UNIVERSITY OF CAPE COAST

LIVELIHOODS, POVERTY AND ENVIRONMENTAL DEGRADATION IN THE SISSILA EAST DISTRICT OF THE UPPER WEST REGION

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BY

GARIBA RAZAK IBRAHIM

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DECLARATION

Candidate's declaration

I hereby declare that this dissertation is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature:..... Date:.....

Name: Gariba Razak Ibrahim

Supervisor's declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by University of Cape Coast.

Supervisor's Signature:..... Date:.....

Name: Prof. J.V. Mensah

ABSTRACT

The study examined the link between livelihoods, poverty and environmental degradation in the Sissala East District of the Upper West Region. Available literature shows that, the region is one of the poorest in Ghana and agriculture is the main livelihood.

The main data collection methods employed were household interviews, focus group discussions and library search. The study covered 90 respondents selected by simple random sampling, purposive sampling and systematic random sampling. Statistical package for Service Solution (SPSS, 16.0) was used to process the data.

The conclusion drawn from the findings was that, environment is degraded by the unsustainable livelihood activities of the people as a result of poverty. Some of the unsustainable livelihood activities identified as having negative effects on the environment included bad farming method, charcoal burning and cattle overgrazing.

The recommendations called on the government and Sissala East District Assemblies to help the people to reduce their over reliance on agriculture by diversifying into alternative livelihoods such as food processing and petting trading. The Environmental Protection Agency, District Assemblies and NGO's should create awareness among the people on the livelihoods, poverty and environmental degradation through community discussion and random talks.

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DEDICATION

To my late mother, Memuna Gariba, my son Hudu Ibrahim Benin and my wife Habiba Ibrahim.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

ACRONYMS

CFC'S	-	Chlorofluorocarbons
DETR	-	Department for Environment, Transport and the Regions
DFID	-	Department for International Development
DTI	-	Department For trade and industry
EPA	-	Environmental Protection Agency
FCUBE	-	Free and Compulsory Universal Basic Education
FGD'S	-	Focus Group Discussion
GDP	-	Gross Domestic Product
GLASOD	-	Global Land Assessment of Degradation
JSS	-	Junior Secondary School
LPG	-	liquefied Petroleum Gas
PPP	-	Purchasing Power Parity
SPSS	-	Statistical Package for Service Solution
UN	-	United Nations
UNDP	-	United Nation Development Programme
UNEP	-	United Nation Environment Programme
US	-	United Nations
WCEP	-	World Commission on Environment and Development

CHAPTER ONE

INTRODUCTION

Background to the study

The relationship between growing poverty, the struggle by the poor to earn their livelihoods and environmental degradation remains a problem in the world. This issue has been given international recognition, especially from the United Nations (UN). The poor degrade the environment in several ways to earn their livelihoods even though the rich also degrade the environment. A livelihood refers to the capabilities, assets and strategies use to make a living that is to achieve food and income security (DFID, 1999).

With the publication of the Bruntland Commission report in 1987, governments formally recognized the important link between poverty, livelihoods and environmental degradation. The report stated that those who are poor and hungry would often destroy their immediate environment in order to survive. They tend to cut down forest, their livestock would overgraze grassland and in growing numbers, they would crowd into congested cities. The cumulative effects of these changes are far-reaching as to make poverty a major global scourge (WCED; 1987). It must be emphasized that environmental degradation is also caused by the affluence. It is the rich who consume the bulk of the world's resources and who are the main polluters of the environment, with the wastes generated by their consumptive lifestyles. Furthermore, the pollutants which are mostly of the advance metropolitan

countries of North America, are not only affecting the environment in the North but are also largely responsible for the degradation of the environment in the poor countries of south America (Brown 1992).

Despite this argument, UNDP (1998) states that there are environmental challenges that arise not only from growing affluence but from growing poverty. The increasing number of poor and landless people is putting unprecedented pressure on the natural resource base as they struggle to survive. Production and consumption activities make use of the natural resources of all types. These activities also produce left over waste products called residuals and sooner or later these must find their way back into the natural world. Depending on how they are handled these residuals may lead to pollution or degradation of the natural environment (Field, 2000).

According to Mink (1993), the link between poverty and environmental degradation is explained based on vicious cycle dynamics, which is Malthusian inspiration where farmers pushed by population increase extend cropping to marginal lands, thereby degrading them. The latter reduces yields, which further impoverishes the farmers. In construct, one school of thought (the distributive school) argues that population growth per-se does not contribute a problem. The problem is due to the underdevelopment in the Third World countries and over- consumption of the global resources by developed countries (who contribute only 20 percent of global population but consumes 80% of global wealth) and the uneven distribution of population across space (Todaro, 1989). The distributive school observed that where current strategies are pursued which lead to higher living standards, greater esteem and freedom; population growth would take care of itself. Families

under these circumstances where their social and future security are assured would have the freedom to choose small families.

The above argument tends to suggest that the struggle for livelihoods by the poor is a major cause of environmental degradation. A livelihood is sustainable when it can cope with and recover from stress and shocks or enhance its capabilities and assets both now and in the future while not undermining the natural resources (DFID, 1999). However, the degree of current use of resources in the developing countries inflicts damages on the environment that go beyond the carrying capacities of the environment.

In developing countries, the majority of the poor people live in rural areas and their livelihoods are critically dependants on the exploitation of natural resources such as water, arable land and forest resources (Lufumpa, 2005). It is estimated that 13 million people live below the poverty line, out of this 72 percent live in rural areas (World, 2000).

The consumption and production activities in Africa have negative impact on the environment, which finally causes poverty. Poor countries may not be able to afford energy friendly household technology such as cooking with gas or electricity. The result is indiscriminate use of fuel wood and depletion of the forest. Also the inability to create jobs for the people could lead to greater people on the land using poor farming methods which degrades the environment (Nuaka, 2008). The developing countries are also the home of the world's poor who in their struggle to survive through production of food and exports which are mainly primary products, minerals and timber end up destroying their surroundings by cutting down trees, over working the soil, overgrazing lands and over fishing.

In Ghana, the misuse, overuse and pollution of the environment in addition to that of over exploitation are challenges facing the country. This was one of the policy issues raised by the National Development Planning Commission (1996). The policy also noted that the continued degradation of soil, water, forest and ecosystem generally, is constantly undermining the nation's ability to sustain food production and to ensure adequate health standards and sustainable development.

A lot of land is being abused through logging, over cultivation and other unsustainable farming practices. According to the National development Planning Commission (2007), limited progress was made in the policy of restoration of degraded environment and natural resource management. The lost from environmental degradation keep increasing and were estimated to have accounted for nearly 6% of GDP in 2006 up from 5.5 percent in 2005 while the hectares of degraded forest, mining dry and wet lands rehabilitated or restored did not match the target set for the year.

Poverty in Ghana is highest among those whose principal livelihoods are food crop farming. Overreliance of the people of the Northern, Upper East and Upper West regions on agriculture means they have no hope of breaking the poverty trap which has strangled them for all years (Abane, 2008).About 28.5 percent of Ghanaians live in poverty with slightly more than 18 percent classified as extremely poor. In terms of regional distribution however a higher percentage (79%) of the extremely poor were found in the Upper West Region and this include the Sissala East District (Ghana Statistical Service, 2005)

Livelihood – environment interaction in the Upper West Region is closely related to poverty-environment interactions. Rural poverty resulting from low agriculture productivity has forced rural people to adopt coping strategies, which degrade the environment. These include over cultivation, gathering and selling firewood and burning of charcoal for sale.

