's farm. Sometimes, if it is time for weeding, you cannot hire labourers to weed your farm that can also affect your yield. Due to the changes in the society, people no

longer want to farm but prefer white-collar jobs. During the days of our great grandfathers, they had enough labourers but nowadays everybody wants to play or act as big men.

A male discussant from Ihenu Uburu in supporting the case of desperation to eke out a living from the available land said:

...for example, when there is only one man there will be enough land for him to farm on but when he starts giving birth, the lands are now shared among his children and that is why lands are no longer left to fallow. If you don't have any other land to shift to, you continue cultivating the same piece of land.

A male discussant from Alibaruhi in an FGD added:

It is due to continuous cultivation. Where we have large land, rain does not allow us to go there to cultivate the land, so we are calling on government to help us so that we can farm on those lands. Due to flooding people hardly get there.

In the same discussion, another man added:

It is not as if we are the cause it is due to the presence of mineral deposit. Wherever there is salt or lead, the soil is always hot and the soil will not yield well and if we cultivate near the river, the flood will disturb us, and there is no compensation from government.

A woman discussant from Ishiagu Enyigba in support of natural causes said:

It is because of the presence of lead.

When asked whether the minerals have always been in their land, and why its degrading effects are felt more, a male discussant from Ishiagu Enyigba said:

...they have always been there. We used to cultivate the land before and have a good yield, but due to over-population, so many people are now cultivating the land making it more exhausted and because of that the impact of the presence of the mineral is felt more.

The HOD of Health Abakaliki L G A in a KII elaborated on this saying:

When miners are working they unearth the soil, so you know the top soil is usually more fertile than the underground layers now pushed up and when they are trying to mine and they find water in the pit, they now use pump to drain the water . the water being drained from underground is already contaminated with lead and zinc and acidic .We discover that wherever such water flows through, grasses are dying ,which means a chemical is killing those grasses and it is part of the degradation we are talking about .The impact is that such mining sites are not fit again for cultivation.

So both human activities and natural deposits cause environmental degradation in Ebonyi state.

4.2.3 Engendering the Causes of Land Degradation in Ebonyi State

The issue of whose activities degrade the land more than the other was posed to find out the gender whose role should be looked into critically in mitigating the impact of environmental degradation in the area. The findings are presented in Fig. 4. 3.

Figure 4.3 shows that 263(90.0%) men degrade land more than women and the details on why respondents chose men or women are presented in Table 4.5.

The table shows that majority of the respondents 184(63.2%) reported that men engage in physically demanding activities on the land such as clearing farmlands excessive tilling of land, bush burning, mining, application of fertilizer, commercial

agriculture, and hunting. While women 26(8.9%) engage in less physically demanding activities on the land such as fetching of firewood, weeding and multiple cropping for subsistence. It therefore means that men in carrying out their gender roles degrade the land more than women in the study area.

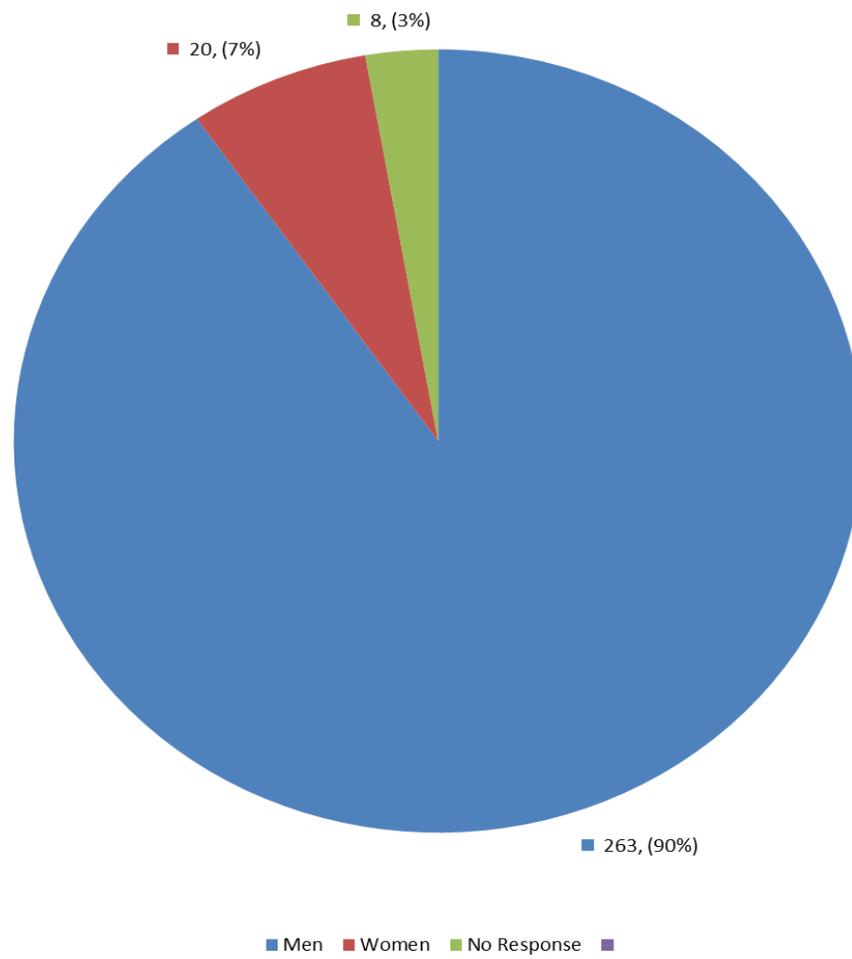


Fig. 4.3: Respondents' Views on Which Gender Degrades the Land More

Source: Field Survey, 2011

Table 4.7: Respondents' Reasons for Choice of who Degrades the Land more

Suggested Reasons	Frequency	Percent
Men engage in more physically demanding activities on the land	184	63.2
Female engage in less physically demanding activities on the land	26	8.9
No Response	81	27.8
Total	291	100.0

Source: Field Survey, 2011

4.2.4 Forest Degradation in Ebonyi State

To investigate the rate of degradation of forests in the study area, the ratio of the number of forests that existed 10 years ago over the number of forests existing now was computed. The mean of the responses and the associated coefficient of variation are presented in Table 4.6.

The table shows that there is a general decrease (70%) of forests in the study area. It also shows that the decrease is more severe in the Southern part of Ebonyi State (50-60%) than in the Central and Northern parts of Ebonyi State (80 – 90%)

Data from survey also shows that 174(59.8%) are aware that original plants exist in the forests presently and 115(39.5%) believe that the original plants and herbs are no longer available. The key informant interview with a Head of Department of Health and Environment in Abakaliki Local Government Area corroborated this, when he said:

Yes, there used to be forest in almost all the communities. Now we discover that even the timber shops in Abakaliki no longer have wood from this locality. The woods are woods from other states and the quality of the woods is nothing to write home about. People accept these types of woods now because the old ones are gone. It is difficult to have hard woods and that is the kind of degradation. As I said, there is virtually no community that can boast of a thick forest.

From the FGD, and semi-structured interview it was gathered that most of the forests now contain secondary vegetation made up of herbs and plants that do not have the original values that people derive from forests. This was captured in an interview with a male from Ishiagu Enyigba when he said “*Men in our community here, we respect our forest because our forest is one a place of security for us.....*”

Table 4.8: Ratio of Number of Forests in the Community Presently Compared to the Number of Forests in the Last 10 Years

Community	Mean of the ratios	Coefficient of Variation
Umunaga-Uburu	0.6	67.2%
Ihenu-Uburu	0.5	37.2%
Ishiagu-Enyigba	0.8	31.8%
Alibaruhi-Enyigba	0.9	21.8%
Ogidiga-Ndufu	0.8	28.7%
Enyim-Agalagu-Ndufu	0.8	26.5%
Overall	0.7	37.0%

Source: Field Survey, 2011

4.2.5 Causes of Forest Degradation in Ebonyi State

The respondents were requested to rank their views on reasons for forest degradation, in a four point Likert response scale as shown in Table 4.7

Table 4.7 shows that most of the respondents, 188(64.6%) strongly agree that bush burning is responsible for forest degradation. This is followed by commercial logging of wood, 125(43.0%), clearing of forests for farming, 109(37.5%), clearing forests for building homes, 94(32.3%) and fetching of firewood, 43(14.8%) is least on the scale.

The Chief Environmental Officer in Ohaozara Local Government Area corroborated the fact that bush burning is a major cause of deforestation in her statement:

Forest, you know during the dry season, some of our people are hunters and so they set the bush on fire and this part of the country we do not have cow meat so we depend on bush meat for our protein. Bush burning by hunters degraded the forest.

4.2.6 Engendering the Causes of Forest Degradation in Ebonyi State

The opinion of the respondents as to whose activities degrade the forest more is presented in Table 4.9.

Table 4.9 present men as contributing more 279(95.9%) to forest degradation than do women 9(3.1%). This is because men engage in more physically demanding activities than women in the forest. Activities like timber lumbering, clearing farmland through bush burning, clearing forests for settlement and for setting up development projects are often initiated and carried out by men. These have more degrading effects on the forest than mere gathering of firewood, food or fodder that women engage in for subsistence.

Table 4.9: Ranking of Respondents' Views on Reasons for Forest Degradation

Reasons	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
Bush Burning	188(64.6)	87(29.9)	8(2.7)	8(2.7)	291(100.0)
Commercial Timber Logging	125(43.0)	108(37.1)	36(12.4)	22(7.6)	291(100.0)
Clearing of Forests for Farming	109(37.5)	118(40.5)	29(10.0)	35(12.0)	291(100.0)
Clearing of Forests for Settlement	94(32.3)	97(33.3)	55(18.9)	45(15.5)	291(100.0)
Fetching of Firewood	43(14.8)	130(44.7)	75(25.8)	43(14.8)	291(100.0)

Source: Field Survey, 2011

Table 4.10: Major Contributors to Forest Degradation

Major contributors to forest degradation	Frequency	Percent
Men	279	95.9
Women	9	3.1
No Response	3	1.0
Total	291	100.0

Source: Field Survey, 2011

4.2.7 Degradation of Sources of Water in Ebonyi State

Water is a major natural endowment in the environment necessary to sustain life on earth. When water is not available it brings about social disharmony, thus people go far away to search for water. In rural communities, water exists in rivers, streams and ponds. Sometimes, these bodies of water become shallow or disappear completely, so degradation of water sources can be determined from number of streams available presently in the village and the number known to exist in distant past (20 years) ago. Table 4.11 shows the number of water sources presently in the study areas.

Results presented in Table 4.9 show that majority of the respondents 205(70.4%) still have three or more water sources available within their neighbourhood. Those who have two are 73(25.1%) and those who have one are 13(4.5%). Also, results from survey show that a large fraction, 219(75.3%) believe that the number of water sources available within their neighbourhood had changed since 20 years ago, while 72(24.7%) said they did not observe any changes.

Though water bodies exist, the nature of the water available in the ponds, streams and rivers are also degrading in quality. The investigation on the nature of water in the community is presented in Table 4.11. The source of the data is from the survey instrument.

Table 4.11 shows that majority see the nature of water sources they access as coloured 117(40.2%) and muddy 92(31.6%) and these are all signs of degraded natural water sources. Since other sources are either not available or not easily affordable the people use it like that.

Table 4.11: Number of Water Sources in the Community

Number	Frequency	Percent
One source	13	4.5
Two sources	73	25.1
Three or more sources	205	70.4
Total	291	100.0

Source: Field Survey, 2011

Table 4.12: Nature of Water from the Sources

Nature	Frequency	Percent
Clear	45	15.5
Coloured	117	40.2
Muddy	92	31.6
Salty	24	8.2
Smelly	7	2.4
Drying up	6	2.1
Total	291	100.0

Source: Field Survey, 2011

4.2.8 Causes of Water Source Degradation in Ebonyi State

Investigation from survey instrument on suggestions by respondents' as to what could be responsible for the deteriorating nature of water is shown in Table 4.12.

Table 4.12 shows flooding 123(42.3%) followed by pollution from fallen leaves in river banks as major causes of water source degradation in the area.

A key informant, the Chief Environmental Officer in Ohaozara Local Government Area reported:

We are not observing any environmental cleanliness. The aquatic life is suffering, we do not have refuse dump centers and all the refuse are washed into the river and these pollute the water. We have only one source of water, (Esu River), and both human excreta and other refuse are washed into the river.

A female discussant from Ihenu Uburu speaking on the causes of water degradation said: *“Long period of dry season and flooding during raining season are the two factors affecting our water sources”*. Another discussant from the same group added,

...dry season vegetable farming engaged in by women around river sources. In the olden days, the trees around the river sources, cast shades on the river, which makes the river to be cool but today due to food scarcity and poverty, our women take on dry season vegetable cultivation and they cut down these trees. Normally, water sources create their own pathway but now the women direct the water sources towards their farms. Due to the cutting down of these trees, by the rivers' banks the water sources are now exposed to flooding. In fact, last year two persons died in the floods and government is not doing anything about it. No bridge, no good roads, so the farmers as well as residents living across the river swim across in order to carry on their businesses.

Table 4.13: Respondents' Views on what is Responsible for the Colour of Water

Reasons	Frequency	Percent
Flooding	123	42.3
Pollution from leafs in river bank	71	24.4
Dumping of refuse	14	4.8
Use of chemicals for fishing	12	4.1
Others	12	4.1
Drying up process	8	2.7
No Response	51	17.5
Total	291	100.0

Source: Field Survey, 2011

The opinion of the respondents on the causes of the shallowness of water bodies is presented in a Likert response scale in Table 4.14. This was sourced from the survey instruments.

Table 4.14 shows dry season effect 154(52.9%) as a major cause of shallowness of water source, followed by natural filling by sand from erosion 145(49.8%) and human induced erosion such that aside from natural dry season effect, human activities are major causes of shallowness of water sources in the area.

Other ideas from the respondents as to the causes of shallowness of the water sources are given in Table 4.15.

Table 4.15 shows that climate change is a major cause of water source degradation as indicated by 95(32.6%).

4.2.9 Engendering the Causes of Water Degradation in Ebonyi State

To be able to mitigate the impact of water degradation, it is necessary to know whose gender roles cause the degradation of water sources in the community. Table 4.15 shows the distribution of the respondents according to whose activities are more responsible for the shallowness of water bodies than the other. The data was sourced from the survey instrument.

Table 4.16 shows that both men 149(51.2%) and women 132(45.4%) activities contribute almost equally to water source degradation.

Table 4.16 presents further suggestions given by the respondents on how playing out the different gender roles affect the water bodies in the community. The source of the data is from survey instrument.

Table 4.14: Ranking of Respondents' Views on Reasons for Growing Shallowness of their Ponds Streams and Rivers

Reasons	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
Dry Season	154(52.9%)	113(38.8%)	16(5.5%)	8(2.7%)	291(100.0%)
Natural Filling by Sand From Erosion	145(49.8%)	117(40.2%)	15(5.2%)	14(4.8%)	291(100.0%)
Human Induced Erosion	68(23.4%)	142(48.8%)	54(18.6%)	27(9.3%)	291(100.0%)
Excessive Pumping of Water	23(7.9%)	70(24.1%)	120(41.2%)	78(26.8%)	291(100.0%)

Source: Field Survey, 2011

Table 4.15: Reasons given by Respondents on the Causes of Shallowness and Drying of Streams

Reasons	Frequency	Percent
Natural Events (climatic change, long period of drought, siltation)	95	32.6
Dumping of refuse	26	8.9
Bad Fishing Practices, (blocking of the river by fishermen, draining the water for fishing)	24	8.3
Mining	20	6.9
Farming around streams and dry season irrigation, cattle rearing	11	3.7
Construction activities (Building and roads)	6	2.1
Industrial use of water	4	1.4
Logging of timber	4	1.4
Domestic use of water	1	0.3
No response	102	35.1
Total	291	100.0

Source: Field Survey, 2011

Table 4.16: Respondents' Views on who contributes more to Water Degradation

Major Contributor	Frequency	Percent
Men	149	51.2
Women	132	45.4
No Response	10	3.4
Total	291	100.0

Source: Field Survey, 2011

Table 4.17: Reasons for Choosing who Degrades Water

Reasons	Frequency	Percent
Male roles have depleting effect on water sources	109	37.5
Female roles have polluting effects on water sources	81	27.8
No response	103	35.4
Total	291	100.0

Source: Field Survey, 2011

Table 4.17 shows 109(37.5%) of the respondents explaining that male roles like fishing with chemicals, draining a whole water body to catch fish and irrigation have depleting effects on water source while 81(27.8%) opined that women's activities like washing and fermenting cassava inside water sources have polluting effects. Since two of them are forms of degradation both men and women contribute greatly to water source degradation. Both of them should be targeted in mitigating water source degradation in the area.

4.3 MINERAL DEPOSIT AND ENVIRONMENTAL DEGRADATION IN EBONYI STATE

The presence of mineral deposit and the manner in which they are tapped can have degrading effects on the environment. This was also investigated using the survey instrument and presented in prose. Respondents were asked if there are some natural resources being tapped in their community, 278(95.5%) said yes while only 13(4.5%) said No.

In the course of the transect walk, it was observed that there are mining camps at Enyigba, Abakaliki Local Government Area, Ndufu Alike in Ikwo Local Government Area where they mine zinc/lead and other precious stones (shown in Plate 4.1). A security guard to one of the mines said that foreign miners were in charge before the Nigerian Civil War, but in recent times, local miners have taken over.

A female discussant in Enyim Agalagu said

“Another cause of soil degradation is the mineral resources we have in our land. It affects crop yield. The salt in the soil affect yam, cassava yield. Any farm land where these minerals resources are located is like a cursed land because anything you plant there will not yield well”.



Plate 4.1: A deep mining pit in Enyigba, Abakaliki Local Government Area

From Uburu in Ohaozara Local Government Area, some salt filtration camps were sighted during the transect walk, and according to a woman at the site “...*although local salt production is fast fading away, Uburu women would not agree to the commercialization of salt production because it will deny them the right of ownership and control over that natural endowment*”. Picture of a salt camp is shown in Plate 4.2.