Statement of the problem

The increasing rate of environmental degradation in Ghana including the Upper West Region has been a matter of national concern. Depletion of the forest and mangroves, soil erosion, drying rivers and land degradation have become a common features of the environment in which the poor eke out their living (UNDP, 2007).

The Sissala East District in the Upper West Region is one of the districts that are currently experiencing rapid environmental degradation. The district is predominantly rural and most of the people are poor. For example, nine out of every ten are poor in the Upper West Region (National Development Planning Commission (2003) and Sissala East District is not an exception. Agriculture is the main livelihood of the people in the district. Poverty coupled with poor farming methods has lead to the clearing of vast tracts of land for cultivation of food crops. Much of such lands have been abandoned and exposed to erosion. Low productivity from agriculture has forced the poor to adopt livelihood strategies including felling of trees for charcoal and fuel wood, and bush burning for hunting to earn a living. Most of the rivers are dried up due to human activities and pressure from cattle overgrazing and consumption.

Fuel wood, which contributes to the depletion of the forest cover, is used by at least 95 percent of households in each district in the Upper West Region including the Sissala East District (Ghana statistical Service, 2005). Ironically, no research has been done in the study area about the link between poverty, livelihoods and environmental degradation. This study attempts to fill the gap.

Objectives of the study

The general objective of the study is to examine the link between poverty, livelihoods and environmental degradation in the Sissala East District.

The specific objectives are to:

- Examine the level of poverty in the district.
- Identify livelihoods of the people in the district.
- Describe the nature of environmental degradation in the district.
- Identify causes of poverty and environmental degradation in the district.
- Discuss the linkage among livelihood, poverty and environmental degradation in the district.
- Make recommendations for the purpose of reducing poverty, and environmental degradation.

Research questions

- What is the level of poverty in the district?
- What are the livelihoods of the people in the district?

- What is the nature of environmental degradation in the district?
- What are the causes of poverty and environmental degradation in the district?
- What is the linkage among poverty, livelihood strategies and environmental degradation?
- How can poverty and environmental degradation be minimized in the Sissala East District?

Significance of the study

A study into the relationship between poverty, livelihoods and environmental degradation would identify issues, which either confirm or redirect existing theoretical and conceptual information about the phenomenon as a developmental problem. Based on the study, suggestions can be made on how to solve the problem.

It is also important to note that, even though this problem is being experienced in the study area, no research has been done on it despite the negative impact it has on the development of the area. The study will thus serve as a basis for all stakeholders such as the government, non-governmental organisations (NGOs), Municipal and District Assemblies to give serious thought to the problem. The study would also serve as a guide for the people in the district to change their attitude towards the use of natural resources provided by the environment.

Finally, the study would provide literature for future studies to be carried out on the relationship between poverty, livelihoods and the environment by the academia.

Scope of the study

The study covers all the 65 communities in the Sissala East District divided into five zones. The communities selected for the study include Tumu from zone one, Kong from zone two, Bugubelle from zone three, Kunchogu from zone four and Santijan from zone five. The study focused on poverty, livelihoods and environmental degradation in the selected communities.

Organisation of the Study

The study is organised in five chapters. The first chapter is the introduction. It covers background of the study, problem statement, objectives, research questions, relevance of the study and scope of the study.

Chapter Two deals with review of literature. It focuses on conceptual issues on poverty, livelihoods and environmental degradation. Chapter Three covers the methodology, which includes introduction, study area, study design, study population, data collection and data analysis

Chapter Four focuses on results and discussions while Chapter Five presents summary, conclusions and recommendations.

CHAPTER TWO

REVIEW OF LITERATURE

Introduction

In this chapter relevant literature is reviewed. It covers issues such as environmental degradation, measures to control environmental problems, poverty, livelihoods, relationship between poverty, livelihoods and environmental degradation and conceptual framework.

Environmental degradation

The environment is used to describe the surrounding in which we live. Increasingly people modify their enviromental conditions to the extent that the environment in turn moulds human activity (Gupata and Asher, 1998:3) Production and household units use the service of environment as they engage in various kinds of livelihood acclivities. Environmental degradation refers to a reduction in the capacity of our surroundings to satisfy human needs as a result of air or land pollution, soil erosion, salinity and alkalinity, deforestation and water pollution (UNEP, 1977).Warren and Agnew (1988) regard land degradation as the loss of resilience in dry lands or the ability of land under a particular lands use system to withstand or recover from shock. Land degradation occurs when resilience is damaged.

Degradation costs may be measured as the cost of replacing lost nutrients as the value of lost yield, the value of increased farm inputs required

to maintain yields, or the cost of rehabilitating the land to its former condition. Degradation of pasture is most extensive in Africa affecting 31 percent with 20 percent in Asia and 14 percent in Latin America. Forestland degradation is also most extensive in Asia affecting 27 percent of forestland compared with 19 percent in Africa and 14 percent in Latin America (Scherr and Yadav, 1996).

According to UNEP (2005), the overall damage of properties, constructions and infrastructure is estimated to exceed 10 billion US dollars. However, the damage of costal environment is believed to be much greater and is impossible to be quantified in monetary terms. The losses include damage of costal eco systems, contaminated water and soil, hazardous debris and the damage of environmental infrastructure industrial sites and potential excessive demands of natural resources.

Crosson (1994) notes that a recent analysis based on Global land Assessment of Degradation (GLASOD), and Dregne and Chou (1992) data suggests that globally, there has been a 17 percent cumulative productivity loss in agriculture over 45 years (1945-1990) due to land degradation. The Global Land Assessment of Degradation indicates that nearly half of global vegetation area is under forest, which about 18 percent is degraded; 3.2 billion hectares are in cropland of which 38 percent is degraded (Oldeman et al, 1990).

In the 1960s, many people around the world began to experience vital environmental problems in their communities. Forest were being destroyed by acid rain, rivers poisoned beyond use by industrial waste, cities chocked by pollution from automobiles and industry, rural farmers hit by famine and once

rich resource reserves wearing thin. Global interconnectedness of these problems were given attention by scientists and they warned that humans were quickly becoming victims of their own success to an extent that we now had the ability to entirely despoil the earth that sustain us (Curtis and Magnar, 2002).

Infrastructure's construction, use, repairs, maintenance and demolishing consume resources and energy and generate waste. The construction industry accounts for 10 percent of GDP and employs one and half million people (DETR, 2000). Energy consumed within domestic and commercial buildings produces a third of the UK's carbon dioxide. Energy produced from non-renewable sources and consumed in building services account for approximately 50 percent of UK carbon dioxide emissions contributing to climate change, consuming non-renewable resources and adding pollution. The industry consumes six tonnes of material per year per person and produces tens of millions tonnes of waste, a significant proportion of which is materials delivered to site and left unused. Waste from construction and demolition materials and soil equal seventy million tonnes annually (DTI, 2004). Poisonous gases such as carbon monoxide and nitrous oxide from industries and products of combustion from automobiles are being released into the atmosphere. These and other activities of man coupled with natural causes such as dust-storms causes the earth's atmosphere to be polluted.

Within the last century, the amount of carbon dioxide in the atmosphere has increased dramatically, largely because people burn vast amount of fossil fuels, coal and petroleum and its derivatives. Average global

temperature has also increased by about 0.6 degrees Celsius (1 degree Fahrenheit) within the past century. Atmospheric scientists have found at least half of that temperature increase can be attributed to human activity. They predicted that unless dramatic actions are taken, global temperature will continue to rise by 1.4 to 5.8 degree Celsius (2.5 to 10.4 degree Fahrenheit) over the next century (UNDP, 1992).

The ozone layer is being threatened by the use of and discharge into the atmosphere of some industrial chemicals (gases) used in fridges, freezers, air conditioners, fire extinguishers and chemicals used in preparing or producing foams. These chemicals called chlorofluorocarbons (CFCs) when released into the atmosphere rise steadily to attack the ozone layer chemically thus depleting it. The individual chemicals (CFCs) released into the atmosphere do not only deplete the ozone layer, but also cause excessive warning of the lower atmosphere surrounding the earth. The excessive warming creates greenhouse effect affecting negatively plant and animal life. Drought, desertification, growing number of skin cancers and cataracts are some of the effects.

UNEP (1977) noted that even if the manufactured of CFCs is immediately banned, the chorine released into the atmosphere will continue to destroy the ozone for many decades. It also revealed that plant and animal species are dying out at an unprecedented rate. Estimates range that from 4,000 to as many as 50,000 species per year become extinct. If the world's rain forest continues to be cut down at the current rate, they may completely disappear by the year 2030. In addition, if the world's population continues to

grow at its present rate and puts ever more pressure on these habitats, they might well be destroyed sooner.

UNDP (1992) observes that water pollution comes from point source or non point source. Pollutants discharged from specific location such as factories, sewage treatment plants, and oil tankers are pollution from point source. Pollution from non point sources occurs when rainfall or snowmelt move over and through the ground. Pollutants such as pesticides and fertilizers are picked up and carried away by the movement of the runoff depositing the pollutants into lakes, rivers, wetlands, costal water and even underground sources of drinking water. The majority of the contaminants in streams and lakes are due to pollution arising from non point sources. With almost 80 percent of the planet covered by oceans, people have long acted as if those bodies of water could serve as a limitless ground for waste.

Nuclear power plants, nuclear weapons, mines that extract uranium ore and processing facilities produce enormous amount of radioactive waste. For years, much of this waste has been improperly disposed. Million of tones of radioactive waste are dumped on or near uranium mills and on the banks of rivers. Nuclear power has been in used in the United States for over 35 years. Many wastes have been carelessly disposed of, whereas others remain stockpiled at nuclear power plants. The U.S. nuclear industry still lacks acceptable means of disposing of the high-level waste produced by reactors and uranium mills (Daniel, 1998). The United States Environmental Protection Agency (EPA) reports that about 37 percent of the country's lakes and estuaries, and 36 percent of its rivers are too polluted for basic use such as

fishing or swimming during all or part of the year (Microsoft Corporation, 1993).

The invasion of deserts through over cultivation, forest clearing and overgrazing has been worsened by extra changes in the climate of West Africa since recent severe persistent droughts. Vegetation has become so impoverished that it is difficult for forest to recuperate even with the onset of rains (Dankelman & Daridson,1988:80)

In Ghana, surface mining which causes physical degradation remains a major source of concern. The spate of degradation is underpinned by the constant extension of the frontiers of surface mining as the quest for short term financial gain appears to be exchanged for environmental integrity and sustainable development. Surface mining involves the process of vegetation cover clearing massive earth excavation and handling of ore to the processing plant for beneficiation, which is to be followed by waste dumping. In each of these processes, considerable amount of physical damage is done to the natural environment (Agbesinyale & Koranteng 2008).Ghana's environmental is suffering the effects of dramatic changes, its forest have been degraded into savannah and the savannah areas are fast turning into deserts (Dankelman & Davidson1988).

Mensah (2003) observes that rivers and lagoons serve as dumping grounds for both solid and liquid wastes. The major causes of costal wetland degradation or physical loss include rapid population growth, inadequate sanitary facilities, harmful effects of some economic activities, low environmental concern, and ineffective wetland ownership and management. The view that wetlands are wastelands has influenced many people to carry

out activities that lead to wetland degradation, which conflicts with sustainable use.

Close to 500 million hectares have been lost to land degradation in Africa. Besides, deforestation, which accounts for 13 percent of this, overgrazing is responsible for 49 percent of land degradation. Two other factors are poor agriculture practice including excessive use of fertilizers and other chemicals and the use of inappropriate equipment on fragile land (ADB, 2007).

Measure to control environmental problems

People and nations have now gradually become aware of the socio-economic effects of environmental degradation and have agreed at the conceptual level on the need to integrate policies for development and the environment. To safeguard the environment that is important to life, humans must learn that ecological resources and natural ecosystems that have taken millions of years to evolve can no longer be viewed as more expendable resources to be exploited without limit for short-term economic gains. There is therefore the need for conserving and enhancing the limited earth resource base. It is in the light of this that many nations have taken serious steps to reduce or control environmental problems.

In June 1972, the first major international conference on environmental issues was held in Stockholm, Sweden and was sponsored by the United Nations. The outcome of the conference led to the creation of the United Nations Environmental Programme (UNEP). The UNEP was set up to be the environmental conscience of the United Nations. Its headquarters was in

Nairobi, Kenya. The focus of UNEP has been on the achievement of scientific consensus about major environmental issues and the study of ways to encourage sustainable development, increasing standards of living without destroying the environment (UNDP, 1992).

In 1987, the Montreal protocol on substance that deplete the ozone layer set international target dates for reducing the manufacture and emissions of chemicals, such as chlorofluorocarbons (CFCs), known to deplete the ozone layer. Other key international environmental treaties, which have been agreed since the Stockholm conference include the convention on International Trade in Endangered Species of Wild Fauna and Flora (1973), the convention on Long- Range Trans-boundary Air Pollution (1979) and the convention on the control of Trans-boundary Movements of Hazardous Waste and their Disposal (1989).

The United Nations framework Convention on Climate Change (UNFCC), the first international measure to address climate change was adopted in May 1994. The convention's goals were to stabilize Green House Gases (GHG) emission at a level that prevents human interference with the climate system. When the UNFCC was adopted, governments knew that commitments would not be sufficient to seriously tackle climate change. In December 1997, they took a further step by adopting a protocol to the UNFCC in the Japanese city of Kyoto. The Kyoto protocol became an International Law in 2004. As of February 2007, 168 countries had ratified the treaty with the United States and Australia as notable exceptions. The protocol was devised, calling for the 37 industrial countries and the European Union,

otherwise called Annex One Countries to reduce their gas emission by 2012 to an average of 5.2 percent below 30 percent the 1990 levels.

In Ghana, the government has created a ministry responsible for environmental issues. The ministry working through the Environmental Protection Agency (EPA), which was established by an act of parliament in 1994 (Act 49) has a number of actions, plans to address the problems caused by the various areas. They include:

- Control of the activities of sand and stone winners,
- Human waste management to avoid discharging raw faces into streams,
- Water Management and pollution,
- A forestation programme,

EPA is crying out useful collaboration with the Minerals Commission in setting standards, requesting environmental impact assessment, and raising awareness of miners and the general community through education to the need to ensure that both large-scale and small-scale mining activities are carried out with least damage to the environment.