A closer look at the environment of the camp in Plate 4.2 shows that there are no green vegetation around the camp a sign of the possible degrading effect of salt on the soil. All over the towns and even in neighbouring towns like Okposi, this type of salt filtration camps are taking over valuable farmlands causing excessive salination and degrading the farmlands,

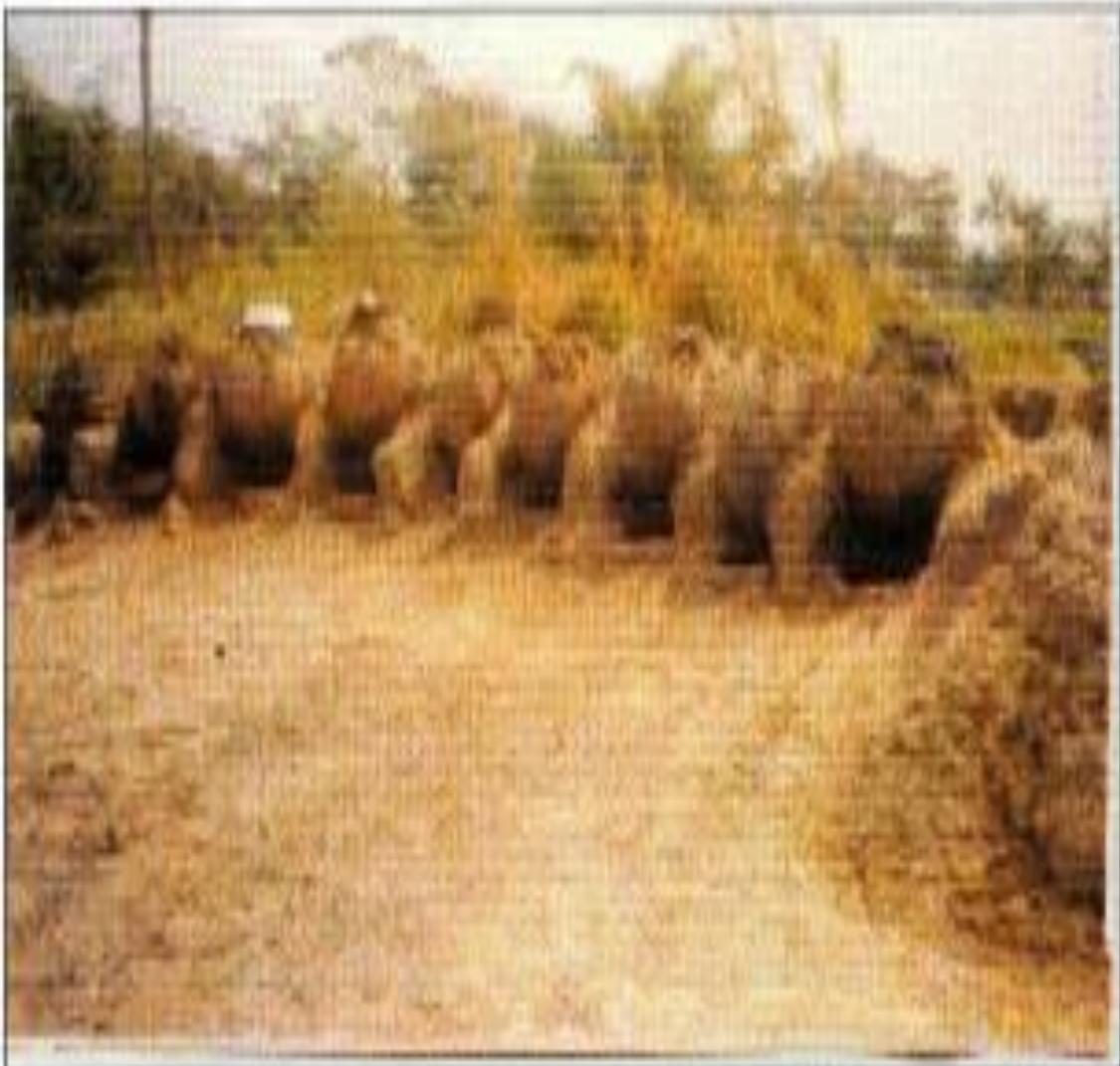


Plate 4.2: A Typical Salt Filtering Camp in Uburu, Ohaozara Local Government Area of Ebonyi State

4.4 SOCIO-ECONOMIC IMPACT OF ENVIRONMENTAL DEGRADATION

This section deals with the social and economic impact of degrading environment on the people in the rural communities under investigation. The impact is presented according to which constituent of the environment is degrading and the perception of the people as to the effects of the degradation.

4.4.1 Impacts of Land Degradation in Ebonyi State

When land is degraded, there are several impacts it has on both social and economic lives of people living in such environment. To investigate the impact of land degradation on the people, the respondents were asked to rank the effects of degrading land on them in a Likert Response Scale ranging from 1 strongly agree to 4 strongly disagreed. The results from this survey question are presented in Table 4.18.

Table 4.18 shows that majority 173(59.5%) of the respondents strongly agreed that low crop yield was an impact of land degradation followed by declining income 100(34.4%). It is actually this cry of crop failure after every harvest period and the general socio-economic hardship observed by the researcher that informed the interest in this topic.

Other socio-economic impacts were sought for in an open ended question and their responses classified as economic and social impacts and presented in Table 4.19. The source of the data is from the survey instrument.

Table 4.18: Respondents Ranking of the Impact of Land Degradation

Impacts	Strongly			Strongly	Total
	Agree	Agree	Disagree	Disagree	
Low Crop Yield	173(59.5)	100(34.4)	14(4.8)	4(1.4)	291(100.0)
Declining Income	100(34.4)	110(37.8)	54(18.6)	27(9.3)	291(100.0)
Spending More Time On Farming	83(28.5)	113(38.8)	72(24.7)	23(7.9)	291(100.0)
More Labour	78(26.8)	111(38.10)	79(27.1)	23(7.9)	291(100.0)
Reduced Access To Fertile Land	68(23.4)	97(33.3)	70(24.1)	56(19.2)	291(100.0)
Land Dispute	15(5.2)	75(25.8)	130(44.7)	71(24.4)	291(100.0)

Source: Field Survey, 2011

Table 4.19: Respondent' List of Impact of Land Degradation as Felt in their Community

Classification	Frequency	Percent
Economic (low crop yield, high cost of production, commercial mining, overgrazing and salination)	112	38.5
Social (apathy on farming activities, communal clashes, migration, hunger, unemployment and colouration of water)	79	27.1
No response	100	34.4
Total	291	100.0

Source: Field Survey, 2011

Table 4.19 shows that economic impact 112(38.5%) of land degradation is felt more than social impact 79(27.1%) in the area. These economic impacts eat deeper into the people's sources of livelihood and in fact elicit the social impacts.

This is supported in a KII with the Head of Department of Health Abakaliki LGA when he said,

The impact is the plants are no more yielding as before because of land degradation. It reduces the economy of the people because they are no more getting as much as they want and poverty is increased....

And this was supported by a woman discussant in an FGD with Ihenu women, *“there is general food scarcity and things are expensive, in fact, some families cannot feed adequately.*

Other types of social impact mentioned in the qualitative data are in form of changes in cultural practices brought about by degrading land productivity.

A man from Ishiagu Enyigba said during a semi-structured interview:

Yes, actually, just like I mentioned a new yam festival that is always observed during August, there is a slight change that this doesn't occur in August, it is now observed in September.

When asked to say what is responsible for the change in the time, he said:

The thing that resulted in the change is the fact that our land is not yielding well, and we don't believe in getting things premature. So before these day our yam use to be mature before that day but now if we plant our yam it does not mature before August that is why the festival is usually shifted to the next month.

4.4.2 Impact of Forest Degradation in Ebonyi State

To investigate the impact of forest degradation on the people in the research area, the respondents were asked to rank some selected impacts of forest degradation. The result of this ranking is presented in table 4.20.

Table 4.20 shows that disappearance of timber 88(30.2%) is a strong impact of forest degradation. However, increasing erosion 68(23.4%), lack of shades 68(23.4%), lack of medicinal herbs 68(23.4%), and difficulties in getting firewood 63(21.6%) are equally impact of forest degradation. There was general agreement that all the suggested impacts are felt in the study area even though not so strongly.

Table 4.20: Respondents' Ranking of Impacts of Forest Degradation

Impacts	Strongly agree	Agree	Disagree	Strongly disagree	No response	Total
Disappearance of timber	88(30.2)	160(55.0)	15(5.2)	24(8.2)	4(1.4)	291(100.0)
Increasing erosion	69(23.7)	147(50.5)	39(13.4)	33(11.3)	3(1.0)	291(100.0)
Lack of shade	68(23.4)	160(55.0)	35(12.0)	28(9.6)	0(0.0)	291(100.0)
Loss of medicinal herbs	68(23.4)	155(53.3)	31(10.7)	34(11.7)	3(1.0)	291(100.0)
Difficulties of getting fire wood	63(21.6)	138(47.4)	61(21.0)	24(8.2)	5(1.7)	291(100.0)

Source: Field Survey, 2011

4.4.3 Impact of Water Degradation in Ebonyi State

To investigate the impact of degradation of water sources on the people in the research area, the respondents were asked to rank some suggested impacts of water degradation. The result of this ranking is presented in Table 4.21

Table 4.21 shows that all the respondents generally agreed that all the suggested impacts of water degradation affect them. These ranges from reduced domestic sanitation 152(52.2%) to more money for buying water 149(51.2%), more time in search of water 145(49.8%), difficulty in fishing 138(47.4%), increase in water borne diseases 129(44.3%), and difficulty in irrigation. There was strong agreement that increase in water-borne diseases 81(27.8%) is a major impact of water source degradation in the area compared to the rest.

Table 4.21: Respondents' Ranking of Impacts of Water Degradation

Impacts	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
Reduced domestic sanitation	51(17.5)	152(52.2)	50(17.2)	38(13.1)	291(100.0)
More money spent in buying water	66(22.7)	149(51.2)	42(14.4)	34(11.7)	291(100.0)
More time for search of water	69(23.7)	145(49.8)	47(16.2)	30(10.3)	291(100.0)
Difficulty in fishing	68(23.4)	138(47.4)	48(16.5)	37(12.7)	291(100.0)
Increase in water-borne diseases	81(27.8)	129(44.3)	52(17.9)	29(10.0)	291(100.0)
Difficulty in irrigation	41(14.1)	81(27.8)	115(39.5)	54(18.6)	291(100.0)

Source: Field Survey, 2011

4.4.4 Impact of Tapping Natural Resources in Ebonyi State

The impact of mining the mineral deposit found in the study area was also investigated. Lead, zinc, salt and other precious stones were mentioned by the people as mineral deposits in the area. Presently, those minerals are tapped locally using local methods. This impact greatly on the people and the environment as presented in Table 4.22

Table 4.22 shows that all the respondents generally agreed that all the suggested impacts of tapping natural resources in the environment affect them. However, there is a strong agreement that extensive excavation 110(37.8%) is a major impact compared to the rest. This is supported by the FGD data.

A male discussant from Alibaruhi said, “There is so much heat in our environment due to the presence of these minerals and they make us uncomfortable”

Some indigenes excavate for lead and other precious stones as a means of coping with dwindling income, even when it is neither lucrative nor environmentally friendly. A female discussant from Ishiagu-Enyigba re-iterated this.

They use hoe and pick axe and sometimes they dig from January to December without hitting at the lead. And when they are not successful they pact their implements and go home.

Another female FGD discussant from Enyim Agalagu in Ikwo Local Government Area when asked the cost of a bag of lead, said

If it is oxide lead, we sell it for N3, 500 or N4, 000. But if it is zinc, we sell it N500 –N1000, but if there is increase in price we sell it for N1,500. But before you get that one bag hmn.....
hmn..... its difficult.

The drudgery and the low income that accrue from local mining were presented as serious socio-economic impacts.

Table 4.22: Respondents' Opinions on Impacts of Tapping Natural Resources in the Environment

Opinion	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
Salination of Water and Soil	55(18.9%)	153(52.6%)	58(19.9%)	25(8.6%)	291(100.0%)
Extensive Excavation	110(37.8%)	139(47.8%)	31(10.7%)	11(3.8%)	291(100.0%)
Destruction of Forest	82(28.2%)	137(47.1%)	47(16.2%)	25(8.2%)	291(100.0%)
Damage to Farm Land	78(26.8%)	116(39.9%)	64(22.0%)	33(11.3%)	291(100.0%)

Source: Field Survey, 2011

Destruction of forest is another impact of tapping natural resources in the area as agreed by 137 (47.1%) and 82 (28.2%) who strongly agreed. The reason is that explorers can go to any extent including clearing forests to ensure that they tap these minerals. With respect to damage to farmland as an impact of tapping resources, 116(39.9%) agreed. This was re-iterated by a woman farmer interviewed in the course of the transect walk. The woman said:

To have lead and zinc deposits in one's farm land is a bad omen, because the crops will not do well. If the pits are flooded and the water enters into your farm or nearby river, every living thing there suffers.

Sometimes in digging these pits the miners do hit the water table and use draining tubes to drain out the contaminated water unto the environment. This has degrading effects on the soil, vegetation, and water sources.

In summary, exploitation of natural resources in the study area has impacted heavily on the environment in the study area. There is widespread salination of land and water bodies, large scale destruction of landscape, deforestation and pollution of farmlands with sludge and residues from the extraction processes.

4.5 IMPACT OF ENVIRONMENTAL DEGRADATION ON GENDER ROLES

The way people perceive and discharge their gender roles can affect the environment and on the other hand, environmental degradation can affect people's ability to play out their gender roles and the kind of gender relation that obtains in the community. The investigation on how these play out in the study area is presented in this section.

4.5.1 Perception of the Gender Roles in Farming Communities in Ebonyi State

In this section classification of the activities pertaining to use of the environment according to gender roles is presented in Table 4.23.

Table 4.23 shows that both men and women gather medicinal herbs, apply fertilizer to crops, harvest crops, plants crops, transport crops, and clear land for farming as was indicated by 219(75.3%), 218(74.9%), 195(67.0%), 186(63.9%), 161(55.3%), and 137(47.1%) respectively.

Predominantly women's roles include gathering of firewood, weeding and fetching water as was indicated by 265(91.1%), 258(88.7%), and 228(78.4%) respectively. While predominantly men's role include the use of tractors to prepare farmland, tilling of farmland, fishing and logging of wood for sale as was indicated by 242(82.2%), 211(72.5%), 205(70.4%), and 120(41.2%) respectively. However, it is worthy to mention that these days there are no rigid gender division of role. Since after instructing that the respondents specify which gender plays a particular role, one still observed that the roles cross-cross.

The respondents were asked if changes in environment have affected their gender roles, in the last 20 years, and, 241(82.8%) said No.

Table 4.23: Respondents' Perception of the Gender Roles in Farming Community

Gender Roles	Responses			
	Male	Female	Both	Total
Gathering of Medicinal Herbs	59(20.3)	11(3.8)	219(75.3)	281(100.0)
Application of Fertilizer To Crops	58(19.9)	12(4.1)	218(74.9)	288(100.0)
Harvesting of Crops	74(25.4)	19(6.5)	195(67.0)	291(100.0)
Planting of Crops	21(7.2)	82(28.2)	186(63.9)	289(100.0)
Transportation of Harvested Crops	69(23.7)	59(20.3)	161(55.3)	289(100.0)
Clearing of Land For Farming	50(17.2)	101(34.7)	137(47.1)	288(100.0)
Gathering of Firewood For Cooking	5(1.7)	265(91.1)	19(6.5)	289(100.0)
Weeding of The Farms?	3(1.0)	258(88.7)	28(9.6)	289(100.0)
Fetching of Water For House Use	7(2.4)	228(78.4)	18.6	289(100.0)
Using Tractors To Prepare Land	242(83.2)	2(0.7)	26(8.9)	270(100.0)
Tilling of Land For Planting	211(72.5)	8(2.7)	69(23.7)	288(100.0)
Fishing	205(70.4)	8(2.7)	76(26.1)	289(100.0)
Logging Wood For Sale	120(41.2)	101(34.7)	66(22.7)	287(100.0)

Source: Field Survey, 2011

4.5.2 Impact of Land Degradation on Gender Roles in Ebonyi State

To analyze the impact of land degradation on gender roles, a cross tabulation of the two variables is presented in table 4.24. Low crop yield (land degradation) was chosen as the dependent variable because it is a modal impact of land degradation as shown in table 4.23. Clearing land for farming (gender role) was chosen as independent variable because it is shown in table 4.23 as both male and female role.

The chi-square analysis shows that the calculated value of 16.563 is greater than the table value of 12.592. This implies that the land degradation variable (low crop field) has significant effect on gender role of land clearing for farming. This explicitly explains that because of the reduction in soil fertility resulting to low crop yield and the migration of more men to the city as reported earlier, the traditional gender role of men clearing the farm land was assumed by the females so as to fill the gap and cushion the effect of land degradation on crop yield. Furthermore, the observed response (count) from the field as indicated in the table reveals that 90 out of 170 respondents strongly agreed that land degradation variable (low crop yield) impact on gender role of land clearing for farming, while only 2 respondents out of 4 strongly disagreed. The wide disparity in the responses (strongly agreed & strongly disagreed) confirms the assertion.

Table 4.24: Cross-tabulation of Responses on Impact of Low Crop Yield and Clearance of Land for Farming

Level of agreement on impact of low crop yield	Responsibility for Clearing of land							
	Male		Female		Both		Total	
	Count	Exp.	Count	Exp.	Count	Exp.	Count	Exp.
Strongly agree	31	28.4	49	59.8	90	81.7	170	170
Agree	11	16.6	48	34.8	40	47.6	99	99
Disagree	4	2.3	4	4.9	6	6.7	14	14
Strongly disagree	2	0.7	0	1.4	2	1.9	4	4
Total	48(17%)		101(35%)		138(48%)		287(100%)	

Source: Field Survey, 2011; Pearson $\chi^2 = 16.563$, df = 6, p = 0.050

4.5.3 Impact of Forest Degradation on Gender Roles in Ebonyi State

To analyze the impact of forest degradation on gender roles, a cross tabulation of the two variables is presented in Table 4.25. Difficulty in getting firewood (forest degradation) was chosen as the dependent variable because use of firewood is a basic need in a rural community. Logging wood for sale (gender role) was chosen as independent variable because it is shown in Table 4.23 as both male and female role.