District Assemblies have also passed a number of byelaws aimed at protecting the environment in their areas of jurisdiction.

Poverty

Poverty is pronounced deprivation that involves a wide range of issues including hunger, lack of shelter and clothing, and inadequate access to health care, education and policymaking (UNDP, 1999). Poverty not only deprives people of basic needs but also proscribes them from participation in the

Political, social and economic spheres, limits their opportunities and choices, and prevents them from achieving their fullest potentials. Indeed, poverty is a multi dimensional concept, which encompasses levels of income, health, literacy and insecurity (World Bank, 2002).

Atkinson (1975) revealed that poverty manifest itself in different forms such as low earnings, low level of skills, lack of assets, absence of access to training, poor health, malnutrition, absent of shelter and food security. Lack of economic security often mean high rate of migration or vulnerability to displacement.

The definition and prescription of poverty also involves some dynamism, that is, the determination of poverty must consider the particular society and time period. Therefore, the standards of poverty must be set against the continually moving average standards of the community.

Mensah and Acheampong (2005) summarized the multi-dimensionality of poverty as income and non-income deprivation. The income dimension implies low levels of income consumption that are socially unacceptable, while the non-income dimension can be categorized into three main facets social, participatory and vulnerability. The social facets refer to lack of health care, good drinking water and decent housing and healthy sanitation. The participatory facet includes lack of voice and political rights. People who lack the ability to participate in decisions that affect their lives directly may consider this as a sense of hopelessness and fundamental characteristics of poverty. The vulnerability facet considers the situation where the poor are most often exposed to environmental hazards and environmental related

conflicts, and are least capable of coping when these hazards and conflicts occur.

Sen. (1984) reveals that the objective school argues that poverty consists of an irreducible core of deprivation that provides a universal definition applicable to all societies even though a different bundle of commodities may fulfill the same general needs. Thus, poverty consists of essentially the same needs among all people everywhere. Conversely, the subjective school argues that the notion of poverty is rooted in the cultural and moral values of specific societies at specific point in time. The poor are essentially those persons and groups of people who perceive they are poor.

Townsend (2006) notes that historically, poverty and income have always been related and income has remained at the core of the meaning of poverty. When people lack or are denied the income and other resources to enable them to play their roles, participate in the relationships and follow the customary behavior expected of them by virtue of their membership in society, they can be described as being in poverty. Such people are deprived because they are poor.

Rio group (2006) noted that three alternative conceptions of poverty have evolved since the 1880s namely subsistence, basic needs, and relative deprivation. The subsistence concept relates to anyone whose income is insufficient to obtain the minimum necessities such as food, clothing and fuel for the maintenance of merely physical efficiency, with food accounting for the greatest share. This conception was criticized because of its emphasis on physical needs as the predominant human need, and the neglect of social needs. This led to the basic needs concept. This concept included the

minimum requirements of a family for private consumption and essential services such as safe drinking water, public transport, health care, education, agriculture tools, and access to farmlands in rural areas and cultural facilities, provided for and by community at large.

However, this was also criticized that the more poverty is conceptualized as absence of or insufficient of physical goods and facilities, the easier it is to focus on the growth of material wealth as the answer without regard for redistribution, re-organization of trading and other institutional relationship. In view of this, the relative deprivation concept was developed. This envisages an income threshold according to family size and type, below which withdrawal or exclusion from active membership of society become disproportionately accentuated (Rio group, 2006).

Poverty can be classified in to absolute and relative poverty. Absolute poverty refers to the situation where the poor are so materially deprived that their survival is at stake. It can be define socially as those who live below a minimum acceptable standard of US$1 per day at a given place and time. Such households find themselves in situations where they cannot meet basic needs for survival. They are chronically hungry, unable to access health care, lack of amenities of safe drinking water and sanitation, cannot afford education for some or all or the children, and lack rudimentary shelter (Mensah et al 2005).

Relative poverty is generally construed as a household income level below a given proportion of average national income. The relatively poor in high income countries for instance lack access to cultural goods, entertainment recreation, quality health care, education and other prerequisites for upward

social mobility. In effect, poverty becomes a relative concept when the circumstances of individuals are compared with those of other members of their society. The relative concept is important because the absolute poverty approach involves conceptual difficulties since there is no single subsistence level usable as a basis for the poverty line (e.g. different conditions between temperate and tropical climate zones (Sachs, 2005).

The National Development Planning Commission (1996) which defines poverty as income less than 2/3 of average GDP per head revealed that 36 percent of the country's population lives in poverty with the rural areas holding 80 percent of them. The poverty indicators include social needs such as education, housing, health and other social services. Expenditure indicators are the percentage of income spent on food and other non-food items.

The Ghana Statistical Service (1989) proposed the minimum wage offered by the government as a benchmark for poverty, even though it recognized the inadequacy of the minimum wage, which was challenged by the Trade Union Congress. It categorises Ghanaian society into extremely poor, moderate poor and non-poor. The proportion of household whose per capita expenditure are less than half of the minimum wage level are extremely poor while those whose per capita expenditure lies between half and full minimum wage level are moderately poor. The non-poor are those with per capita expenditure that lies between the full and three times the minimum wage

Causes of poverty

Women and International Development (2006) identifies two factors associated with poverty and inequality, acute and entrenched factors. The acute factors are warfare, agriculture, cultural cycles, draughts and flooding, and natural disasters. Warfare causes are material and human destruction and displacement. The destruction affects infrastructure and social services such as health care and access to clean water. Subsistence farmers often experience cycles of relative abundance and scarcity. For many of such farmers the period immediately prior to harvest is a hungry period and they usually lack sufficient resources to meet their minimal nutritional needs. In addition, environmental forces often cause acute period of crisis by destroying crops and animals through draught and floods. Lastly, hurricanes and earthquakes devastate communities worldwide but the effects are strongest in the developing world where limited resources inhabit the construction of adequate housing, infrastructure and the mechanisms for responding to crisis.

The entrenched causes of poverty relate to colonial history which accounts for the lack of uniformity in the provision of infrastructure in most developing countries. The colonizers developed local economies to facilitate expropriation of resources for their own economic growth and development by constructing roads and railways to link areas endowed with raw materials to ports and harbors. Others were neglected, thereby creating inequalities in the availability of factors that facilitate income generation.

Environmental degradation also exacerbates poverty since the poor tend to rely more on natural resources for their livelihoods. In many West African countries including Ghana, globalization is collapsing farming

activities, especially in cotton cultural subsidies while poor countries are forced to reduce tariffs and remove subsidies to farmers. In part, it is because rich countries dictate how much to pay for produce from the poor countries. The result is that general socio-economic development in the poor countries is impeded owing to the lack of funds to invest in them (Birdsal, 2005). Globalization has therefore created conditions that are likely to consign less endowed countries to perpetual poverty.

Subsistence agriculture, as widely practiced in the country especially in the three Northern Regions is unable to provide for peoples needs. Besides agriculture produce does not earn as much income as industrial products or even processed crops. There is therefore the tendency for farmers to dominate the poor segment of the country's population (Abane, 2005).

Poverty reduction approaches include participation, gender mainstreaming, capacity building, basic needs, institutional and self-help (Narayana, 2006). According to Mensa et al (2005) strategies for poverty reduction intervention must cover the individual and the aggregate level and address the acute, entrenched and external factors. There is no uniform policy across countries because the underlying factors may vary from one to another. However, there are income and non-income factors and these should guide policy formulation. Hence, the policy has to cover;

1. Economic factors to mitigate the effect of different factor endowments by:
    - Rapid employment to increase earnings
    - Development of skill training and entrepreneurship to enhance productivity.
    - Equal wage of equal work for all persons and particularly female heads

- Mobilization of people in unions and groups
- Providing equitable access to economic resources, social overhead capital, information and communication technology and marketing facilities
- Provision of support services such as safe drinking water, cooking fuel, irrigation and fodder for animal husbandry
- Expansion of income generating and self-employment opportunities.

2. People involvement in local governance
3. Rural Development to stimulate wealth creation and reduce-urban migration
4. Complementary role of the government, civil society and the private sector who are the major actors in the national development process. The government has the mandate to rule the nation while the private sector plays an important role in wealth creation with the support of the state through its economic policies and services. The civil society, operates to ensure accountability on the part of government and fairness on the part of the private sector (Mensah, 2005).

Livelihoods

A livelihood comprises the capabilities, assets (including both material and social resources), and activities required for a means of living (Ellis, 1999). A livelihood is sustainable when it can cope with and recover from stress and shocks, as well as have the capacity to maintain and enhance its capabilities and assets without undermining the natural resource base (WCED, 1987, Rees, 1989)

Sustainability of livelihood strategies of individuals or households depends on access to use and development of different types of assets in ways that assure benefits for current and future generations (Woodhouse et al 2000). Rural households may drive a part livelihood from farming, part livelihood from migrant labour undertaken by absent household members in urban areas or other rural areas; and a part livelihood from a variety of other activities, more or less informal, such as petty trade or beer brewing (Vandana, 2005)

Closely linked to the observation of diversity of modes of livelihood at any one time is the idea of diversification of livelihoods over time. For example, a broad comparative review of a process described as de-agrarianisation in Sub-Saharan Africa concluded that 60 – 80 percent of rural household income in the late 1990s was derived from non-farming sources, by comparison with an approximate 40 percent in the 1980s (Bryceson, 1999). The reasons for such changes are: structural adjustment programmes, sharply worsening terms of agricultural trade, the collapse of meso-level infrastructure of support for small scale farmers, devalued currencies, new opportunities and necessities of cross-border smuggling, and trade, (Vandana, 2005).

It is also important to note that migration for work elsewhere is one typical mode of diversification in the livelihoods of the rural poor that has arguable been inhibited by politicians and undervalued by policy makers (de Haan, 1999). Woodhouse et al (2000) identified five basic types of assets for livelihoods. They are natural, physical, financial, human and social. Natural capital consists of land, water and biological resources such as trees, pasture and wildlife. The productivity of these resources may be degraded or improved by human managements.

Relationship between poverty, livelihoods and environmental degradation

Awareness of the relationship between environmental degradation, poverty and deterioration of livelihoods in many developing countries has increased in recent times. It is now widely recognized that the issue of poverty, environment and development are intrinsically linked, forming a vicious cycle.

Poor people sometimes have no choice but to degrade their environment as, in order to survive, they may over-exploit their natural resource base and, in doing so, deny future generations a productive environment. The cycle is complete, as a degraded environment prevents the poor from making a living from it (Brown, 1992).

Poor people increase their use of natural resources in order to live. The livelihood outcomes that people strive to achieve include more employment and increase wellbeing including good health reduce vulnerability increase access to goods and services that improve food security (Woodhouse et al 2000).

Lale (1988) argues that environmental degradation is very often caused by poverty because the poor have no option but to exploit resources for short term survival. The interlinked nature of most environmental problems is such that environmental degradation ultimately affects ever body although, poor individual and nations may suffer more and sooner than richer ones.

The modification of the ecosystem by humans to obtain their livelihoods has negative effects on other components of ecosystems and results in trade off. For example, increased food production lead to reduction in biodiversity (Daily Graphic 2007:7)

Conceptual framework

The model of this study is adapted from Lale (1988) as shown in Figure 1. The model explains the relationship between poverty, livelihoods and environmental degradation. The figure explains how livelihoods strategies of households can lead to environmental degradation and poverty. It shows that the livelihoods strategies of the poor involve the use of poor production methods and over exploitation of natural recourses, which leads to environmental degradation. The figure further explains how the degraded environment leads to resource loss, which in turn fuels poverty.

This model would help the study investigate the link between poverty, livelihoods and environmental degradation.

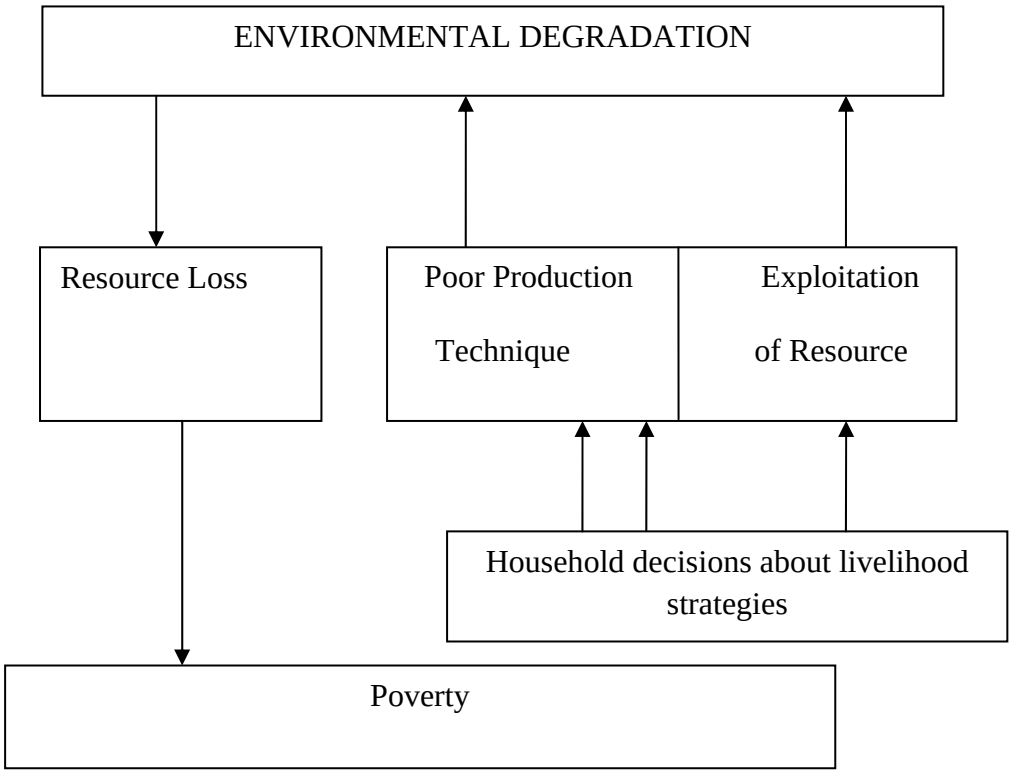

Figure 1: Linking poverty livelihood and environmental degradation

Source: Adapted from Lele (1998)

CHAPTER THREE

METHODOLOGY

Introduction

In every research work, there is the need to follow certain methodological steps in order to enhance clear presentation of issues with regard to the subject under study. The key elements of this chapter are study area, study design, study population, study unit, sampling technique, methods of data collection and data analysis.