The chi-square analysis shows a statistical significant relationship between impact of forest degradation (difficulty in getting firewood) and gender role (responsibility for commercial logging of wood). The calculated chi-square value of 22.119 is greater than the table value of 18.548. This implies that because of the difficulty in getting fire wood which arose as a result of deforestation, women now venture into commercial wood logging to fill the gap. Related to this is the fact that the changing role of women in the study area has also placed financial burdens on the women as “bread winners” which is perceived to be the traditional role of men as against “housekeepers” which was the traditional role of women. As a result of the financial burden and the lucrative nature of wood logging, women are now engaging in commercial wood logging as a way of respite for their financial pressure.

Furthermore, logging of wood for sale is a modern male gender role, because of the physical strength required for this activity. For women to get involved in logging wood for sale and not only the traditional gathering of dead branches for domestic use, means a change in gender role. It may be that the deforestation observed in this study area has increased the commercial values of firewood and has pushed women into logging wood for sale.

Table 4.25: Cross-tabulation of difficulty in getting fire wood on the responsibility for commercial logging of wood

Difficulties of getting fire wood is an impact of forest degradation	Responsibility for commercial wood logging							
	Male		Female		Both		Total	
	Count	Exp.	Count	Exp.	Count	Exp.	Count	Exp.
Strongly agree	35	26.2	20	22.2	8	14.6	63	63
Agree	58	57.3	47	48.6	33	32.1	138	138
Disagree	21	24.5	17	20.8	21	13.7	59	59
Strongly disagree	4	10.	16	8.5	4	5.6	24	24
Total	118(42%)		100(35%)		66(23%)		284(100%)	

Source: Field Survey, 2011; Pearson $\chi^2 = 22.119$, df =6, p=0.005

4.5.4 Impact of Water Body Degradation on Gender Roles in Ebonyi State

To analyze the impact of water body degradation on gender roles, a cross tabulation of the two variables is presented in Table 4.26. Spending more time searching for water (water scarcity/degradation) was chosen as the dependent variable because water is a basic need in life. Fetching water for home use (gender role) was chosen as independent variable because it is shown in Table 4.23 as both male and female role.

The chi-squared analysis shows no statistically significant relationship between the respondents' perception of the impact water degradation (spending more time getting clean water) and gender role of fetching water for family use. This is shown by the lower calculated chi-square value of 16.793 to the table value of 16.812. This implies that the impact of water degradation (spending more time looking for clean water) do not invariably affect the gender role of fetching water for family use. The finding indicates that irrespective of the level of water degradation, the women still has the traditional role of fetching water. However, counted men who engaged in fetching water for family use could be accounted for by the few who are exceptionally dedicated to helping out in family chores as confirmed by the qualitative technique (FGD) employed in data collection. This shows that the role of fetching water for home use is still mainly that of women 227 (79%) as compared to number of men 7 (0.02%). This reveals that when water sources degrade, it is the women who suffer most because they have the role of fetching, storing, and using water at home.

Table 4.26: Cross-tabulation of spending more time looking for clean water and the role of fetching water for domestic use

More time spent in search of water is impacting on the gender roles	Who fetches the water?							
	Male		Female		Both		Total	
	Count	Exp.	Count	Exp.	Count	Exp.	Count	Exp.
Strongly agree	2	1.6	53	52.2	11	12.2	66	66
Agree	4	3.5	121	114.7	20	26.8	145	145
Disagree	1	1.1	27	36.4	18	8.5	46	46
Strongly disagree	0	0.7	26	23.7	4	5.5	30	30
Total	7(0.02%)		227(79%)		53(18%)		287(100%)	

Source: Field Survey; Pearson $\chi^2 = 16.793$, $df = 6$, $p = 0.010$

4.6 IMPACT OF ENVIRONMENTAL DEGRADATION ON GENDER RELATION

Although the quantitative data indicated that gender roles have not changed, some excerpts from qualitative data presented below show women as complaining of bearing more burdens of responsibility, now than before. This is an impact of environmental degradation on gender roles and relation.

A female discussant from Ihenu Uburu, commenting on how changing environment affect gender roles, said:

In terms of relationship between men and women, in the olden days, men use to shoulder family responsibilities but nowadays, women are left to do it. Even in the entire community, if there is any serious need and women do not step in to shoulder it, it will not register success. Before women only help men, but nowadays, women carry full family responsibilities.

Another woman also commented on this, *“It affects women more because a man will leave the house and the woman is left with the children who cry to her for food which she must provide.”*

On the other hand, Commenting on the straining family relationship due to excess workload resulting from environmental degradation a male discussant from Ihenu-Uburu said:

Abandoning family responsibility to women is not true because men go into polygamy in the olden days because of farm work, but nowadays, the women no longer work in their husband’s farms and that is why farm work is no longer thriving. Also in those days, men used to share their farmlands among their wives, but nowadays, especially when they

(women) have grown up children, they don't farm for their husbands. Everybody wants to be independent and want to own their own farms, leading to many men dying of hunger because their wives no longer cook for them. It is also not true that men have abandoned their responsibility for women, rather it is the women who feel reluctant to assist the men in taking care of the home; thereby leading to delay of progress and prosperity in the family. In the olden days, people called women "*Oriaku*" and not "*Okpataku*."

Another male discussant from Ihenu Uburu also added:

When the women go about their independent businesses, they forget their husbands and when he comes back from farm he is hungry and the arteries are weak and they may die in the process and the women will go into prostitution.

The researcher asked the women discussants from Ihenu Uburu why women agreed to shoulder more responsibilities than what women were used to before and one of them said:

It is because most of the men go out to drink and eat forgetting to care if other family members have eaten. Another contributory factor is that when they meet at their drinking joint, they gossip about their wives and how they live at home and how they threaten to divorce them if they do not shoulder some responsibilities. Another will say let her not feed her children, are they not for her, after all when they (children) travel to the city they will buy wrapper and other goodies for their mothers and all we get is hot drinks.

Asked why women accepted to shoulder men's responsibilities these days, the woman concluded:

This is because our husbands have pushed the care of children to us and if we should neglect the care of children it will affect us because we are the ones that gave birth to them. After all, men neither carry pregnancy nor breast-feed children. Therefore, women have to oversee the welfare of the children.

Furthermore the Officer in charge of environment in Ohaozara LGA in a KII added:

Even the hard and simple jobs men no longer do, it is the women that carry both light and hard work I do not know into what our men are turning. Many of the men are going into transport business living farm work to women.

Another female discussant from Alibaruhi capped it up by saying:

Women suffer a lot to train and feed the children and when you approach a man for assistance, he will ask you if you see him earning any income or do you want him to kill himself? After such comments, you have no option than to keep struggling to feed your children since you cannot abandon them.

These excerpts are all attesting to conflicts in gender relation. From the men's point of view, when asked if there is a link between changing gender roles/relations, and environmental degradation, a male discussant from Ihenu Uburu said:

Changes in gender relationship to me are linked to changes in development and civilization. By the time a woman starts competing

with fellow women in another family, she will want to be like the other women overnight. It is not necessarily because of land degradation. There are some families where men and women cooperate to take care of the family.

Another male discussant cut in and said, “No, if a man does not have enough money to sustain the family, the woman will be angry.”

In a semi-structured interview a woman from Umunaga, Uburu supported the view of the men when she said:

You know that we women have this habit that you can only be submissive when you are taken care of that is what I think low crop yield is bringing to our community.

In attempt to further investigate the link between the unfriendly gender relationships with environmental degradation the researcher asked the male discussants from Ihenu Uburu why men do not have enough money to take care of their families, one of them said:

It is because the land has degraded and the man no longer has enough income to take care of the family. At the end of the year, he can't buy clothes for the wife and children and take care of other family needs but the women won't understand that it is due to poor crop yield.

Another discussant in the group answered in affirmative:

Yes, there is a link between changes in gender relationship and environmental degradation. I remember when I was young, my father used to cooperate with my mother and her co-wives. They will cultivate a small portion and when the crop is harvested we are all happy; but nowadays, due to land degradation, no matter how much the husband

toils, they have nothing to show for it and so, instead of the women insisting on following the husband to toil, they rather struggle on their own. Most of the men who died are due to starvation from their wives. So am praying that the land will start yielding like before so that the men will take care of their wife's and family. Because of materialism, women think they can take care of the family but it won't work because I believe in a situation where a man will take adequate care of the family and the wife will be submissive to him.

From these qualitative data it is obvious that there is a nexus between poor crop yield and conflict in gender relation.

4.7 COPING STRATEGIES ADOPTED BY THE PEOPLE IN SOLVING ENVIRONMENTAL PROBLEMS

In event of changes that affect a group of people or a community, it is natural that people devise means to cope with adverse changes. The methods of coping with environmental degradation were investigated in the study communities and reported in this section.

4.7.1 Migration as coping strategy against impact of environmental degradation

When environment begin to degrade, one of the measures taken by people is to migrate. Table 4.27 shows the tendency towards accepting migration as a coping strategy in the study area.

The table 4.27 shows that more men 247(84.9%) accept migration as a coping strategy than women. More women 163(56.0%) accept staying back to regenerate a degraded environment than men 36(12.4%). This was expected because men are more mobile than women.

Table 4.27: Respondents' Views on Acceptance of Migration as a Coping Strategy usually adopted by Men and Women

Respondents' Views	Male Count(% within variable)	Female Count (% within variable)
Migrate to look for alternative jobs	247(84.9%)	124(42.6%)
Stay and seek for means of improving the environment	36(12.4%)	163(56.0%)
No Response	8(2.7%)	4(1.4%)
Total	291(100.0%)	291(100.0%)

Source: Field Survey, 2011

4.7.2 Coping with Degradation of Farmlands by Use of Technology

The technology of choice in dealing with farmland degradation is use of fertilizers. There are two types of fertilizers, chemical fertilizers; which are sometimes hard to obtain and may be detrimental to the environment and natural fertilizers which are prepared by the people and could be more effective. Table 4.28 shows the type of fertilizers that the people preferred to use irrespective of the effect on the environment.

Table 4.28 shows that more women 102(70.3%) prefer the use of chemical fertilizer than men 95(65.1%) but on the whole, there is a higher 197(67.7%) preference of use of chemical fertilizer than natural manure 90(30.9%) as technology for coping with degradation of farmland.

In an FGD with men from Ihenu Uburu, one of the discussants said:

Our land is no longer the way it used to be and we do not know if the cause is from the air. They suggested the use of fertilizer which we started using but we don't know if it is the fertilizer that is degrading the soil because when we were not applying it, our lands were yielding better, but now we are using fertilizer, we are getting poor yield.

Another discussant said:

Before, we used to buy foreign fertilizer and when we apply it to our crops, it yields better. Since we have locally made fertilizers now, when you apply it, no matter the quantity, it does not yield much.... ..You should help us to see how government can return the quality of fertilizer to what it used to be before now so that when we apply it, we will get a better yield....

The respondents were also asked whether they apply fertilizer on the advice of experts or not. The response shows that 171 (58.7%) said that they apply fertilizers

without expert advice; though a good number, 116(39.9%) said they do seek advice. Reason why people do not seek advice is presented in Table 4.28.

Table 4.28 shows that majority 113 (38.8%) of the respondents felt that the reason for not seeking expert advice is because there are dearth of extension workers however, more women 50(34.5%) than men 32(21.9%) felt they do not need advice.

The opinion of the Head of Department of Health, Abakaliki Local Government Area explains why:

Chemical fertilizer will after the plants are gone, the negative impact of chemical fertilizers remain on the land itself and well there is this notion that at a place you use fertilizer both earthworms and other organisms are killed and that again is part of the problem of the land and so many families don't even agree to use fertilizer in their farm, there is also this notion that, if you use fertilizer on yam, it will rotten earlier than those that did not use fertilizer so it's neither here nor there in terms of fertilizer usage but people are still looking for it basically because of rice. Most of them do not use it on their crops because it may affect their preservation. So many people are not willing to use it. If they use it, it means they will sell the yam October or maybe May because it won't last.

In addition he continued:

...We have agric. extension workers in the Local Government Area, but they are basically too few to cover the entire communities. Imagine a local government like Abakaliki L.G.A where you have about seven (7) communities, each large enough to form a Local Government, now the entire Local Government have, may be, two extension workers, how

would two extension workers go round the communities to teach them. It is boring and it is not possible for them to get the knowledge. We are talking about people who are illiterates. If you teach them today and tomorrow you are not there, it is difficult. The practice would have been, to teach them and you come back to follow up and access the results. Changes in their production would encourage them. If they make mistakes or misuse the materials, they may cause more havoc and they will need somebody again to tell them why those things happened. And because they are too few their impact is not being felt.

Table 4.28 Respondents' Preference for Fertilizer Type

Preferences	Sex		Total
	Male	Female	
Chemical fertilizers	95(65.1%)	102(70.3%)	197(67.7%)
Natural fertilizers	51(34.9%)	39(26.9%)	90(30.9)
No Response	0(0.0%)	4(2.8%)	4(1.4)
Total	146(100.0%)	145(100.0)	291(100.0%)

Source: Field Survey, 2011

Table 4.29: Respondents' Reasons for not Using Expert Advice in Application of Fertilizer

Reasons	Sex Count(% within variable)		
	Male	Female	All
Do not need advice	32(21.9%)	50(34.5%)	82(28.2%)
No body to advice on it	71(48.6%)	42(29.0%)	113(38.8%)
No Response	43(29.5%)	53(36.6%)	96(33.0%)
Total	146(100.0%)	145(100.0%)	291(100.0%)

Source: Field Survey, 2011

4.7.3 Coping with Degradation of Forests

One of the most important uses of the forest resources in a farming community is for fetching firewood for cooking. The advent of other types of fuel may not have diminished the use of firewood except in cases where firewood is no longer available due to degradation of forest resources. Coping strategy chosen to study the forest degradation is the response of the people on what they use as cooking fuel in the presence of degrading forest reserves. Response from survey shows that more respondents 272 (93.5%) use firewood for cooking. Table 4.30 shows the reasons for respondents' choice of firewood as a cooking fuel.

Table 4.30 shows that majority 191(65.6%) use firewood because it is cheaper and better. This is because it is a free access commodity in a rural community and there are no cheaper alternatives 87(29.9%).

Table 4.30: Reasons for Choice of Use of Firewood

Reasons	Sex Count		Total
	Male	Female	
Cheaper and better	95(65.1%)	96(66.2%)	191(65.6%)
No alternative	48(32.9%)	39(26.9%)	87(29.9%)
Did not know the impact	1(0.7%)	1(0.7%)	2(0.7%)
No Response	2(1.4%)	9(6.2%)	11(3.8%)
Total	146(100.0%)	145(100.0%)	291(100.0%)

Source: Field Survey, 2011

4.7.4 Coping with Water Scarcity in Ebonyi State

Some strategies for coping with water degradation were identified and the frequencies with which the respondents adopt those strategies were sought. The results are presented in Table 4.31.

Table 4.31 shows that majority 141(48.5%) of the respondents search for water wherever it will be found as a coping strategy against water scarcity while 91(31.3%) dig wells. More men 73(50.0%) prefer searching for water than women 68(46.9%). While more women 47(32.4%) prefer digging well than men 44(30.11%) probably because wells are dug closer to homes than searching for water which is a tedious and time consuming activity for women and children.

This is reiterated by a male discussant from Enyimagalagu when he said:

We now have boreholes. However, our ponds are still on communal ownership. People spray the ponds with chemicals every 3 months, after spraying; we are advised not to fetch water for about 8 hours. They usually inform us before they spray it.

A female discussant from Ogidiga added:

...some people dig well. We also get assistance from NGOs. The UNICEF and DFID have supplied a number of boreholes. Some people after building their house sink some smoke up pump unlike the hang-up well.

Yet another male discussant from Ogidiga said

We make use of dams and boreholes. In the olden days, some kinsmen can go to their ponds (okpuru) and dig up sand that covered the water so that it becomes deeper. Some of us dig wells in our compounds and if you don't have water you can go to your neighbor's house to draw water.

Table 4.31: Respondents Views on Adoption of Various Methods of Coping with Water Scarcity

Respondents' Views	Sex		
	Count		
	Male	Female	All
Search For Water	73(50.0%)	68(46.9%)	141(48.5%)
Dig Wells	44(30.1%)	47(32.4%)	91(31.3%)
Sink Boreholes	16(11.0%)	16(11.0%)	32(11.0%)
Collect Rain Water	8(5.5%)	10(6.9%)	18(6.2%)
Filter Polluted Water	5(3.4%)	1(.7%)	6(2.1%)
No Response	0(0.0%)	3(2.1%)	3(1.0%)
Total	146(100.0%)	145(100.0%)	291(100.0%)

Source: Field Survey, 2011

4.7.5 Looking for Assistance as Means of Coping

Asking for help is also a coping strategy. There are three possibilities; help from Government, from the community, friends, relatives and societies or on the other hand an individual may choose to depend on self. The investigation of these tendencies is presented in table 4.32 and the reasons for choosing where to ask for assistance is given in table 4.33

Table 4.33 shows that majority 149 (51.2%) of the respondents source help from community to solve environmental problems. For a better gender analysis of this coping strategy, the data in table 4.34 was disaggregated according to sex as shown in Table 4.32.

More men 82 (56.6%), than women 67 (47.2%) believe that they can depend on community efforts to solve environmental problems. More women 65 (45.8%), than men 40 (27.6%), believe in government efforts and more men 23 (15.9%), than women 33 (11.3%), believe in individual efforts.

Table 4.34 shows 80(27.5%) of the respondents saying that they prefer sourcing help from the community because community sources are more readily available than government sources. 78(26.8%) prefer government because it has all it takes to develop an area, 60(20.6%) and to some extent those who did not respond 73(25.1%) believe in self- help because of scarcity of other sources of help.

Some FGD excerpts captured this. A male discussant from Ihenu Uburu said:

We go borrowing from several sources like village meeting and the rich among us, but the truth is that we have not received any government assistance in our farm work. The money we borrow is usually small and so can't give us enough assistance in our farm work.