Study area

The Sissala East District is one of the nine districts in the Upper West Region. It was part of the then Sissala District which had a population of 85,442 with 10,131 households and a total of 6,301 houses (Ghana Statistical Service 2005).

In 2001, the Sissala District was divided into two, Sissala East and Sissala West. The Sissala East District, which is the study area, is bordered on the north by the Republic of Burkina Faso, to the east by the Upper East Region, to the west by the Sissala West District and to the south by the Wa West District as shown in Figure 2.

The climate of the study area is the Sudan type. There are two major seasons, the dry and wet seasons. The dry season starts from November and ends in the early part of April. This season is characterized by cool and dry

tropical continental air mass referred to as harmattan from November to the end of February. The second part of the dry season, is known as the hot season, which starts from early March to late April. The months of March and April are usually every hot. The temperature of the area is between a low of 15^0C at nighttime during harmattan and a high of 40^0C in the day during the hot season (Ghana Statistical Service 2005).The wet season also known as the rainy season starts from April and ends in late October. The rainy seasons are cool and characterized by storms, which sometimes cause erosion and destroy buildings.

In terms of drainage within the district, the White Volta is the main or consequent river. It is fed by a number of subsequent rivers or tributaries. The major tributaries include river Sisili on the east between Navrongo and Tumu, river Wahabu in the west, which flows to join river Sisili, and river Banu in the east in santijan. Some tributaries are usually intermittent. Most of them dry out during the dry season.

The study area is located in the Guinea Savanna vegetation belt. The vegetation consists of grass with scattered drought resistance trees such as the baobab, dawadawa, shea and neem trees. The different collection of trees provide all kinds of livelihood requirements for fuel wood and charcoal, construction of houses, cattle kraals and fencing of gardens. The short scrubs and grass provide fodder for livestock.

The Sissala East District has 65 towns and villages. According to Ghana Statistical Service (2005), the population of the area was estimated as 48,444 with 7,652 households and 3,764 houses. The study area has large migration of the youth to urban areas of the country. Most of the villages have

a population of less than 1,000. The district has inadequate infrastructure such as electricity, potable water, health facilities and good roads. The main economic activity of the people in the study area is subsistence agriculture. The famers cultivate maize, guinea corn, millet, groundnuts, yam, rice and beans. They also engage in hunting, cutting and selling of firewood and burning and selling of charcoal.

Study design

The study design adopted was both explorative and descriptive. The survey method was used to collect quantitative data. Qualitative methods used comprised participator researched tools such as focus group discussions, observations and transect walks. The design was used to help in the understanding of questions like, what is the nature of environmental degradation, and what is the relationship between poverty, livelihoods and environmental degradation. The design was chosen because the study was a study of relative short period and also involves a systematic collection and presentation of data to give a true picture of the situation. The justification for this design was also to reduce time, cost and energy in surveying the entire population.

A study design is defined as that which provides a qualitative or numeric description of some fraction of the population, which is the sample, through the data collection process of asking questions. The data collection in turns enables the study to generalize the findings form a sample of responses to a population Flower (1988) cited in Creswell (1994).

Study population

The study population covers all households in the Sissala East District (see appendices A). This was estimated at 7,652 (Ghana statistical service 2005). From appendices, A it can be seen that only Tumu, the district capital had 1,587 households. All other communities in the district had household numbers that fell below 1,000.

Household head or adult members of the household were considered as the unit of investigation in the study. The composition of a household was defined in terms of relationship between members of the household to the person they accept to the management of and up take of the house and the household members. Members also belong to a common economic activity, a common labour pool and a common feeding source (Ghana Statistical Service, 2005).

Sampling technique

For the purpose of this study a combination of cluster sampling, simple random Sampling, systematic sampling and purposive sampling were used to sample respondents. As a first step cluster sampling was applied.

This was done by clustering the 65 communities in the district into 5 zones based on spatial location. The five zones included the Tumu zone, Wallembelle zone, Buguble zone, Nabngabelle zone and Nabulo zone, identified by zones, one, two three, four and five respectively as shown in Table 1.This was done to reduce time cost and energy in surveying the entire study area.

A community each was selected from each of the five zones using the lottery method. This was also done by first constructing a sampling frame for each of the five zones. The names of the communities in each zone were written on pieces of papers and placed in five separate boxes. The papers in the boxes were well mixed. An assistant was blindfolded and asked to pick one paper from each of the boxes. The communities sampled were Tumu, Kong, Bugabelle, Kunchogu and Santigan.The five communities sampled represented 7% of the total number of communities.

Using house numbers as guide and as basis for sampling frame, the systematic random sampling technique was applied in selecting specific households for the study across each zone. Based on the number of households of each community quotas were applied to determine the number of households per community to be investigated. In each household, a household head or an adult member was interviewed. In all, 90 households (representing 11% of the total households in the district) were sampled, 60 from Tumu, 10 from kong, 10 from Bugubelle, 5 from Kunchogu and five from Santijan. These quotas were given to ensure representativeness, since the zones were of different sizes. (See table 2). 90 was taken as the maximum because, according to Sarantokos (1999), large samples do not always guarantee higher precisions, validity or in general, successes in research study. In addition, ten people per each zone comprising five males and five females were purposively selected for focus group discussion conducted in the five separate zones.

Table 1: Clustered communities in five zones

TUMU NABUGUBEL NABULO	**WALLEMBELLE**	**BUGUBELLE**	
ZONE (1)	**ZONE (2)**	**ZONE (3)**	**ZONE (4)** **ZONE (5)**
TUMU	WALLEMBELLE	KULFUO	NABUGUBELLE NABULO
KAINA	KANDIA	VAMBOI	KRAPUNG HALEMBOI
LIMIRA	SORBELLE	SENTIE	KAWILLA MWAND.
KUPULIMA	NADAKUI	JITENG	BANU TARSAW
DIMAJAN .1	DANGI	BECHEBOI	BASISAN KUROBOI
DIMAJAN .2	LILIXI	WAHABU	KUNGHOGU KALAXI
CHINCHAN	KOWIE	BUGUBELLE	BUJAN BABUJAN
BAKWALA	KONG	TANYIELIE	DOLIBIZONGBENBISI
TAFIASI	NANKOWIE	NETALL	SUDUUJAN SANTIJAN
NANCHALA	SAKAI	TANLA	SUMBORU GWOSI(152)
KASAPORI K.	SAKALOW	PINA	YIGENTU DU
SULEBELLE	TIMRAGA	NAVARIWIE	PIENG BAWISIBELE
GBARIMA	BENDEI	WURU	CHALU KOMO KALAXI

Source: Field survey, 2009

Table 2: Population, households and sample size of sampled communities

Community	Zone	Total population	Total household	Sample size
Tumu	One	8,858	1,587	60
Kong	Two	1,206	140	10
Bugubelle	Three	1,859	192	10
Kunchogu	Four	201	29	5
Santijan	Five	252	29	5
Total		12,376	1,977	90

Source: Ghana Statistical Service, 2000

Methods of data collection

The data collection methods used in the study included observations, household interviews, focus group discussion, and library search. Observation was used as a data collection technique for information on land use practices, farming methods and condition of the environment. An observation guide was developed to assist in the data collection.