Table 4.32: Sex Disaggregated Data on Respondents' Dependences in Solving Environmental Problems in the Community

Dependence	SEX		
	Male	Female	All
Community effort	82(56.6%)	67(47.2%)	149(51.2%)
Government	40(27.6%)	65(45.8%)	105(36.1%)
Individual	23(15.9%)	10(7.0%)	33(11.3%)
No Response	1(3.4%)	3(1.0%)	4(4.4%)
Total	146(100.0%)	145(100.0%)	291(100.0%)

Source: Field Survey, 2011

Table 4.33: Respondents' Dependences in Solving Environmental Problems in the Community

Source of Help	Frequency	Percent
Community	149	51.2
Government	105	36.1
Individual	33	11.3
No Response	4	1.4
Total	291	100.0

Source: Field Survey, 2011

Table 4.34: Respondents' Reasons for Choice of source of Assistance

Reasons	Frequency	Percent
Community efforts is our own government	80	27.5
Government has all it takes to develop the community	78	26.8
Assistance is difficult to obtain, so individual effort is better	60	20.6
No response	73	25.1
Total	291	100.0

Source: Field Survey, 2011

When the researcher asked the same group if government assists them promptly, a discussant said:

They don't respond always but if you need immediate response, you can go to where they borrow at high interest rate. The problem with this is that if you borrow 1 kobo, you will pay an interest of 2 kobo and at the end; you may even sell your properties to pay for the accumulated interest. Another source of help is through a community-based group called "*Gboza*". After clearing your farm land and you don't belong to the group, you can go through a member who will inform others to come and help you.

When asked why Government assistance is rare a woman opinion leader from Umunaga Uburu in a semi-structured interview said, "... *there may be assistance but those on top take everything*". According to her, those on top are "*the educated ones who represent us in government*"

. Another male a retired police officer from Ogidiga in SSI capped it up:

...if you don't belong to parties you won't get, except a few of us they deal directly with .Some other people unless you belong to a party in power you will not expect to get what is given. Just like this type now the FADAMA project unless you belong, you will not get the loan or whatever from FADAMA.

Respondents' views on the type of assistance from government are presented in Table 4.35.

Table 4.35 shows that government assistance is more in supply of fertilizer 156(53.6%) followed by sinking of boreholes 96(33.0%) there is paucity of other assistance.

Data from FGD shows that when a community is represented in government the community receives help from government. This is captured in the words of a male discussant from Umunaga Uburu in an FGD

Yes, because he is our son and he understands our problems. Anytime we run to him, he usually assists us. He is the one taking care of us since the governments have left our problems to him alone.

Table 4.35: Responses on Type of Assistance Received from Government

Assistance Obtainable	Frequency	Percent
Fertilizers	156	53.6
Sink Boreholes	96	33.0
Extension Services	19	6.5
Improved Seeds	3	1.0
Financial Assistance	2	0.7
Plant Trees	1	0.3
No Response	14	4.8
Total	291	100.0

Source: Field Survey, 2011

Respondents were asked if there were gender discrimination in the distribution of government assistance and the results show that more respondents, 162(55.7%) do not believe that there is discrimination in government distribution of assistance. Data from FGD shows that discrimination comes when collaterals are demanded and women do not often have collaterals, so they hardly get help from government.

However further investigation from the survey shows that more men, 180(61.9%) than women, 41(14.1%) get more whenever government gives assistance to the community. This was supported in an FGD with men of Ogidiga where a retired police officer said:

Women do not have collaterals, many women here I tell you frankly have no bank account, they have no building of their own, so hardly would you expect them to access such loans. Like myself whatever I get I distribute to my two wives.

Support from relations was investigated in the survey and the result shows that majority, 181(62.2%) also get help from relations, many, 107(36.8%) do not get help. The sources of help that people get from their families are presented in Table 4.36.

Table 4.36 shows that majority 124(42.6%) of the respondents source help from relations living outside their homes (migrated relations) and large number 66(22.7%) too did not respond to the issue may be because they do not have anybody to depend upon.

Other personal efforts to cope with degradation are given in Table 4.37.

Table 4.36: Respondents' Opinion on Sources of Help from Relations

Source of Help	Frequency	Percent
Relations Outside Home	124	42.6
Children	64	22.0
Spouse	37	12.7
No Response	66	22.7
Total	291	100.0

Source: Field Survey, 2011

Table 4.37: Respondents' Personal Efforts to Cope With Degradation

Respondents' Efforts	Frequency	Percent
Join Cooperative	114	39.2
Work For Subsistence	90	30.9
Do Craft Work To Earn Money	45	15.5
Others	28	9.6
Search For Food	5	1.7
No Response	9	3.1
Total	291	100.0

Source: Field Survey, 2011

Table 4.37 shows that majority 114(39.2%) of the respondents join cooperative societies, followed by 90(30.9%) who work as labourers as their individual efforts to cope with degradation. A female discussant from Enyimagalagu said:

We belong to village meetings where we contribute to the general fund; we have a committee to plan what we will use the money for. Sometimes we use it to pay school fees for our children, even in our compound, all the women can engage in contribution among themselves.

Another male discussant from Ogidiga said:

We join meetings where we could borrow money to attend to our needs we offer ourselves as farm labourers. Some of us travel to Abakaliki or other neighbouring towns to sell our labour.

4.8 GOVERNMENT POLICIES ON ENVIRONMENTAL DEGRADATION

Awareness and taking advantage of government policies directed at solving environmental degradation is an important step to solving environmental problems. The researcher asked respondents if they were aware of policies on addressing environmental degradation. Results show that 123(42.3%) are aware there are government policies on environment, and more 160(55.0%) are not aware.

Data from KII, FGD and SSI shows that two key programmes of government in the area are tree planting programmes and poverty alleviation programme NAPEP.

A male KII respondent from Ikwo reported:

I think the programme government has put in place to tackle that problem is to plant trees for them, or preventing erosion by digging cross bars and even building bridges culverts where it is necessary they also have WHO/UNICEF boreholes.

Another male FGD discussant from Alibaruhi said:

The government is embarking on poverty alleviation even though it has not reached us they do it through loan granting of a thing, fertilizer distribution to farmers, and distribution of Keke NAPEP which many of us need since we are idle in this village.

Table 4.38 shows the other areas where respondents in the survey believe that government policies generally address.

Table 4.38 shows that majority 108(37.1%) do not know government policies on environment or which aspects of the environment they address, 32.0% are aware these policies address the land while 67(23.0%) are aware of government policies that address water issues.

The survey question on whether government implemented their policies in their communities, presented more respondents, 134(46.0%) saying no and 64(22.0%) saying yes. 93(32.0%) did not respond.

On whether the degree to which government implemented policies takes care of the needs of women in the communities, the results show that majority, 154(52.9%), disagreed that government policies cater for the needs of women and only 47(16.2%) said yes. As much as 90(30.9%) did not respond to the question.

On the issue of, if there are interest groups in their communities that assist in solving environmental problems, the answers show that 157(54.0%) agreed that such interest groups exist while 129(44.3%) did not agree.

Table 4.38: Areas of Environment that Government Policies Address

Areas	Frequency	Percent
Land	93	32.0
Water	67	23.0
Forest	22	7.6
Air	1	0.3
No Response	108	37.1
Total	291	100.0

Source: Field Survey, 2011

CHAPTER FIVE DISCUSSION OF FINDINGS

In this chapter the data presented in chapter four will be discussed based on the research questions and objectives of the study.

5.1 SOCIO-DEMOGRAPHIC DATA OF THE RESPONDENTS

The socio-demographic data shows that there is an almost equal representation of males and females in the study. The equal number of male and female was by design because the study is meant to generate gender disaggregated data. The study covers a wide range of ages with majority between 40 and 50 years. This age range is typical of households in agrarian communities. While the youth and young adults search for greener pastures outside the village the older working class adults settle for agricultural activities in the villages.

Majority of the respondents have no formal education while very few had tertiary level of education. Though the level of educational attainment was generally low, there is gender disparity in this level of attainment and the disparity favoured men. It can be inferred therefore, that men in the area of study are more educated than women. Education is known to alienate people from traditional environment and culture, since most of the lucrative jobs associated with education are not usually located in rural areas where the sacredness of traditional institution is still intact. Therefore, more women live in the rural areas and engage in farming. The trend in most Igbo societies is that more females attain higher education than males, because most males prefer trading to education, however, in Ebonyi State, the situation is different. Ebonyi women's lower level of educational attainment can be explained by the culture of male preference and poverty. This culture believes that daughters will after marriage move out of the family to live with their husbands while sons will preserve the family

name. There is also the perception that men are more economically productive and so more useful than women. This has implication for gender relation and environmental degradation in Ebonyi state. In a situation where women who are not economically valued turn out to be more involved in a dominant occupation (farming) in a community and are often ill equipped for it, their desperation to succeed will further severe their relations with their male counterparts and degrade the land. They will see their relationship as that of competition instead of complementary. At the same time, both the women and the land on which they farm will become exhausted. A good proportion of the respondents rate themselves as either medium income earners. Only 6 (2.1%) rated themselves as high income earners.

The distribution of the respondents in terms of major occupation shows that farming is the major occupation of the people in the study area. Sex disaggregated data on occupation show that more females have their main occupation as farming. This is contrary to women's traditional gender roles in Igbo land. In the olden days women were not full-time farmers. They only intercropped cassava, coco-yam, maize, and vegetables in their husband's farms, but this finding shows a change in gender role and this is as a result of environmental degradation which makes it more difficult for husbands' income alone to cater for family needs. This corroborates FAO (2011) which also found that women account for a high proportion of farmers in many developing countries. They often have very little assets, including land technology, farm labour, extension services, financial services and education to support their livelihoods. This can significantly affect women's ability to adapt to new agricultural conditions in the face of environmental degradation.

The size of farmland in rural communities can vary in size between 200 square meters to 2000 square meters. The more of these farmlands a farmer owns the more his

or her chances of becoming a rich farmer. Ownership of most of the lands is by inheritance. Some obtain land by renting, leasing and women mainly access land from their husbands and relatives before they can farm.

From both the quantitative and qualitative findings it is clear that women are disadvantaged in ownership of land. This finding is in agreement with Rahman (2004) who argued that women in Nigeria form an active reserve labour force but rarely own the means of production. In a situation where women who constitute a greater proportion of farmers in an area do not have direct ownership right to land, a basic means of production, their efforts cannot be very productive and will even exacerbate land degradation.

The analysis of both socio-demographic data (bio-data and asset base data) shows that generally the people are of low socio economic status. Judging from their low level of educational attainment, farming being a major and subsidiary occupation, no house helps, use of crude farming methods, type of house they live in, and their level of income one can conclude they are poor. This corroborates Kotze (2003) who reported that the bulk of the poor, some three-quarters according to a World Bank estimate; live in rural areas where they draw their livelihoods from agriculture and related activities. It also shows that their women are poorer. This is also in line with Skinner's (2011) report that of those affected by climate change that fall below the poverty lines, women account for the majority. This is because women are disadvantaged compared to men in terms of the opportunities available to them, the social status they enjoy and the resources they are able to access. However, we can still draw from their innovative responses to their plight through their local knowledge or and their capacity to adapt to difficult and unstable circumstances. There are significant differences between women's and men's experiences of poverty and environmental

change because gender inequalities in ability to have command over environmental resource entitlements (e.g. land, trees) labour and income. These inequalities leave women with limited flexibility to respond to environmental changes in ways which maintain environmental resources, hence the gradual nature of environmental degradation in the area.

5.2 ENVIRONMENTAL DEGRADATION IN THE STUDY AREA

Through opinions, perceptions, attitudes and experiences of respondents on the use of the environment, a quantitative data was obtained that was effectively used to determine the nature and causes of environmental degradation in the research area. This is in line with the subjective and interpretative methodological approach adopted in this study.

5.2.1 Land Degradation in Ebonyi State

Findings showed that the nature of land degradation in this area is not the acute disaster type, but chronic and gradual degradation of the topsoil as shown by decreasing land productivity over time.

Causes of land degradation are important factors in determining the means of mitigating the impact of environmental degradation on the people. The reasons for declining productivity shows that human activities, top the list of causes. This include over-cultivation of land, bad farming practice, mining and grazing activities and other activities related to availability of farm input and support.

Both the quantitative and qualitative data agree that, poor crop yield is an outstanding sign of land degradation, this is caused by lack of fallowing, continuous cropping of same crop specie, delay in access or no access to fertilizer, scarcity of farm labourers, general apathy to farm work, desperation to survive, presence of lead and other heavy elements in the soil, bush burning and erosion.

All these have implication for environmental degradation, gender relation and the socio-economic well-being of the people of Ebonyi state. According to Adewale (1991), most of the measures to control environmental degradation are focused on how to rescue the physical environment to the neglect of measures to modify environmentally harmful human activities. Also from experience, disaster forms of degradation (flood, gully erosion, desertification) are immediately attended to more than gradual degradation in Nigeria. It follows therefore that if natural reconstitution of land through vegetative growth and decay is over stressed by over population and lack of practice of shifting cultivation, the land will continue to degrade. Of course the gender that depend more on the land for their livelihood will suffer more.

Furthermore, in discussing the nature and causes of land degradation in Ebonyi State the findings and argument of Cleaver and Schrieber (1994) is replicated in the area. According to them shifting cultivation was practiced under conditions of slow population growth and abundant land. Farmers merely shifted to virgin lands when soil fertility declined which allows for natural reconstitution of land through vegetative growth and decay, but the scope for further expansion of farm land has narrowed due to rapid population growth and the use of land for other developmental projects. Now rural people are compelled to remain on the same parcel of land still using their traditional production techniques. In the agrarian communities of Ebonyi State, people are aware that the land is exhausted and need replenishment but poverty and desperation to survive forces them to continue to degrade their environment. Tell Magazine of September 26th, 2011 supported this view that unfriendly environment and negligence of the farmers by government have made rice farming unattractive in Ebonyi State. It stated that they do not practice mechanized farming because they are poor. It concluded that problems of lack of expansion, low quality seedlings, and highly

politicized process of accessing government loans and fertilizer distribution have made farmers develop a kind of apathy towards farming.

The findings also corroborated Sida (1995); Leach and Mearns (1991) and UNEP (1995) which argued that research and policy has tended to focus on the relationship between poverty and environmental degradation in terms of pointing out that the poor are both victims and agents of environmental degradation: victims in that they are more likely to live in ecologically vulnerable areas, agents in that they may have no option but deplete environmental resources thus contributing to environmental degradation. There is therefore, a strong link between poverty and environmental degradation in Ebonyi state.

This work recognize that gender relations have a powerful influence on how environments are used and managed over time and the effects of this on patterns of ecological change. Gender-environmental relations are seen as integral to the social and economic organization which mediates people's relationship with their particular environment. The data on the question on whose activities and roles degrade the land more shows that men degrade land more than women the reason being that men engage in physically demanding activities on the land such as clearing farmlands excessive tilling of land, bush burning, mining, application of fertilizer, commercial agriculture, and hunting. While women engage in less physically demanding activities on the land such as fetching of firewood, weeding and multiple cropping for subsistence. It therefore means that men in carrying out their gender roles degrade the land more than women in the study area.

This is an important finding because mainstream literature on environmentally sustainable development (ESD) has ignored gender relations with overemphasis on women environment and development (WED) (Joekes *et al.*, 1996) The WED thinking

stresses the managerial aspects of economic development that seek to minimize negative effects of development by targeting women as recipients of environmental development assistance and because their work has always entailed a close relation with nature. This finding has corroborated Bradiotti and Wieringa 1994 in flawing the WED conceptualizations for three reasons: First, environmentally-friendly management practices by women can be explained in terms of rational short-term interests. For instance women may only collect dry wood for fuel because it is lighter and easier to carry, and certain tree species may be protected by custom rather than by women's motivation to conserve resources. Secondly, women's relation to natural resources reflects social-structural forces, within the framework of gender relations which systematically differentiate men and women in processes of production and reproduction. These forces relegate women to environmentally-based activities by limiting their access to other types of livelihood activities. Third, like the WID approach, the WED perspective focuses on women at the exclusion of men, and pays little attention to differences among women. All these arguments support the socialist-ecofeminist perspective adopted in this study. That means the roles of men and women are equally important in the use and management of the environment and should be targeted in planning for environmental protection and sustainable development of an area.

5.2.2 Forest Degradation in Ebonyi State

Results showed that the number of forests is decreasing in all the communities studied. Apart from the outright disappearance of the forests, there is also the issue of loss of original species of plants and herbs that are important to health and social welfare. One of the reasons for reserving forests in the past is to preserve medicinal plants and herbs, and to serve as protection during war. A sign of decline in the quality

of the forests is the decreasing awareness of existence of original plants and herbs used by the people in the community for various purposes. Findings show that most of the forests now contain secondary vegetation made of herbs and plants that do not have the original values that people derive from forests.

Establishing the causes of forest degradation is a central factor in determining the solution to the problems and in mitigating the consequences of such degradation. Findings shows that most of the respondents, strongly agree that bush burning is responsible for forest degradation, bush burning is again the single largest cause of forest disappearance in the communities under study. Bush burning is not only a traditional method of clearing bushes for farming in various communities in Ebonyi State, hunters also set forests ablaze in search of games thus making bush burning a single most important cause of forest degradation .This has implications on deforestation as well as on land degradation because it kills microorganisms in the soil and exposes the land to erosion and heat.

Furthermore, findings show that men's activities degrade the forests more than women's activities. These activities include bush burning; timber logging, clearing forests for farming or development and even commercial firewood business, while clearing farms and fetching of firewood are women's activities.

Speaking on changes in gender roles, and the involvement of men in fetching firewood, a retired police officer from Ogidiga in Ikwo Local Government Area said in a semi-structured interview:

.....men will enter forest to cut logs, pieces them into firewood which they in turn chartered lorries to collect all these things. There is change, the change is really exposing the forest, reducing the forest, men do that, but women only go there to fetch firewood. Men really cause that degradation.

This finding is different from Agrawal (1986) where drought and wood fuel crisis were presented as reasons for deforestation in India. That study adopted the WID and WED approach to addressing environmental problems which emphasizes women's managerial roles and closeness to nature to the neglect of men's roles. That singular finding informed the formation of the Chipko movement in India and green belt movement in Kenya by women. In this area studied, forest protection cannot be left to women alone because women's activities contribute less to deforestation. This being the case the eco-feminist argument that men and women should get interested and actually work assiduously to protect the forest is pertinent.

5.2.3 Water source degradation in Ebonyi state

In the area of study, one's access to water is not limited to one's community. This means that you can access other sources of water from your neighbouring communities. This explains why more people indicated having access to many water sources including rivers, streams and ponds.

Existence of water sources is a source of social relief for the people, but this is only complete if the source of water is good. The clean nature of water bodies are changing due to human activities and natural causes. The human activities include a wide range of activities like dumping of refuse, mining and bad fishing methods, farming around streams, building homes around the streams, logging of timber, cattle rearing around streams, and domestic use of water.

The qualitative data supports natural causes as major causes of water degradation. A woman discussant from Ihenu Uburu speaking on the causes of water degradation said: *"Long period of dry season and flooding during raining season are the two factors affecting our water sources"*.

When human beings cut down trees and farm around water bodies, they expose the environment to erosion. During the rains, flood carry sand and debris into water thus causing siltation and shallowness of the water bodies. After a long time the persistently affected water sources can die. This is detrimental to the people because they are few alternatives to natural sources of water supply in the area and that explains why poor environmental sanitation and water borne diseases are endemic in the area.

The finding also shows that both male and female roles contribute in water source degradation. Men's activities deplete while women's activities pollute water sources. These activities performed by men include large-scale irrigation activities, dumping of mine tailings into and near rivers, emptying of streams for fishing and cutting down trees at river banks. The activities performed by women include dumping of refuse, washing, and fermenting cassava tubers inside the stream. It could therefore be inferred, that the reasons for choosing men as major contributors to water source degradation is because men's activities deplete water sources as against women whose activities only pollute water sources. Even though depletion and pollution have degrading effects, they may be thinking pollution is more manageable than depletion disappearance of water. This finding too supports the importance of doing a gender study of environmental change rather than studying the issues focusing on women alone. It is easy to conclude that women degrade water sources because they have the gender role of fetching water but this gender analysis has revealed that more male gender roles degrade water sources.

5.3 MINERAL DEPOSIT AND ENVIRONMENTAL DEGRADATION IN EBONYI STATE

Local mining and processing of minerals going on in Ebonyi State are devastating the environment. In Ebonyi-North, and Central it is lead and zinc mining,

in Ebonyi-South; it is traditional salt-making and rock quarrying. These activities are devastating a large area of what could be farmland or forest, and water sources. Data shows that while majority 222 (76.3%) of the resources are located on the land, 54 (18.6%) are in the water and only 6 (2.1%) are located in the forest. By implication, any negative effect of the mere presence and mining of these resources can affect the land and water, thus creating economic and social problems in the community

Some indigenes excavate for lead and other precious stones as a means of coping with dwindling income, even when it is neither lucrative nor environmentally friendly

This finding shows how desperation to survive and overcome poverty push a people into further hardship by engaging in local mining of common property resource and in the bid further degrade their environment.

5.4 SOCIO-ECONOMIC IMPACT OF ENVIRONMENTAL DEGRADATION IN EBONYI STATE

5.4.1 Socio-economic Impact of land degradation

Results shows that majority of the respondents strongly agreed that low crop yield is a serious economic impact of land degradation followed by declining income.

In agrarian communities, a farmer's livelihood depends on the produce from the farm. When there is poor crop yield, the people's income declines. People work harder and spend more time in the farm. A time they would have committed to other productive activities. There will also be reduced access or scarcity of fertile lands leading to land disputes and over cultivation of the land, and the cycle continues. All these definitely impact on gender roles and relations and even cultural practices of the people of Ebonyi State.

5.4.2 Socio-economic Impact of forest degradation

Most of the respondents agreed that the disappearance of timber and lack of shade are impacts of forest degradation. Others identified the loss of medicinal herbs, increasing erosion, difficulties in getting firewood as other impacts of forest degradation.

When thick forests are degraded, one can hardly get strong trees for timber, there will not be enough shades, making the environment hot especially during dry season. There will be increased erosion of top soil and flooding of rivers. Erosion of top soil nutrient and depletion of underground nutrient gives rise to low crop yield and increase in poverty. Loss of medicinal herbs affects people's health, because in rural communities, people depend on medicinal herbs for their health care. Finally, when firewood becomes difficult to get, it will influence the people's income, time and nutrition. All these in turn affect gender roles and relations in the area.

5.4.3 Socio-economic Impact of water degradation

Majority of the respondents agreed that water degradation have brought reduced domestic sanitation in their community. Water degradation shows itself in scarcity of drinking water, water pollution and colouration. Water borne diseases such as guinea worm, schistosomiasis, filariasis, diarrhoea and dysentery were common in the area until the WHO, UNICEF and USAID intervened through sinking boreholes and spraying chemicals around springs, ponds and rivers.

When water is degraded, it affects domestic sanitation, more money is spent buying clean water, and more time spent searching for clean water. Fishing and irrigation agriculture also reduces. Finally, water borne diseases, particularly guinea worm was endemic in the area of study. These findings corroborates the overview report of Skinner 2011 where she reported that the impacts that climate change will

have on water are now clearly recognized and acknowledged by the scientific community. With changing rainfall patterns and increasing risk of water-related disasters not only will crop production and food security be affected, but there will also be less availability of clean water to meet people's basic needs. Also research in sub-Saharan Africa, has shown that women and girls spend a total of 40 billion hours per a year collecting water, which is equivalent to a year's worth of labour by the entire workforce of France (UNDP, 2009).

The findings on the impact of environmental degradation on land, forest and water corroborated the findings of Dankelman and Davidson (1988), Akpa (2000) and PBR (2001) in that these impacts have serious consequences on the general socioeconomic wellbeing of people. One of the most challenging impacts is the strain the new environmental conditions puts on the availability of natural resources. According to GEO-Science (2011) as land productivity decreases and global population rises, from a current 6.2 billion in 2010 to a predicted 9.5 billion in 2050, there are major questions around how enough food will be produced to feed this growing number of people at a time when both land and water availability are decreasing. It is estimated that by 2050 the world will need 40 per cent more food, 30 per cent more water, and 50 per cent more energy, yet how these will be attained with these resource degradation remains a serious challenge and will have implications for gender equality. Land degradation increases women's responsibilities and they have least access to necessary inputs, fewer assets on which to rely and limited access to alternative sources of income or livelihood. This is the plight of women in Ebony state.

5.4.4 Socio-economic Impact of tapping natural resources

Findings show that the impact of tapping natural resources in the environment is salination of water sources and the soil. This is because the area has a lot of salt deposit.

No grasses grow around the salt filtration camps '*onu-ebe*' for example and several natural water sources and even boreholes taste salty. Extensive excavation on the land has affected the land mass in the study area. In several places in the Enyigba and Ndufualike study areas, there were deep pits abandoned by local miners looking for lead, zinc and other precious stones.

Destruction of forest is another impact of tapping natural resources in the area. The reason is that explorers can go to any extent including clearing an entire forest to ensure that they tap these minerals. Damage to farmland is yet another impact of tapping resources.

Generally, exploitation of natural resources in the study area has impacted heavily on the environment. There is widespread salination of land and water bodies, large scale destruction of landscape, deforestation and pollution of farmlands with sludges and residues from the extraction processes. These findings are corroborated by Akpa (2000) who found that areas within Ebonyi State that never had salt as mineral resource are now having salty water.

5.5 IMPACT OF ENVIRONMENTAL DEGRADATION ON GENDER ROLES AND RELATIONS

The various impacts of environmental degradation discussed earlier make gender roles arduous, economically unrewarding and ultimately leads to poverty. Poverty itself brings about problems in gender relations. The implications of these on the environment and on gender roles and relation are discussed here.

5.5.1 Gender roles in farming community

Gender roles in the research communities shows that gathering of medicinal herbs, application of fertilizers, harvesting of crops, planting of crops, transportation of harvested crops and clearing of land for farming are activities performed mostly by

both genders, and degradation caused by any of these activities can be attributed to both male or female genders. Specific roles assigned to the female gender include gathering firewood for cooking, weeding of farms, and fetching water for house use. Roles identified as male roles are use of tractors, tilling of land for planting, fishing and logging of wood for sale. One can infer from this data whose roles men's, women's or both degrade the environment most. Those whom the society holds responsible for any role will likely suffer most when environmental degradation affects the way such roles are played out.

Most of the respondents believe that their various roles have been affected. In addition, most respondents who said that there are changes in roles complained that it is becoming more difficult to carry out their gender roles as a result of environmental degradation.

5.5.2 Impact of Environmental Degradation on Gender Relations

Gender roles may not have changed in principle according to the quantitative data, but some excerpts from qualitative data indicate that women are bearing more burdens of responsibility and this gives rise to some conflicts in their gender relation with their husbands. From the qualitative data too, it was found that while some people, linked changes in gender roles and relations to men's apathy to farm work, others linked it to modernization and civilization, yet others saw a direct link between changes in gender roles and relations and environmental degradation. The contradiction between the qualitative and quantitative data on the nexus between environmental degradation and changing gender relation is due to the insidious nature of the degradation in the area. At the face value quantitatively, there is no link but only in-depth interaction with the people revealed the nexus. It therefore follows that since women cannot abandon children and their natural environment, they take on more family responsibilities than

men do as their desperate measure to survive. Whereas, men do not contend the changing roles of women, they argue that it is natural, and they take it for granted.

This further buttresses the Cultural Eco-feminists argument about women's closeness to nature, because women are more closely connected to nature through their reproductive potentials, they are better placed to care for the environment in Ebonyi state. Women tend to have a greater involvement in environmentally sustainable activities and environmental management than men, but may incur certain costs or lack the required resources and decision making powers to command control over resources. This is similar to the finding from a study of four communities in three Latin American countries by Paolisso and Gammage (1996) which indicated that women make significantly larger contributions to managing the negative effects on family welfare of natural resource decline and environmental pollution. The study found that women's time and task allocations change in response to environmental degradation and women's environmental task represent an important part of the household's first line of defense against environmental degradation. It can be argued that environmental tasks impose additional burdens on women, in part because their existing productive and reproductive activities are not easily transferred to other household members, whereas she can take on additional responsibilities to ensure that the family is sustained.

Again one would argue with Agrawal (1997) and Thapa (2005) and like the social eco-feminists, that the link between people and environment is determined by the way in which production and distribution in a society is carried out. That as far as there is gender and class division of labour, property and power, there will be differences in people's interaction with nature, effects of degradation on people and their responses to it. This line of thought is corroborated by the report of Skinner (2011) where she indicated that there are various gender implications to the rising threat of food

shortages, with both the production and consumption of food being highly gendered. The implication on gender is that as agricultural production becomes more labour intensive, in many cases women will increasingly carry the burden of the additional work and have least access to necessary inputs. Also with increasing crop failure, women often face the worst negative economic implication as they have fewer assets on which to rely and limited access to alternative sources of income and livelihood (Blackden and Wodon, 2006).

5.6 COPING STRATEGIES ADOPTED BY THE PEOPLE IN SOLVING ENVIRONMENTAL PROBLEMS

Sometimes, people mitigate the effects of environmental degradation either by mass emigration out of the affected areas, by use of traditional technology, and or seeking for assistance. This section analyzes the findings on these issues.

5.6.1 Migration as Coping Strategy Against Impact of Environmental Degradation

Findings show that migration is a strategy adopted by men for coping with environmental degradation, and women also migrate to look for alternative jobs or join their husbands. Once a man or woman has attained a level of enlightenment, he/she would not want to suffer poverty in the rural area. Moreover, since more families are monogamous these days, married women also migrate to towns to join their husbands. The respondents believe that migration is a solution to dwindling natural resources in the rural area.

This finding corroborates Skinner (2011) where she reported that migration is often used as a strategy of last resort, when all other coping mechanism fail and people are forced to sell land or assets and migrate to new areas to seek new livelihoods. It therefore, has considerable environmental and gender implications. When people migrate, the degraded environment is abandoned leading to further degradation and

hardship for the people left behind. Also there are gender differentials in the very causes of migration as well as who migrates, where they migrate to, for what reason and for how long as well as the secondary impact the migration has on other family and household members and their communities. When husbands migrate for example, the wives become managers of large family farms which they hardly have rights claim over. They work harder than ever to mitigate the effect of soil degradation at the same time they expect remittances from their husbands that hardly come. For the man, the implication may be to settle for menial jobs especially where they are not qualified for lucrative jobs in the urban areas.

5.6.2 Coping with Degradation of Farmlands by Use of Technology

Results show that majority, of the people prefer to use chemical fertilizers. Specifically, more women prefer chemical fertilizer than men, despite the effect on the environment.

Sometimes, the people need the advice of experts on application of chemical, but result shows that majority said that they apply fertilizers without expert advice; though a good number, said they do seek advice. The sex-disaggregated data show that more men than women apply fertilizer on the advice of expert.

Traditionally, the people of Ebonyi have strong aversion to the use of chemical fertilizers, but continued poor crop yield has forced them to accept its use. Despite the accepted use many do not bother seeking agriculture extension advice (may be because they are not available) thereby further degrading the land. This means that the agrarian communities of Ebonyi State are not using fertilizers in an environmentally friendly manner and this contributes to their land degradation. Since they are mainly small holder farmers and lack the capital to engage in modern farming techniques, they and their environment will continue to degrade.

5.6.3 Coping with Degradation of Forests

Data from survey shows that more respondents use firewood for cooking and that majority of the respondents chose firewood because it is cheaper and better. However, a good number use firewood because they are no better alternatives. Since the people use mainly firewood for cooking, believing that it is cheaper and better and there are no alternatives it is possible that fetching of fire wood contribute a great deal to deforestation. Although they are alternatives to the use of firewood, poverty and the non-availability of such alternatives in the rural areas may discourage their use. So the forest will continue to degrade and women whose gender role is to fetch firewood will also continue to suffer.

5.6.4 Coping with Water Scarcity

Majority, of the respondents would search for water anywhere. More men, than women, agree to this kind of coping with water scarcity. However, a good number, dug wells for water, some are able to sink boreholes while some depend on rainwater collected during rainy season. Very few, use the technology of filtering water. This shows that majority of the people still have to go the hard way to cope with the problems of water source degradation.

Generally, it can be said that the people adopt environmentally friendly coping strategies against water scarcity. But these methods are cumbersome, time consuming and financially involving. They have consequences on their gender roles and relation and affect more women, who have the primary gender role of fetching water, than men.

This finding supports Sever (2005) who argued that there are clear, well documented gender dimensions to the issues of access to water. This is because many poor people access water from 'common property' such as rivers or ponds, but the freedom to use these sources is restricted as water becomes a scarce and marketable

commodity. The supply of water is being increasingly contracted out to private providers in developing countries, with user fees being charged and only households who can afford it being able to connect to water mains. This has huge gender-specific implications, with women often unable to meet the charges since their activities do not generate enough income. As a result, they may be forced to walk longer distances for a supply that is free (Bell, 2001).

5.6.5 Looking for Assistance as Coping Strategy

Result show that most of the respondents, depend on the community for solving the environmental degradation problems. Most of the respondents chose community help because it is easily accessible and available to them. Reasons for choosing government help by many of the respondents are that the government has all it takes to develop the community, even if it is not accessible or made available to them at the moment. Many though believe in their personal effort because they can hardly see any solution from anywhere. This shows that since government's assistance is scarce the people resort to community and self-help and this is a common feature in the research area.

Rural people expect government to solve most of their problems. However, the non- representation of people in government creates problems of availability and accessibility of government assistance. It therefore means that, if a community does not have active representatives in government, the community will not feel government's presence. The researcher asked the respondents if there were gender discriminations in the distribution of assistance and further results show that more respondents do not believe that there is discrimination in government's distribution of assistance.

However further investigation from the survey shows that more men, than women, get more whenever government gives assistance to the community. A man from Ogidiga testified to this in SSI

Women do not have collaterals, many women here I tell you frankly have no bank account, they have no building of their own, so hardly would you expect them to access such loans like myself whatever I get I distribute to my two wives.

Data from survey also showed that majority of the respondents get help from their relations living outside the village.

Findings also showed that most of the respondents join cooperative societies in order to save for the rainy days, some labour in other people's farms. In the study area, cooperative societies are in the form of thrift societies, family and village meetings, where members contribute money under an agreed sharing formula. It can also include rotational labour groups among age grades. People readily fall back on these groups in times of need.

From the foregoing one can understand that the people particularly women prefer government assistance, but since these assistance are scarce, the people resort to community and self-help. Most of them belong to community based organizations, village or clan meetings where they contribute to and draw from a common fund for labour and financial assistance. Since the people are generally poor, the implication of depending on community and individuals for assistance is that there will be serious redistribution of poverty among the people. Life in the villages will be tough except the government intervenes.

5.7 GOVERNMENT INTERVENTIONS ON ENVIRONMENTAL DEGRADATION

Data from survey has shown that fewer respondents believe there are government policies on environment, and more, are not aware of any such policies implemented in their community. Even though most respondents are aware of ways

government intervenes to mitigate environmental degradation or poverty alleviation, they are not aware if such policies are implemented in their communities.

An environmental officer in Ohaozara LGA did not even know that her role includes generating and feeding the government with information on environmental problems in her LGA. Some of the environmental officers claimed that their opinions do not count in the making of government policies on environment .In the words of a key informant the officer in charge of environment Ikwo LGA:

That is the system we are in because it is only when you are at the management level you can say your report can yield something. This is because when we are discussing the matter you cannot even put your mouth to say this is what we have done to the community like even most of the work we generate our report we sent it to the head of personnel management when they look at it in the end you will not even know what happened throughout the year

He continued in his statement that:

I think the policy government has put in place to tackle that problem is to plant trees for them, or preventing erosion by digging cross bars and even building bridges culverts where it is necessary they also have WHO/UNICEF boreholes.

Another male discussant from Alibaruhi said:

The government is embarking on poverty alleviation even though it has not reached us they do it through loan granting of a thing fertilizer distribution to farmers distribution of *Keke* NAPEP and many of us need it since we are idle in this village.

Finally, most of the respondents are not aware if issues involving environment is of concern to their government. Many believe that community based organizations are a better option in terms of help, though their activities and presence in the area are not well known or understood. Since there is low awareness and low implementation of government intervention in the area, there will be no point talking about whether such policies are gender mainstreamed.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 SUMMARY OF KEY FINDINGS

The key findings of the study are summarized based on the structure and objectives of the study in this section.