Interview schedule was used as the main data collection tool. The justification for the household interview was to find answers to as many questions as possible leading to the achievement of the objectives. The interview schedules had six sections namely background of the respondent, poverty profile in the Sissala East District, evidence of environment degradation, livelihoods of households, relationship between livelihood poverty and environmental degradation, and measures to control poverty and environmental degradation. In all ninety household heads or adult members

were interviewed in five communities. In each community, two focus group discussion sessions were conducted to obtain certain in-depth information on concepts and perceptions about the subject of study. These also addressed gender issues and help supplement information on community knowledge, beliefs and behaviuor already available but incomplete or unclear. Discussions were held differently based on gender (males and female).To achieve representativeness five males and five female were selected for discussion in each community. Members were selected using purposively sampling to represent charcoal burners, farmers, markets women and opinion leaders. Ninety minutes was used for each discussion.

Library search was used to gather documentary data on environmental issues in the area. This helped to obtain the trend of environmental problems and also served as a means of supporting the research findings.

Procedure for administration of research instruments

The field work took one and half months. Two field assistants who could speak the local language were employed in the collection of data under my strict supervision. The field assistances were both educated to senior high school level.

Data analysis

After the data collection, editing and coding was done before presentation. Data collected was summarized and put in form of tables and figures. This made discussion of the data more understandable. The tables and figures showed means, frequencies and percentages. The description of

the link between poverty, livelihoods and environmental degradation in the study area was done using the above statistics. To facilitate data analysis the Statistical Product and Service Solutions (SPSS) was used.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The chapter deals with results and discussions of the study. It covers the background of households, profile of poverty, environmental degradation in the study area, livelihoods of respondents, the relationship between poverty livelihood and environmental and the measures to control environmental degradation in the study area.

Background of respondents

To put the study in context, the background of the respondents is analysed in this section. This covers discussion of the sex of respondents educational background, age structure of household heads and members.

Sex of respondents

The sample of 90 respondents consisted of 94.6 percent males and 5.4 percent females as shown in Table 3. The sex of the respondents was important in this study because women and men have different types of access and control of livelihood assets, and survival strategies that can affect the environment. The male dominated household heads was not surprising because cultural and social practices in the study area assigns decision-making powers with regard to productive assets and household expenditures to men.

Table 3: Sex of respondents

Sex	Frequency	Percent
Male	85	94.6
Female	5	5.4
Total	90	100

Source Field survey, 2009

Age structure of respondents

The age structure of the respondents was necessary because it was to determine the economically active group of household heads to help identify issues to be considered when implementing livelihood programmes to reduce poverty and environmental degradation in the district. The age structure of respondents is presented in Table 4. The majority (77.8%) of the respondents were over 60 years while only 22% percent were in the economic active age group (16–60) years.

The results show that the majority of the household heads were old and vulnerable to poverty. This situation puts more burdens on the economic active household members who either migrate to cities or adopt surviving strategies, which include charcoal burning and bush burning for game, which degrade the environment.

Table 4: Age structure of respondents

Age group (years)	Frequency	Percent
16 – 45	2	2.22
46 – 60	18	20.00
Over 60	70	77.78
Total	90	100.00

Source: Field survey, 2009

Age structure of household members

The age structure of household members of the sample was necessary in this study to help determine the dependency ratio, which can influence poverty.

Table 5 shows the age structure of household members of the respondents. The majority (58 percent) of the household members were in the dependency age group (0 – 15) and over 60 years. The economic active group (16 – 45) and (46-60) was 42 percent.

Table 5: Age structure of household members

Age group (years)	Frequency	Percent
0 – 15	5,945	48.57
16 – 45	3,673	30.00
46 – 60	1,469	12.00
Over 60	1,154	9.43
Total	12,240	100.00

Source: Field survey 2009

Educational background of respondents

The educational background of respondents is presented in Table 6. Educational background of respondents was taken into consideration because it could influence the type of livelihoods strategies, poverty levels of respondents as well as their perception of environmental degradation. The Table reveals that for the period of the study 43.33 percent of the respondents did not have any formal education, 28.89 percent had only primary education, 10 percent had Middle school or Junior high school education, 8.82 percent Senior High School, 6.67 percent had Post Secondary /Technical education while 2.2 2 percent had Tertiary Education. A higher percentage of the respondents did not have formal education. Abane (2005) estimated that 48.9% of the people in Upper West, which include the Sissala East District, did not have formal education and that explains why many people in the region are found in either agriculture or menial and other low paid jobs.

Table 6: Educational background respondents

Education level	Frequency	Percent
Tertiary	2	2.22
Post Sec. /Tech.	6	6.67
Senior High	8	8.89
Junior High/MSLC	9	10.00
Primary	26	28.89
No formal education	39	43.33
Total	90	100.00

Source: Field survey, 2009

Poverty profile

Poverty manifest itself in different forms such as low earnings, low level of skills, lack of assets, absence of shelter and food security (Alkinso, 1975). Household income analysis perceptions of poverty, indicators of poverty together with the causes of poverty were used to determine profile of poverty the in the district.

Income Analysis: Household income analysis was undertaken to determine the evidence of poverty in the study area. The annual income of each household was computed by adding together the money value of all crops (cereals, legumes, roots, tubers, fruits and nuts) cultivated, all livestock, and all other sources of income from trading, professions and teaching. Table 7 shows the nominal household incomes of the respondents in the study area. Given that the poverty line is US$1 per day, the annual expected income per annum was GH¢ 468 (US$360).

From Table 7, 88.90 percent earned up to GH¢ 400 (US$286) per annum which is less than US$1 per day, while only 11.1% respondents earned up to and above GH¢500 which was up to or above the poverty line, of US$1 per day. This suggest that majority of the people in the study area earned below the official poverty line defined as earning less than $1 per day (World bank, 1990). This finding was in agreement with that of Ghana Statistical Service (2007), that in 2006, 87.90% of the people in Upper West Region live in poverty.

Table 7: Household income distribution among respondents in the Sissala East District (Per Annum)

Income GH¢	No. of Household	Percent	Cumulative percent	Average Income	Total Income
1 – 100	20	22.22	22.22	80	1600
101 – 200	23	25.56	47.78	175	4.025
201 – 300	21	23.33	1.11	232	4,872
301 – 400	16	17.79	88.90	345	5,520
401 – 500	3	3.33	92.23	467	1,401
501 – 600	2	2.22	94.45	560	1.120
601 – 700	0	0	94.45	0	0.0
701 – 800	2	2.22	96.7	763	15.26
801 – 900	1	1.11	97.78	850	850
901 -1000	1	1.11	98.89	983	983
Over 1000	1	1.11	100.00	563	1,563
Total	90	100.00		16,018	23,460

Source: Field survey, 2009

Perception of poverty in the study area

The subjective school argues that the notion of "poverty" is rooted in the cultural and moral values of specific societies at specific point in time (Silverman 2000). Respondents were asked to indicate whether in their own opinion poverty exist in the study area. This was to determine the perception of respondents about the poverty condition in the area. The results revealed that all the 90 respondents agreed that poverty exists in the study area. As

indicated in the conceptual framework of this study, the implication is that poverty situation in the area would push the people to over exploit the natural resources of the area to survive.