6.1.1 Socio-Demographic Data

The study has an almost equal representation of males and females in the sample, majority of them are aged 40-50 years. Their main and subsidiary occupation is predominantly farming. Most of them are married with most families headed by men. The study showed that there is a high low-level of educational attainment. The studied population has moderately large (1-10) family size. The ownership of land is mainly by inheritance. Women in the community do not own land but access land through their husbands. The method of farming is mainly by hiring labour and by self and family members. Mechanized farming is rare. Majority lives in houses made of mud wall and metal roof and have low income.

Judging from the number who reported low level of educational attainment, who have farming as their major and subsidiary occupation, have low income and use crude farming methods, one can conclude that the respondents are predominantly poor small holder farmers. Traditionally only men own land and have control over natural resources. The desperation to survive and overcome poverty has pushed the people into engaging in activities that degrade their environment.

6.1.2 Nature and Causes of Environmental Degradation in the Study Area

The land in the study area is degrading and is observable in the form of continuous low crop yield. The major causes of the land degradation was found to be human activities, such as over-cultivation of land, bad farming practice, mining and

grazing activities and other minor activities related to availability of farm input and support. Natural causes such as flood, climatic change and pest are secondary causes of low yield of crops or degradation of farmland.

The forests too are degrading. Bush burning, commercial timber logging, clearance of forests for farming, settlement and developmental projects as well as fetching of firewood are major contributors to forest degradation.

On the issue of water degradation, majority of the respondents can still access three or more natural sources of water, though more than 60% believe that the quality of their water is degrading. The water found in most of the communities are coloured, muddy, brackish, smelly and drying up. Apart from degradation of water quality, the water bodies are becoming shallower. Human activities are major contributors to water degradation.

The negative effect of the presence and mining of some mineral resources found in the area degrade the environment, cause low crop yield, create observable physical heat on the land, pollute the water bodies, creating other economic and social problems in the communities.

On engendering the causes of degradation, majority of the respondents believe that men's traditional activities degrade land more than women's traditional activities. They also believe that men's commercial activities like logging of trees, clearance of forests and development projects degrade the forests. It was also found that men's traditional activities contribute to water sources depletion while women's activities contribute to water sources pollution.

6.1.3 Socio-economic impact of environmental degradation

Majority of the respondents see low crop yield as the most serious impact of land degradation, there are also declining income, reduced access to fertile lands, and communal land disputes.

In the opinion of most respondents disappearance of timber and extinction of medicinal forest plant and herb species are the most serious impacts of forest degradation.

The most serious socio-economic impact of water degradation felt by the people of Ebonyi State is reduction in domestic sanitation and too much time spent by the people in search of water. There are also problems associated with drying up of water bodies such as scarcity of irrigation water and prevalence of water-borne diseases like guinea worms.

It was found that large area of farmlands in Ebonyi State had been salinated due to the presence of salt and the activities of the traditional salt-making industries. This is also coupled with the excess mineral salts in the land affecting the aquifer. Also extensive and uncontrolled excavation of land through mining of lead and zinc has devastated many farmlands forests and polluted water sources.

6.1.4 Impact of Environmental Degradation on Gender Roles and Relations

The findings classified traditional gender roles in Ebonyi State into three namely, those performed by both genders, such as gathering medicinal herbs, application of fertilizers and clearing land for farming. Specific female gender roles are gathering firewood for cooking, weeding of farms and fetching of water for house use. Specific male gender roles include mechanized farming, tilling of land for farming, logging of trees for timber and commercial firewood. Some of these roles are changing due to environmental degradation.

Data analysis showed that low crop yield due to degradation of farmland has significantly changed the male gender role of clearing land for farming to male and female roles. Difficulty in getting firewood due to forest degradation has significantly changed the male role of logging wood for sale to both male and female roles. The impact of too much time spent in search of water has significantly changed the female role of fetching water, in that some men now participate although with some means of transportation in fetching water. In view of these changing roles, women now take on more responsibilities than men in the family and are not happy. They therefore, suffer more effect of environmental degradation than the men.

6.1.5 Coping Strategies for Environmental Problems

Majority of the respondents believe that emigration is the best strategy for dealing with problems of environmental degradation. It was also found that the most significant contributor to the decision to emigrate is level of education. Gender and age are very likely to influence the decision of men to emigrate. Migration for its sake does not reduce environmental degradation or improve socio- economic wellbeing since most of them were forced to migrate and are ill equipped to access lucrative jobs in the cities so they instead migrate into deeper poverty.

It was found that most of the respondents prefer to use chemical fertilizer. Women prefer chemical to organic fertilizers more than men. There are very few agriculture extension officers in the area leading to a lot of problems with getting advice from experts on the use of new technologies and this contributes a lot to environmental degradation and low socio- economic wellbeing of the people.

Planting of trees and digging of wells are also widely accepted as coping strategies in the State but are not properly coordinated. Individuals in the State also depend heavily on help from their relations living and working outside the State and on

community based associations. But since these assistances are meager their socio economic wellbeing are still not improved. Their desperation to survive still forces them into degrading the environment.

6.1.6 Government Intervention Policies on Environmental Degradation

The respondents are aware of government policies to mitigate environmental degradation. But these policies are rarely implemented in the communities studied. They believe this was due to their poor representation in government. There are no gender mainstreaming of government policies and programmes in the state.

6.2 CONCLUSION

The nature of environmental degradation in agrarian communities of Ebonyi State has been identified as gradual degradation of environmental resource base, land, forest and water, leading to gross poverty and migration. Men's commercialization of natural resources has contributed immensely to the level of degradation found in the communities today.

The major socio-economic impact of environmental degradation in Ebonyi State was found to include persistent low crop yield, disappearance of timber and reduced domestic sanitation leading to declining income and poverty.

The degradation of the environment was found to have placed extra burden on the women who have to carry out roles that were traditionally theirs and those that were for the men, leading to conflicts in gender relations. It was also found that in attempt to mitigate the consequences of environmental degradation, unfriendly coping strategies such as misapplication of technology leading to further degradation of the environment.

The people are aware of government policies that address environmental degradation, but these policies are rarely implemented in their communities. The lack of government presence made the people rely more on community and self-help in

mitigating their problems, and since poverty is endemic there, it boils down to redistribution of poverty.

6.3 CONTRIBUTION TO KNOWLEDGE

A unique set of data on environmental degradation targeted at both genders and gender relations were unveiled by this study.

- The critical contributions are:
 - Degradation of natural resources has placed extra-burdens on men and women, though more on women leading to changes in gender roles and conflict in gender relations. This was facilitated by gender disaggregated data emphasized in the research.
 - Coping strategies adopted are in most cases not environmentally friendly (in most cases there is evidence of desperation to survive) leading to further degradation.
 - Insufficient government presence makes people rely more on community and self-help in mitigating environmental problems.
 - Since poverty is endemic in the area, the mitigation measures adopted leads to redistribution of poverty among the people.

6.4 RECOMMENDATIONS

Based on the conclusions reached, the following recommendations are proffered:

1. The federal government should enact a long term policy that will combine policies of accelerated development with programmes to conserve environment and its resources and to slow down population growth.
2. The federal government should develop appropriate national guidelines and standards on environmental pollution and natural resources conservation and

where they exist should be firmly administered. For these, institutions concerned with environmental management should be decentralized and strengthened at every level of government particularly at Local Government Areas.

3. The land use act of 1978 needs urgent review to remove the bottle necks, complications and inequalities it contains.
4. The Ebonyi State Assembly should pass a bill that will consider women in allocation of communal lands for farming. This is because as majority of the farmers are women, they need a level of ownership right to land conferred on them. An extensive land titling for men and women is recommended.
5. The Local Government should enforce environmental byelaws against bush burning, lumbering of trees, and use of chemicals for fishing, these laws should also take care of preservation of reserved forests, plants and herbs.
6. The state and local government should make efforts towards poverty alleviation by taking into consideration all parties in the community, especially women who are most affected as a result of the degradation of the environment.
7. The State and Local Government should employ more agriculture extension officers who should educate farmers on the appropriate and sustainable use of technology and agro-chemicals in their activities.
8. The media should be used to conscientize people on environmental issues.
9. Since increasing pressure of population on the land has resulted in shortened fallow periods, or reduced practice of shifting cultivation, also since most farmers cannot afford costly inputs, it is necessary to develop at the community level a low input soil management technology. In this regards, alley cropping

which involves planting some trees at the furrow within farm lands is recommended.

10. Methods of enhancing soil fertility with plant and animal wastes instead of chemical fertilizer should be adopted by communities. This is because it was found that wrong application of chemical fertilizers degrade the soil in the area. Since local and individual sources might be limited, it is recommended that community based organizations (CBOs) should set up large manure centers in various communities where grasses and domestic wastes will be collected, decomposed and distributed to farmers according to need.
11. Community practices like guarding of drinking water sources, digging wells and local dams, tree planting and sharing of communal lands should be fostered.
12. Community based organizations and groups should be recognized by the Local Governments as information vanguards on environmental protection. This is because the people in the research area belong to different CBOs and village meetings and also because group decisions are more widely adhered to. Groups are also effective for re-enforcing knowledge among non-literate people as they can rely on the collective memory of the group.

Government should build boreholes and pipe-borne water systems closer to the people thereby reducing the distance to water sources.
13. Communities should set up water users association where they pay tokens to maintain boreholes.
14. Legal rights and economic opportunities for men and women should go hand-in-hand, thus empowering them for greater participation in meaningful and rewarding work.

The Ebonyi State Assembly should pass a bill that will consider women in allocation of communal lands for farming. This is because as majority of the farmers are women, they need a level of ownership right to land conferred on them. An extensive land titling for men and women is recommended.

15. Since farming was found to be primary and secondary occupation of the people, men and women should make efforts to increase the range of livelihood choices available to them within the communities.
16. The people should make use of alternatives to fuel wood or improved fuel-efficient systems to reduce dependence on firewood.
17. There is need for greater attention to women's needs and contributions to the environmental capital. This is because both women and environment are shadow subsidies that enable profits to be made, which most of the time are taken as free goods. Methods of valuing women's work as well as environmental goods need to be incorporated into approaches to solution of environmental problems.
18. Gender should be mainstreamed in all development plans, projects and actions in Ebonyi State.
19. Further researches would be needed to establish the links between gender relations and environmental management. This will include examination of workability of some of the recommended practices such as Alley-farming, setting up of water-users association, community-compost gender-mainstreaming of government development projects and programmes etc.

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APPENDIX I
QUESTIONNAIRE

Dear Sir/Madam,

This questionnaire is soliciting your candid opinion on the topic gender analysis of the socio-economic impact of environmental degradation in Ebonyi State. It is a research conducted in partial fulfillment of the requirement for the award a PhD in Sociology of the University of Jos. Your confidentiality and anonymity are guaranteed.

Tick as appropriate.

A. SOCIO DEMOGRAPHIC DATA

A.1 Personal details

1. Name of Community.....LGA.....

2. Sex of Respondent

A Male B Female

3. Age

A 20-29, B 30-39 C 40-50 D above 50

4. Level of Educational Attainment

A No formal B Primary C Secondary D Post secondary

5. Marital status

A Married B Single C Divorced D Separated E Widowed

6. Main occupation

A Farmer B Trader C Civil servant

D Others specify.....

7. Subsidiary occupation

A Farmer B Trader C Craftsman

8. Headship of the family

A Male B Female

A.2 Asset Base of Respondent

9. Number of wives (if applicable)

A One B two C more

10. Number of children

Males.....

Females.....

11. Number of male children living outside the community

A None B one C two D more than two

12. Availability of house helps and servants

A Yes B No

13. Type of house

A Cement wall and metal roof
B Mud wall and metal roof
C Mud wall with thatched roof

14. Number of farmlands owned

A One B two C three or more

15. Accessibility to land (tick the major method)

A by inheritance
B by renting
C by leasing
D from relatives
E from husband

16. Method of farming predominantly used

A Uses mechanized farm implements
B Hires labour
C Does the farm work by self and family
D Other methods specify.....

17. Annual income

A high B medium C low

B. IDENTIFICATION OF NATURE AND CAUSES OF ENVIRONMENTAL DEGRADATION IN THE STUDY-COMMUNITY

B.1 Land Degradation

18. Are there signs of land degradation in your community?

A Yes B No

19. What are the signs?

.....

20. Do you practice shifting cultivation?

A Yes B No

21. What is the nature of land productivity in this community?

A Increasing B declining C just adequate

22. If declining, how severe is the decline?

A Very severe B Severe C not severe

23. When did low productivity start in this community?

A 20 years B 10 years C 5 years or less

24. Natural causes like drought, wind, flood, erosion are reasons for declining productivity

- A Strongly agree B Agree C Disagree D Strongly disagree
25. Over cultivation is a reason for declining productivity
- A Strongly agree B Agree C Disagree D Strongly disagree
26. Improper use of fertilizer is a reason for declining productivity
- A Strongly agree B Agree C Disagree D Strongly disagree
27. Lack of fertilizer application is a reason for declining productivity
- A Strongly agree B Agree C Disagree D Strongly disagree
28. Suggest other reasons for declining land productivity
-
29. Who contributes more to land degradation in your community?
A Men B Women
30. Give reasons for your response to question 29 above
-
- B.2 Forest Degradation**
31. How many forests exist in this community presently?
.....
32. In the last 10 years how many forests were there?
.....
33. Do those that survive still have the original plants and herbs?
A Yes B No
34. Bush burning is a reasons for forest degradation in this community
A Strongly agree B Agree C Disagree D Strongly disagree
35. Commercial logging for timbre is a reason for forest degradation in this community
A Strongly agree B Agree C Disagree D Strongly disagree
36. Fetching firewood is a reason for forest degradation in this community
A Strongly agree B Agree C Disagree D Strongly disagree
37. Clearance of forests for farmland is a reason for forest degradation in this community
A Strongly agree B Agree C Disagree D Strongly disagree
38. Clearance of forests for settlement is a reason for forest degradation in this community
A Strongly agree B Agree C Disagree D Strongly disagree
39. Suggest other reasons for forest degradation in your area
.....
40. Who contributes more to forest degradation in your community?
A Men B Women
41. Give reasons for your response to question 39 above
.....

B.3 Water Source Degradation

42. How many streams and rivers exist in this community presently

A One B Two C Three or more

43. In the last 20 years were there more rivers and streams?

a. A Yes B No

44. Are the surviving streams and rivers still as deep as they used to be

Yes/No

45. Natural filling by sand from flood is a reason for shallowness and drying up of water sources in this community

A Strongly agree B Agree C Disagree D Strongly disagree

46. Human induced erosion due to destruction of the water shed is a reason for shallowness and drying up of water sources in this community

A Strongly agree B Agree C Disagree D Strongly disagree

47. Excessive pumping of the water from the rivers and streams for irrigation is a reason for shallowness and drying up of water sources in this community

A Strongly agree B Agree C Disagree D Strongly disagree

48. Dry season is a reasons for shallowness and drying up of water sources in this community

A Strongly agree B Agree C Disagree D Strongly disagree

49. Suggest other reasons for shallowness and drying up of water sources in your area.....

50. Who contributes more to water degradation in your community?

A Men B Women

51. Give reasons for your response to question 50 above

52. What is the nature of the water in the rivers and streams?

A Clear B coloured C muddy D smelly E salty F drying up

53. If coloured, muddy or smelly what is responsible?

A Naturally due to pollution from leafs in river bank

B Flooding

C Use of chemicals for fishing

D Dumping of refuse or washing of dirt

E Drying up process

F Others specify.....

B.4 Natural Resources in the Environment

54. Are there natural resources in your community that were tapped or are being tapped?

A Yes B No

55. Who taps these resources?

A Men B Women C Government D Private Company

56. Where are the resources located?

A In water B on land C In the forest

57. How long have the resources been tapped?

A Over 20 years B 10 -19years C less than 10

58. Extensive excavation of top soil is an impact of tapping natural resources in your community

A Strongly agree B Agree C Disagree D Strongly disagree

59. Destruction of forest is an impact of tapping natural resources in your community

A Strongly agree B Agree C Disagree D Strongly disagree

60. Damage to farmland is an impact of tapping natural resources in your community

A Strongly agree B Agree C Disagree D Strongly disagree

61. Salination of water and soil is an impact of tapping natural resources in your community

A Strongly agree B Agree C Disagree D Strongly disagree

62. Suggest other impacts of tapping natural resources in your community

.....

C. EVALUATION OF SOCIOECONOMIC IMPACT OF ENVIRONMENTAL DEGRADATION ON GENDER ROLES AND RELATIONSHIP

C.1 Impacts of Environmental Degradation

63. Low crop yield is an impact of land degradation in your community

A Strongly agree B Agree C Disagree D Strongly disagree

64. Putting in more labour in farming activities is an impact of land degradation in your community

A Strongly agree B Agree C Disagree D Strongly disagree

65. Spending more time in farming activities is an impact of land degradation in your community

A Strongly agree B Agree C Disagree D Strongly disagree

66. Declining income from farm is an impact of land degradation in your community

A Strongly agree B Agree C Disagree D Strongly disagree

67. Land dispute is an impact of land degradation in your community

A Strongly agree B Agree C Disagree D Strongly disagree

68. Reduced access to fertile land is an impact of land degradation in your community

A Strongly agree B Agree C Disagree D Strongly disagree

69. Suggest other impacts of land degradation in the community

.....

70. Difficulties in fetching firewood is an impact of forest degradation

A Strongly agree B Agree C Disagree D Strongly disagree

71. Disappearance of timber is an impact of forest degradation

A Strongly agree B Agree C Disagree D Strongly disagree

72. Loss of medicinal herb is an impact of forest degradation

A Strongly agree B Agree C Disagree D Strongly disagree

73. Increasing erosion is an impact of forest degradation

A Strongly agree B Agree C Disagree D Strongly disagree

74. Lack of shade is an impact of forest degradation

A Strongly agree B Agree C Disagree D Strongly disagree

75. Increase in water born diseases is an impact of water degradation in the community

76. A Strongly agree B Agree C Disagree D Strongly disagree

77. More time is spent in search of water is an impact of water degradation in the community

A Strongly agree B Agree C Disagree D Strongly disagree

78. More money is spent buying water is an impact of water degradation in the community

A Strongly agree B Agree C Disagree D Strongly disagree

79. Reduced domestic sanitation is an impact of water degradation in the community

A Strongly agree B Agree C Disagree D Strongly disagree

80. Irrigation becomes more difficult is an impact of water degradation in the community

A Strongly agree B Agree C Disagree D Strongly disagree

81. Fishing becomes more difficult is an impact of water degradation in the community

A Strongly agree B Agree C Disagree D Strongly disagree

C.2 Perception of gender roles in farming community

81. Who clears land for farming in this community?

A Male B Female C Both

82. Who prepares the land manually for planting in this community?

A Male B Female C Both

83. Who uses tractors to prepare the land in this community?

A Male B Female C Both

84. Who plants crops in this community?

A Male B Female C Both

85. Who applies fertilizer to crops in this community?

A Male B Female C Both

86. Who weeds the farms in this community?

A Male B Female C Both

87. Who harvests crops in this community?

A Male B Female C Both

88. Who transports harvested crops in this community?

A Male B Female C Both

89. Who logs wood for sale in this community?

A Male B Female C Both

90. Who gathers firewood for home cooking in this community?

A Male B Female C Both

91. Who gathers medicinal herbs in this community?

A Male B Female C Both

92. Who fetches water for house use in this community?

A Male B Female C Both

93. Who fishes in this community

A Male B Female C Both

94. Are there changes in these roles in the last 10 to 20 years?

A Yes B No

94. Did the changes make it more difficult to perform the roles?

A Yes B No

95. Are the difficulties connected to environmental degradation?

A Yes B No

96. If yes, how is it connected to environmental degradation?

.....

C.3 Environmental degradation and migration

97. When environment degrade and poverty sets in, what are the typical reactions of men in this community?

- A They migrate to look for alternative jobs
- B They prefer to stay at home and seek for means of improving the environment

98. When environment degrade and poverty sets in, what are the typical reactions of women in this community?

- A They migrate to look for alternative jobs
- B They prefer to stay at home and seek for means of improving the environment

D. EVALUATION OF ENVIRONMENTAL FRIENDLINESS OF COPING STRATEGIES

D1. Gender and appreciation of coping strategies against environmental degradation

99. What type of fertilizer do you prefer?

- A Chemical fertilizers
- B Natural fertilizers

100. Do you start applying the fertilizer on advice from experts?

- A Yes
- B No

101. If no, why?

- A I do not need to seek advice
- B There is no body to advise on this

102. Do you use firewood more often for your cooking?

- A Yes
- B No

103. If yes why?

- A It is cheaper and better
- B There is no alternative
- C What are the impacts of the use of firewood

104. Do you plant trees when you cut one?

- A Yes, I do plant
- B No, I do not need to
- C I have no idea that I should plant trees

105. How do you cope with water scarcity and pollution?

- A Dig wells
- B Collect rain water in tanks
- C Sink boreholes
- D Filter polluted water
- E Go far to search for water

D.3 Assistance in managing the effects of environmental degradation

106. Who do you predominantly depend on to solve environmental problems in your community?

- A Government
- B community effort
- C Individual effort

107. **Provide reasons for your response?**

108. What type of assistance do you receive from government? (*tick as many as applies*)

- A Fertilizers B Improved seeds C Extension service D Sink Boreholes
- E Plant trees F Financial assistance

109. Are there some forms of discrimination in distribution of assistance from government?

- A Yes B No

110. If yes who gets more?

- A Men B women

111. Do you also get support from relations?

- A Yes B No

112. If yes, from who? (*mark as many as are applicable*)

- A My spouse who has emigrated
- B My son or daughter who is not living with me
- C Relations

113. What other measures of support do you have to seek?

- A Join cooperative society
- B Work in other person's farm for subsistence and income
- C Search for food in the forests or from rivers
- D Do craft work or trade to earn money
- E Others specify.....

E Policies on environmental degradation

114. Do you know of any government policy directed at solving the problems of environmental degradation?

- A Yes B No

115. Which aspects of the environment do this policies address

- A Land B water C air D forest

116. In your opinion are the policies implemented in your community?

- A Yes B No

117. Do the policies prescribe anything to cater for the needs of women

- A. Yes B. No

118. Are there some interest groups in your community who are showing concern on environmental issues

- A Yes B No

119. If yes which are they.....

120. Do they mainstream gender in their programmes?

- A Yes B No

APPENDIX II

Αφυφου

Μμεβι οκιρικιρι εβε α να-ακί(πυτα νρι να οτυ ο σι εμετυτα εξιγβο ιβι νδυ υμυν
 ωοκε να υμυνωανψ/ να ακυ να υβα ηα ν□οβοδο ν□ακί(πυταγασι νρι ν□Εβονφι
 Στεετι

Εξιγβο Ογα/Ννε

Αφυφου νδι α χηί(ρί ιχηί(πυτα υχηε γι νεισιοκωυ να-ελεβα ανψα νεοτυ μμεβι οκ
 ιρικιρι εβε α να-ακί(πυτα νρι να οτυ ο σι εμετυτα εξιγβο ιβι νδυ υμυνωοκε να
 υμυνωανψ/ να ακυ να υβα ηα νεοβοδο να-ακί(πυταγασι νρι νΕβονφι Στεετι.
 Ε φι ψα εμεζυ ιηε α τυρυ ανψα ψα μακα ιτοζυ οκε νεινωετα νζερε μμυτα (καχ
 ηαμαρα βυ Πη.Δ να Σοσηιολοφι ν-α Μαηαδυμ θοσ. Αγαγη/ εμε κα ονψε (ζί μ
 ατα να (βυ γ/ ζαρα αφυφου νδι α.

Τινψε ↔κ×ρ× μα ο βυ μεφου αηιριοκωυ δ/ κα οκωεσ/ρ/

Ι μεελα

A ΙΗΕ ΓΒΑΣΑΡΑ ΟΝΩΕ ΟΝΨΕ

1.

Αηα οβοδο γι?.....

.....

2.

Αηα (χηιχηι ιμε οβοδο γι?.....

.....

3. Ι βυ Νωοκε κα ι βυ νωαανψι?

A Νωοκε B. Νωαανψι

4. Αφ(ολε / γβαρα?

A αφο ιρι αβυ(ρυο νειρι αβυ(να ιτολυ (20 – 29 ψρσ) B αφο /ρι ατ(ρυ(νειρι ατ(να
 ιτολυ (30 – 39 ψρσ)

X αφο ιρι ανο ρυο ιρι ανο να ιτολυ (40 – 49 ψρσ) Δ αφο καριρι ιρι ισε (50 ανδ αβ
 οψε)

5. Κεδυ εβε ιγυδοβερε ακουκωφ?

A Αγγη/ μ μα νχηα B Ογο πρα/μαρι X Ογο σεκον/ρ/ Δ καρ/ρ/ ογ
 ο σεκον/ρ/

6. Ι λυρυ δι/νωουνψε κα οβυ να / λυβεγη/?

A Α Αλυρυ μ δι/νωουνψε B Αλυβεγηι μ δι/νωουνψε

X Αγβαραμ δι/νωουνψε μ αλυκωαγη/ μ Δ Αλυρυ μ μα ανψι κεωαγοδυρυ E Αλυρυ μ
 μα (νωυ(λα

7. Γιι βυ ακα (ρυ γ/ καχηα γ/ μπια?

A Ορυ υγβο B Ιζυ αηια X Ορυ ακα

8. Κεδυ ακα ορυ οζο ι νωερε?

A Ορυ υγβο B Ιζυ αηια X Ορυ ακα Δ Ορυ γ(παμεντι E Νδι (ζι

9. Ονψε να-αχηι νεζι-να-υλο γι?

A Νωοκε B Νωαανψ/

ΙΗΕ ΜΝΩΕΤΑ

10. Ϊ λυρυ υμνωαανψ< ολε?
 A Οτυ B Αβυφ X Καρια αβυφ
11. Ϊ νωερε υμυ ολε?
 A Υμυ νωοκε B Υμυ νωαανψ<
12. Υμυ Νωοκε γ< ολε βι να μβα (ζι)?
 A Ονωεγη< B Οτυ X Αβυφ Δ Καρ<α αβυφ
13. Ϊ νωερε υμυοδιβο να υμνενψεμακα?
 A Έ-έ B Έ-ε
14. Κεδυ υδ< υλ< < νωερε?
 A Υλ< ντυ σιμεντι να γβαμγβαμ B Υλ< αφ♣ να γβαμγβαμ X Υλ< αφ♣ να ακ<ρ<κα
15. Αλα ολε κα < νωερε μακα (ρυ υγβο)?
 A Οτυ B Αβυφ X Ατο ωεε γαβαζιε
16. Κεδυ κα ισι ενωετα αλ♣?
 A Νκε ρυτυρυμ σιτε νεακα νναμ B Ϊκωυ υγωφ μακα (νωα ολε να ολε
 X Ϊκωυ υγωφ μακα οτυ αφφ Δ Σιτε νεακα νδ< μυ να σι να αγβυρυ E Σιτε ν
εακα δι μ
17. Υζι< ολε κα εφικαρ<ρ< ακ<πυτα νρι νεοβοδο α?
 A Σιτε νειφι νγωα (ρυ (γβαρα (ηυρυ B Σιτε νεικπ<τα νδι (ρυ
 X Σιτε να μυ ονωε μ να υμυ μ ιφι ακα ανψΙ ρυφ ψα βυ (ρυ
 Δ Υζι< (ζι< (κ(ωαα).....
18. Έγο ολε κα < να-ενωετα νεαφ< σι να (λυ υγβο?
 A Ό βυρυ ιβυ B Ό βυτυρυ Ιβυ X Ό βυγη< ιβυ
 B ΜΜΕΒΙ ΟΚΙΡΙΚΙΡΙ ΝΑ-ΕΒΕ Α ΝΑ-ΑΚΟΠΥΤΑ ΝΡΙ ΝεΟΒΟΔΟ
ΜΜΕΒΙ ΑΛΑ
19. Ε νωερε ↔κ<ρ< να-εγοσι να α να-εμεβι αλα εβε ανα ακοπυτα νρι οβοδο γ<?
 A Έ-έ B Έ-ε
20. Ολεε ↔κ<ρ< ↔κ<ρ< νδι αηυ?
.....
.....
21. Άνὰ ενψε αλ♣ ογε κα (κ<↔< ακα τυτυ α κ<ψα νρι?
 A Έ-έ B Έ-ε
22. Ολεε οτυ αλα σι εμεπυτα μκπυρυ νεοβοδο α?
 A Ονα αβαωανψε B Οναγη< αγα νιηυ X Οδι νν<μμα
23. Οβυρυ να (ναγη< αγα νειηυ, αγαγη< νειηυ αηυ (δι υκωυυ?
 A Οδ<καρ<ρ< υκωυυ B Οδι υκωυυ X Οδ<γη< υκωυυ
24. Ολε αφ< αλ♣ οβοδο α βιδορο δαωα μβα νειμεπυτα μκπυρυ?
 A Αφ< <ρ< αβυφ B Αφ< <ρ< X αφ< <σε μ<βυ καρ<α ν<τ<
25. Οσιναχη, (οκε ανωυ, ννυκωυ ικυκυ, ιδε μιμι να μβυζε), οσο νειηε
να-εμε αλα εμεπυταγηι νρι?
 A Εκωενψεσιρι μ ικε B Εκωενψερε μ X Εκωενψεγη< μ Δ Εκωενψεγη< μ μ
α νχηα

26.

Ικί νρι νάαλ ♣ κωα αφί βυ οτυ νιμε ιηε να-εμε κα αλ ♣ γηαρα ιμεπυτα νρι νκε ί
μα?

- A Εκωενψεσιρι μ ικε B Εκωενψερε μ X Εκωενψεγη< μ Δ Εκωενψεγη< μ μ
α νχηα

27.

Ι τινψε φετιλα<ζα νάαλ ♣ νάυζί να-έζιγηι έζι οσο νάιμε ιηε να-εμε κα αλ ♣ γη
αρα
ιμεπυτα νρι νκε ίμα?

- A Εκωενψεσιρι μ ικε B Εκωενψερε μ X Εκωενψεγη< μ Δ Εκωενψεγη< μ μ
α νχηα

28.

Έ νωεγηι ντυ φετιλ<ζα ίνα βυκαρι οτυ νάιμε ιηε νάεμε κα αλ ♣ γηαρα ιμεπυτα
νρι νκε ίμα

- A Εκωενψεσιρι μ ικε B Εκωενψερε μ X Εκωενψεγη< μ Δ Εκωενψεγη< μ μ
α νχηα

29. Κωου ιηε ίζί < χηερε νάεμε κα αλ ♣ γηαρα <μεπυτα νρι νκε ίμα

.....
...

.....

30. Όλε νδι ομυμε ηα καχηα ιμε κα αλα γηαρα ιμεπυτα νρι νκε ίμα νάοβοδο α?

- A Υμυνωοκε B Υμυνωαανψι

31. Κωου ιηε μερε < φι ζαα αφυφυ ιρι αφύ να ασατο (28) οτυαα?

.....
...

.....

ΠΒΥΤΥΣΙ ΟΣΙΣΙ ΔΙ ΝάΟΚΕ ΟΗΙΑ

32. Οκε ίηια ολε δι νάοβοδο γι υγβυ α?

33. Νάαφί ιρι γαρα αγα, ίηια ολε δι να ψα?.....

34.

Οηια νδι α φίδυρυ υγβυ α ηα κα νάερε υδ< οσισι μβυ να αηιηια να-ετοβυ να
ηα?

- A Έ-έ B Έ-ε

35.

Ιμυνψε ίκυ νάοηια ίβυ οτυ νάιμε ιηε νδι να-εμεβι οσισι δι νάοκε ίηια νάοβοδο γ
ι?

- A Εκωενψεσιρι μ ικε B Εκωενψερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

36. Ι γβυτυ οσισι δι νάίηια, ωαα ψα ρεε οσο να-εμεμινα ίηια?

- A Εκωενψεσιρι μ ικε B Εκωενψερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

37. Ι κπατα νκυ νάιμε ίηια οσο να εμεμινα ίηια δι νάοβοδο α?

- A Εκωενψεσιρι μ ικε B Εκωενψερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

38.

Ἰ συχηα οκε ἱηια ωερε ψα μερε εβε α να-ακῖ νρι οσο να-εμεμινα ἱηια νεοβοδο α?

A Εκωενψεσιρι μ ικε B Εκωενψερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

39. Κωου ιηε νδι ἱζῖ ἴ χηερε σο να-εμεμινα ἱηια νεοβοδο γι?

40. Ολεε νδι ομυμε ηα καχηα ἴμεγιδε ἱνῖδυ οκε ἱηια νεοβοδο γι?

A ὸμυνωοκε B ὸμυνωαανψι

41. Κωωαα ἴηε μερε ἴ φι ζαα αφυφυ νκε ιρι ανῖ οτυ α?

ἹΗΕ ΝΑ-ΕΜΕΒΙΓΗΑΣἹ ΜΜΙΡΙ

42. ὸζῖ ἱψι ολε δι νεοβοδο α

A Οτυ B Αβυῖ X Ατῖ μῖβυ καρια

43. Νῆιρι αφῖ αβυῖ γαφα αγα, ενωερε ἱνυ ἱγυγυ ἱψι καρια κα ηα δι υγβυ α?

A Ε-εῖ B Ε-εῖ

44. Ἱψι νδι α ε νωερε υγβυ α ηα κα δι ογβυ δι κα ηα δι να μβυ?

A Ἐ-εῖ B Ἐ-εῖ

45.

Ἱδε μμιρι ἴβυρυ ↔φ♣ ωυνψε νῆιψι ἱβυ οτυ υζῖ μιρι φι ατα νῆιψι μα ἱ βυ ταλατα νῆιψι νεοβοδο α?

A Εκωενψεσιρι μ ικε B Εκωενψερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

46. Μβυζε μαδυ κπαταρα σιτε να ἱμεβι υζῖ μιρι σι αγα ο σο νῆεμε κα ογβυ μμιρι ταλατα μῖβυ ταχηαα?

A Εκωενψεσιρι μ ικε B Εκωενψερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

47. Ἱ μικῖ ρῖ μιρι δι νῆιψι ἱφι ωεε φεσα νῆεβε ακῖ ρῖ νρι ο σο νῆεμε κα ογβυ μμιρι ταλατα μῖβυ ταχηαα?

A Εκωενψεσιρι μ ικε B Εκωενψερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

48. Οκῖ χηι ο σο νῆεμε κα ογβυ μμιρι ταλατα μῖβυ ταχηαα?

A Εκωενψεσιρι μ ικε B Εκωενψερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

49.

Κωου ιηε ἱζῖ να-εβυτε μμιρι δι νῆιψι ἱταλατα μα ἱβυ ταχηαα κπαμκπαμ νεοβοδο γι?

50. Ο λεε νδι καχηα ἱ μεβι μμιρι δἴ νιψι νεοβοδο γἴ?

A ὸμυνωοκε B ὸμυνωανψἴ

51. Κῖωα α ιηε μερε ἴ φι ζαα αφυφυ α ἴ ζαα?

52. Κεδυ κα μμιρι δἴ νῆιψι οβοδο υνυ δἴ?

A ὸ χηαπυρυ νκε ἱμα B ὸ χηα ψα γωακῖ ρῖ αγωακῖ X ὸ να αχηα ↔φ♣ ↔φ♣

Δ ὸ να εσι ἴ σι Ε ὸ να-αταχηα

53.

Γ<ν< μερε ο φι να-αχηα ντυ ντυ μα / βυ να-αχηα ↔φ♣ ↔φ♣ μα / βυ
νέσι < σι?

A Ο βυ ακωα οσισι δανψεχηαρα να μμιρι B Ο βυ υτο μμιρι X Ο βυ ιφι / γω
υ εγβυ αζυ

Δ Ο βυ μακα υνπι α να-ατυνπε να μμιρι μα / βυ ιηε ρυρυ ινπι ανα ασα να μμιρι

E Κωο ιηε / ζ / ιχηερε.....

X AKY XHI NΨERE NΞOKIPIKIRI MMAΔY

54.

Ε νωερε ακυ χηι νπερε νξοβοδο γι νκε ε κωυτυταωορο μα / βυ νκε ανα
εκωυτυτα?

A Έ-έ B Έ-ε

55. Ονψε να εκωυτυτα ακυ νδι α?

A Υμυνωοκε B Υμυνωαανπι X Γομεντι Δ Υλ / ρυ ν / ρ / ονωε ψα

56. Ε βεε κα ακυ νδι α δι?

A Νειμε μμιρι B Νεελυ αλ♣ X Νειμε / ηια

57. Ιηε δι κα αφ / ολε κα ε γωυτυταωορο ακυ α?

A Ο καριρι ιρι αφ / αβυ / B Μαλιτε νξαφ / ιρι ρυο νξαφ / ιρι να-ιτοολυ X Ορυγηι αφ /
ιρι

58. Ι γωυ αλα γωυτεε ψα ακα / βυ οτυ ε σι εβιδο ιωεπυτα ακυ σι να χηι νξοβοδο γι?

A Εκωενψεσιρι μ ικε B Εκωενπερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

59. Ιγβυτυγασι οσισι δι να ννυκωυ / ηια / βυ υζ / ε σι εωεπυτα ακυ σι να χηι
νξοβοδο γι?

A Εκωενψεσιρι μ ικε B Εκωενπερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

60. Ιμεβι αλ♣ α να-ακ / πυτα νρι / βυ υζ / ε σι εωεπυτα ακυ σι να χηι νξοβοδο γι?

A Εκωενψεσιρι μ ικε B Εκωενπερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

61. Μιρι ννυ να αλα ννυ / να-εμετυτα υζ / ε σι εωεπυτα ακυ σι να χηι νξοβοδο γι?

A Εκωενψεσιρι μ ικε B Εκωενπερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

62. Κωο ιηε νδι οζο να-εμετυτα υζο ε σι εωεπυτα ακυ σι να χηι νξοβοδο γι

Δ MMEY MMEBI OKIPIKIRI NΞEMETY YMYNΩOKE NA YMYNΩAANΨI

Ιηε ννηια αηυ να-εσι νειμεβι οκιρικιρι εβε υμυ μμαδυ βι

63.

Αλα εμεπυταγη νρι οτυ οξκωεσιρι, ο σο νειηε νηια αηυ να-εσι να-μεβι οκιρικι
ρι νξοβοδο γι?

A Εκωενψεσιρι μ ικε B Εκωενπερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

64. Ιτινπε οκε νδολι νερυ ορυ υγβο Αλα εμεπυταγη νρι οτυ οξκωεσιρι οσο νειηε νηια α
ηυ

να-εσι νειμεβι οκιρικιρι νξοβοδο γι?

A Εκωενψεσιρι μ ικε B Εκωενπερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

65. Ιτυφυ ννυκωυ ογε νιρυ ορυ υγβο Ιτινπε οκε νδολι νερυ ορυ υγβο Αλα εμεπυταγη
νρι οτυ οξκωεσιρι οσο νειηε νηια αηυ να-εσι νειμεβι οκιρικιρι νξοβοδο γι?

A Εκωενψεσιρι μ ικε B Εκωενπερε μ X Εκωενψεγηι μ Δ Εκωενψεγηι μ μα νχηα

66. Ι μεβι οκιρικιρι / να-εμε κα / νυ εγ / υμυμμαδυ να ενωετα νξ / ρυ υγβο
να-αγβαδα νξοβοδο γι?

- Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
67. Οζζζζ(αλ♣ ο-σο νιηε νηζα αηη να-εσι νειμεβι οκιρικiri εβε μμαδυ βι νεοβοδο γι?
- Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
68. Ιμεβι οκιρικiri εβε ε βι / να-εμε κα / νυ / γυγυ εβε δι μμα ικ / πτυα νρι να-αγβαδα?
- Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
69. Κωου ιηε νδι οζο ιμεβι οκιρικiri εβε ε βι να-εβυτε
.....
.....
70. Ιηε ννηια αηη α ανα-ενωετα νεικπατα νκυ να-εσιτε / να εμεβι οκιρικiri εβε ε βι?
 Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
71. Οσισι α να εγβυτυ αωαπυτα ιηε ε φι αρυ υλο να ιηε / ζ / γασι αδιζιγη υβαρα / να εμεβι
οκιρικiri εβε μμαδυ βι?
 Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
72. Μγβ / ρ / γωυ να ακωυκω / εφι αγω / νριανρια αδιχηαγη / ζ / νειηι να α να-εμεβι οκιρικiri εβε μμαδυ βι?
 Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
73. Ιμεβι οκιρικiri εβε μμαδυ βι / να-εμε κα μβυζε να αβαωανψε να-οβοδο γι?
 Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
74. Ιμεβι οκιρικiri εβε μμαδυ βι / να-εβυτε ε νωεγηι νδο?
 Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
75. Μβαωανψε να / νυ / γυγυ νρια νρια να-εσι να μμiri σιτερε νειμεβι μμiri υμυ μμαδυ να-εφι
εμε ιηε νεοβοδο
76. Ιχη / γηαρι εβε ανα ενωετα μμiri οσο να νσογβυ ανα ενωε μακα ιψι ν-μεβι?
 Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
77. Ιτυφυ ογε να-ινωετα μμiri οσο να-εμεβι μμiri να οβοδο γι?
 Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
78. Ιηε μερε ε φι ετυφυ ννυκωυ εγο ιφι να-αζυ μμiri βυ να ανα εμεβι μμiri δ / ζ νεοβοδο
 Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
79. Να εζι να-υλο αναγηι αδι οχηα οβυ μακα να ανα εμεβι μμiri δι να οβοδο?
 Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
80. Ινωετα μμiri ε φι ακοπυτα νρι ο να-εσι iκε μακα να ανα εμεβι μμiri δι να οβοδο?
 Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
81. Ιγβυτε αζυ / να αηια αηη μακα να ανα εμεβι μμiri δι να οβοδο?
 Α Εκωενψεσiri μ iκε Β Εκωενψερε μ Χ Εκωενψεγη μ Δ Εκωενψεγη μ μα νχηα
Ε ΙΗΕ ΔΙΠΡΙ ΥΜΥΝΩΟΚΕ ΝΑ ΥΜΥΝΩΑΑΝΨΙ ΝΔΙ ΝΑ-ΑΚΩ ΥΓΒΟ Νεοβοδο
82. Ονψε να-ασυχηα εβε α να-ακ / υγβο νεοβοδο α?
 Α Υμυνωοκε Β Υμυνωαανψι Χ Υμυνωοκε να υμυνωαανψι
83. Ονψε να-εφι iκε αηη ψα ακωαδο αλ♣ μακα ικυνψε ψα νρι να οβοδο α?
 Α Υμυνωοκε Β Υμυνωαανψι Χ Υμυνωοκε να υμυνωαανψι
84. Ονψε να εφι ταρακιτ / εγβυρι αλ♣ μακα ικ / νρι να-οβοδο α?
 Α Υμυνωοκε Β Υμυνωαανψι Χ Υμυνωοκε να υμυνωαανψι
85. Ονψε να-ακυνψε νρι νεαλα νεοβοδο α?
 Α Υμυνωοκε Β Υμυνωαανψι Χ Υμυνωοκε να υμυνωαανψι
86. Ονψε κα / βυ / ρυ ψα ιγηα ντυ φετιλα / ζα?
 Α Υμυνωοκε Β Υμυνωαανψι Χ Υμυνωοκε να υμυνωαανψι

87. Ονψε κα (διΛρι ιβ(πυ αηΛηΛα νεβε α κ(ρ(νρι?
A Υμυνωοκε **B** Υμυνωαανψι **X** Υμυνωοκε να υμυνωαανψι
88. Ονψε κα (διΛρι Λιωετα ιηε α κ(ρ(νευβο?
A Υμυνωοκε **B** Υμυνωαανψι **X** Υμυνωοκε να υμυνωαανψι
89. Ονψε να εβυλατα ιηε ε ωεπυταλα νευβο?
A Υμυνωοκε **B** Υμυνωαανψι **X** Υμυνωοκε να υμυνωαανψι
90. Ονψε κα (διΛρι ιωαπυτα νκυ ε φι εσι νρι νευλ(νεοβοδο α?
A Υμυνωοκε **B** Υμυνωαανψι **X** Υμυνωοκε να υμυνωαανψι
91. Ονψε κα (διΛρι Λκπατα νκυ φι εσι νρι νευλ(νεοβοδο α?
A Υμυνωοκε **B** Υμυνωαανψι **X** Υμυνωοκε να υμυνωαανψι
92. Ονψε κα (βυ (ρυ ψα ικπατα μγβ(ρ(γωυ να μκπα ακωκω(φι αγω((ρια νεοβοδο α?
A Υμυνωοκε **B** Υμυνωαανψι **X** Υμυνωοκε να υμυνωαανψι
93. Ονψε κα (διΛρι ικυτε μμιρι ε φι εμε ιηε νεξι-να-υλ(νεοβοδο α?
A Υμυνωοκε **B** Υμυνωαανψι **X** Υμυνωοκε να υμυνωαανψι
94. Ολεε νδι να-εγβυκαρι αζυ νεοβοδο α?
A Υμυνωοκε **B** Υμυνωαανψι **X** Υμυνωοκε να υμυνωαανψι
95. Ε νωερε ιηε μγβανωε δΛ νε(ρυ νδι α νιλε, νειηε δι κα αφ(ιρι μ(βυ αφ(ιρι αβυ(γαρ α αγα?
A ΕΕ **B** ΕΕ
96. Ιηε νηια αηυ δΛ νε(ρυ νδι α ο σιτερε νε(τυ ε σι εμεβι οκιρικιρι εβε μμαδυ βι?
A ΕΕ **B** ΕΕ
97. Κωου ιηε μερε ιφι ζαα ιηε Λ ζαρα
-
- Γ ΜΜΕΒΙ ΟΚΙΡΙΚΙΡΙ ΝΑ ΙΚΩΛΠΥ ΝΑ-ΟΒΟΔΟ**
98. Μγβε οκιρικιρι μεβιρι, υβιαμ βατα, γι νι βυ ιηε υμυνωοκε να-εμεκαρι?
A Ηα νεαγβαγα οβοδο (ζ(ιχη((ρυ
B Ηα να αν(δυ νεοβοδο ηα νεαχη(υζ(ηα γα-εφι νεεμεξι εβε οβιβι ηα
99. Μγβε οκιρικιρι μεβιρι, υβιαμ βατα, γι νι βυ ιηε υμυνωαανψι να-εμεκαρι?
A Ηα νεαγβαγα οβοδο (ζ(ιχη((ρυ
B Ηα να αν(δυ νεοβοδο ηα νεαχη(υζ(ηα γα-εφι νεεμεξι εβε οβιβι ηα
- Η ΜΒΦ ΥΜΥ ΜΜΑΔΥ ΝΑ ΑΓΒΑ ΜΓΒΕ ΟΚΙΡΙΚΙΡΙ ΝΑ-ΕΜΕΒΙ**
100. Ολεε υδι ΦετιλαΛιζα ι κα αναβατα μγβε ιηε οωωε υβι γι νεαδα αδα?
A Ντυ φετιλαιζα ακα μερε **B** Ντυ Φετιλαιζα σι να-χηι
101. Ο βυ νδι (καχηα-αμαρα νηερε γι νδυμ(δυ μερε ιφι νεετινψε ντυ ΦετιλαΛιζα
A ΕΕ **B** ΕΕ
102. Ο βυρυ να Λ σΛρΛ ΕΕ, γΛνΛ μερε Λ φι ζαα οτυ α?
A Αχη(γηι μ υδιρι νδυμ(δυ α **B** Αηυγηι μ ονψε γα ενψεμ νδυμ(δυ α
103. Ι να εφικαρι νκυ εσι νρι?
A ΕΕ **B** ΕΕ
104. Ο βυρυ να Λ σΛρΛ ΕΕ, γΛνΛ μερε Λ φι ζαα οτυ α?
A Ο διγηι οκε ονυ, κακωαρα μμα **B** Αμαγηι μ υζο οζο μ γα-εφι εσι ν
 Ι να-ακυνψε οσισι (ζ(, μγβε νιλε ιγβυτυρυ οτυ?
- A** ΕΕ, ανα μ ακυνψε **B** ΕΕ, εκωεσιγηι μ ικυνψε **X** Αμαγηιμ να μ κωεσιρι ικυνψε
106. Κεδυ κα νδι οβοδο α σι αναφερε μγβε υκ(μμιρι να μγβε μμιρι μεβιρι?

A Σιτε νειγωυ (μι (ωεελυ) B Σιτε να ιφι ιηε νεχηηετα μιρι οζζζο X Σιτε να-ικου βί (ηολυ

A σιτε να ιζαχηα μιρι μεβιρι εμεβι E Σιτε να ιγα εβε οζο γα χηίί μιρι

I EBE ENΨE M AKΑ ΣI ABIA MΓBE OKIPIKIP I MEBIP I

107 Ονψε κα ι να-αδαβεκαρι μακα ονψινψε ακα, μα οκιρικιρι μεβι α?

A Γομεντι B Νζυκί δι να-οβοδο X Ο νωεγηι, μαδυ νιλε να-εμε κα οσι χηίί

108 Γζνζ μερε ζφζ ζαα ιηε ζ ζαρα?

.....
109 Κεδυ κα ε νψεμακα σι νακα Γοψμεντι σι αδι?

A Ινψε ντυ Φετιλαζζα B Ινψε ακυκυ (γβαρα (ηυρυ X Νκωαδο σιτε νειζιτε νδι νδυμ δυ

A Ιγωυ βίίηολυ E Ικυ οσισι Φ Ινψε εγο

110 Ενωερε οτυ εσι ακπα οκε νεικεσα ιηε ενψεμακα?

A EE' B EE

111 Οβυρυ να-ιζαρα EE'κεδυ νδι να-εκετακαρι?

A Υμυνωοκε B Υμυνωαανψι

112 Ι να ενωετα ενψεμακα σιτε νακα νδι-εζι-νυλί γι?

A EE' B EE

113 Ο βυρυ να ι ζαρα EE', βυ σιτε νακα ονψε μίβυ νδι ολε?

A Ι βανψε να-οτυ Ιφικ(ακα (χοπαρ-τιψυ) B Ιρυ ορυ νγο X Ι χηί(γαρι ιηε οριρι νεί ηια μίβυ να μιρι

Ι χηί(ρυ ακα E Ιζυ αηια Φ κωυο νδι (ζί/

9 IHE NΔI OHANEZE NA-EME ΓBAΣAPA MBEBI OKIPIKIP I

114 Ονωερε ιωυ Γίψυμεντι τιρι μακα ινψε ακα μα-ενωεε μμεβι οκιρικιρι?

A EE' B EE

115 Ο βυρυ να αζζζα γι βυ EE', κεδυ ακυκυ οκιρικιρι ιωυ νδια γβασαρ

A Αλα B Μμζρζ X Οηια

Νεχηηιηε γζ, ιωυ α (να αδι ιρε να-οβοδ

A EE' B EE

117 Ιωυ α (να ενψεακα ζ γβο μκπα υμυνωαανψι νενωε μα οκιρικιρι νεμεβι?

A EE' B EE

118 Ε νωερε νδι οτυ νεγοσι μμασι μακα μμεβι οκιρικιρι νεμεβι νεοβοδο α?

A EE' B EE

119 Ο βυρυ να ζ ζαρα EE', κπίί ηα αηα

.....
Ο βυρυ να ζ ζαρα EE' να αφυφυ νναρι νειρι νεασαί, νδι οτυ α ηα νελεβακωα ανψα νειηε γβασαρα υμυνωαανψι να υμυνωοκε Ι μελα!

APPENDIX III**FOCUS GROUP DISCUSSION GUIDE**

- What is the relationship between men and women and the natural resource base, land forest and water (probe for ownership, control, use, and access?)
- Do these patterns of relationship change with environmental degradation?
- Do these patterns of relationship in any way contribute to the degradation of these resources?
- What nature does environmental degradation adopt in your community (probe for land ,forest ,water and other natural resource degradation)
- What are the causes of land degradation (probe for the role of gender in this)
- What are the causes of forest degradation (probe for the role of gender in this)
- What are the causes of water degradation (probe for the role of gender in this)?
- How does land degradation impact on men and women in this community (social and economic)?
- How does forest degradation impact on men and women in this community (social and economic)?
- How does water degradation impact on men and women in this community (social and economic)?
- What coping strategies do men and women adopt when faced with land degradation?
- What coping strategies do men and women adopt when faced with forest degradation?
- What coping strategies do men and women adopt when faced with water degradation?
- Who do you people look unto for solution to environmental problems in your community?
- Why do you depend on this person/body?
- How successful have their past interventions been?
- Do they mainstream gender in their intervention measures?

APPENDIX IV**SEMI-STRUCTURED INTERVIEW GUIDE**

1. What is the nature of gender relationship in this community?
 - (a) In relation to agriculture, what are the roles of men and women?
 - (b) In relation to water resources, what are the roles of men and women?
 - (c) In relation to forest resources, what are the roles of men and women?
 - (d) In relation to natural endowment, what are the roles of men and women?
 - (e) In relation to cultural practices, what are the roles of men and women?
2. Have these relationships witnessed some changes?
3. Can you recall specific events that brought about these changes? (for example colonialism, civil war, urbanization etc)
4. Would you link these changes in gender relationship to environmental degradation in this community?
5. Does environmental degradation further worsen the nature of gender relation in this community?
 - a) In relation to agriculture?
 - b) In relation to water resources?
 - c) In relation to forest resources?
 - d) In relation to natural endowment?
 - e) In relation to cultural practices
6. What are the coping strategies often adopted by men and women in this community
7. Comment on some governmental policies on the environment in Ebonyi state.

APPENDIX V**KEY INFORMANT INTERVIEW GUIDE**

1. What is the nature of land degradation in this LGA?
2. What is the nature of forest degradation in this LGA?
3. What is the nature of water degradation in this LGA?
4. As an officer of the department of environment in this LGA what are the reported causes of land, forest, and water degradation in this area?
5. How do land, forest, and water degradation impact on the people of this area?
6. What are governmental policies/programmes put in place to tackle land, forest, and water degradation in this area?.
7. How far is gender mainstreamed in this policies and programmes?
8. What are the successes recorded so far?
9. What are the challenges?
10. How far is gender an issue in environmental degradation in this area?
11. What pattern of gender relationship will you advocate for a more sustainable environmental development of this area (probe for land, forest and water development)