Indicators of poverty in the Sissala East District

In the survey, respondents were further requested to indicate the major indicators of poverty. The data collected was analysed and presented as indicators of poverty in the Sissala East District (See Table 8). From the table, borrowing of food accounted for 8.89 percent, inability to provide three square meals a day 6, 89 percent and days without food 4.22 percent. The study suggests that majority of the people in the study, borrowed food to survive on some occasion. This affirms the finding of Awusabo-Asare et al (2004) that a substantial proportion of households in the Upper East, Upper West and Northern Regions had on many occasions borrowed or credited food at least three days in a week simply to supplement stock for feeding.

In the case of health indicators of poverty, longer times to nearest hospital and lack of medical officers accounted for 8.89 percent respectively while high mortality was 2.2 percent. The study revealed that people in the district spend longer times to get to the nearest hospital and also lacks medical officers. During the focus group discussion in Tumu, the District capital, it was revealed that there was no medical Doctor in the district hospital at the time of the survey. The implication is that, spending longer times to reach health care facilities and lack of medical officials in the district may lead to high mortality rate in the district.

About 8.89 percent identified low educational attainment as the indicator of poverty, 7.78 percent indicated high school drop out rate while 3.35 percent indicated inadequate educational facilities. The study revealed that low education attainment of the people in the study area is the major educational indicator of poverty. This suggests that poverty in the district is explained by the low level of education. Maxwell school (2006) revealed that poverty and inequality are explained by personal circumstances such as the amount of education, skill, experience and intelligence.

Economic indicators of poverty

In terms of economic indicate of poverty, 6.67 percent of the respondents indicated high rate of unemployment, the same percentage (6.67 indicated low agriculture productivity, 4.44 percent high out migration and 2.22 percent lack of infrastructure.

The study revealed that lack of employment and low agriculture productivity are the major economic indicators of poverty in the study area. In a focus groups discussion at Kunchogu Men in the group disclosed that more than 60 percent of the residents have migrated to the South for employment due to lack of employment opportunities in the district coupled with hunger and low incomes resulting from low agriculture productivity.

In terms of housing, indicators of poverty, 8.89 percent of the respondents identified the use of grass for roofing as the indicator of poverty, 6.67 percent indentified “atakpame” walls, and 0.44 percent indentified land crete walls, while 4 percent indicated sancrete walls as the housing indicators of poverty in the study area. The result suggests that the use of grass roof is an

evidence of poverty in the study area. In the focus group discussion it was revealed that most people used grass roofs in the area because they could not afford zinc roofing due to poverty.

Table 8: Indicators of poverty in the Sissala East District

Area	Indicators	Frequency	Percent
Food and	*Days without food	40	8.89
Nutrition	*Inability to provide three square meal a day	31	6.89
	*Borrowing of food	19	4.22
Health	*Longer times to nearest	40	8.89
	*Lack of medical facilities	40	8.89
	*High mortality rate	10	2.22
Education	*High school drop outs	35	7.78
	*Inadequate educational facilities	15	3.33
	*Low educational attainment	40	8.89
Continue Table 8			
Economic	*High rate of unemployment	30	6.67
	*Low productivity in agric.	20	4.44
	*Lack of infrastructure	10	2.22
	*High our migration	30	6.67
Housing	*Sancrete wall	18	4
	*Lancrete wall	2	0.44
	*Atakpame	30	6.67
	*Zink roof	0	0
	*Grass roof	60	8.89
	Total	450*	100.00

*The total responses were more than the total respondents (90), because of multiple responses.

Source: Field survey, 2009

Causes of poverty

For the causes of poverty, respondents were asked to mention the causes of poverty in the study area. They mentioned low income from agriculture produce, lack of employment, low agriculture productivity and low educational attainment. Of the total number of respondents, 20.73 percent mentioned low income, 19.51 percent low agriculture productivity, 17.07 percent lack of employment, 15.85 percent low educational attainment, 14.64 percent out migration and 12.20 percent poor infrastructure (See Table 9).

During the focus group discussions the consensus was that farm produce were being bought at very lower prices. This, coupled with low agriculture productivity were mentioned as the major causes of poverty in the district. Tenkorang (2006) noted that the people in the study area are mostly engaged in subsistence agriculture and this normally does not fetch much money.

Table 9: Causes of poverty

Causes	Frequency	Percent
Low income	85	20.73
Low agriculture productivity	80	19.51
Lack of employment opportunity	70	17.07
Low educational employment	65	15.85
Out migration	60	14.64
Poor infrastructure	50	12.20
Total	410*	100.00

The total responses exceeded the number of respondents (90) because of multiple responses.

Source Field survey, 2009

Evidence of environmental degradation

The study looked at evidence of environmental degradation from observations, sources of energy and indicators of environmental degradation. Direct observation of the land and environment was undertaken to get information on environmental degradation. A look at the environment of sampled communities revealed that there was indiscriminate disposal of liquid and solid waste around dwelling places. Household dumps were found closer to houses and provided breading grounds for flies and vultures and this confirms Tenkorang (2006) finding that in the Bolgatanga and Sissala district at least 50 percent of the site for disposal are either behind the houses in waste dump or in bush behind the houses and that almost all the household dumps were less than 50m form the houses.

The study also noted that the environment was being degraded through over-cultivation, over grazing and woodcutting at. In a focus group discussion at Kong, the chief, stated that several hectors of the forest in the village have been destroyed through woodcutting. He expressed concerned about the extinction of large number of mahogany trees in the area through chain saw operators.

Sources of domestic energy

Considering, the fact that the majority of the population in Africa uses fuel wood to meet their energy needs, Lufumpa (1995) concluded that felling of trees for this purpose is by far the most significant factor contributing to local deforestation. It was therefore expected that energy source and usage would give evidence of environmental degradation.

In the survey, heads of household were asked to indicate the type of energy used for domestic purposes. The results revealed that, majority of the people use firewood for domestic energy. About 80 percent use firewood, 15 percent use charcoal and 5 percent use gas. Women in the focus group discussing remarked that, they now travel several Kilometres to look for firewood, but about thirty years back there were many trees nearer to their houses. This discussion shows evidence of environmental degradation in the study area over the years due to the use of firewood as the major source of energy.

Indicators of environmental degradation

Environmental problems are associated with urban or industrial location, such as pollution, poor sanitation and waste disposal. There are environmental problems also associated with vegetation and wildlife, such as biodiversity and deforestation vandana (2005). It was therefore important to investigate the indicators of environmental degradation in the study area so that the problem can be addressed. Respondents were first asked to indicate whether environmental degradation exists in the district. The result revealed that all the respondents agreed that environmental degradation exist in the study area.

Respondents were again asked to identify the indicators of environmental degradation in the district. The results are presented in Table 10. About 44.44 percent and 22.20 percent of the respondents indicated extinction of plants species and poor sanitation respectively.

The study, therefore, suggests that extinction of plant species is the major indicator of environmental degradation in the study area, followed by poor sanitation. In the focus group discussion, it was revealed that many economic trees such as "dawadawa and shea have been lost due to farming and bush fires.

Table 10: Indicators of environmental degradation in the Sissala East District

Indicators	Frequency	Percent
Extinction of plant species	40	44.44
Poor sanitation	38	42.22
Extinction of animal species	5	5.56
Land population	4	4.45
Water population	2	2.22
Air population	1	1.11
Total	90	100.00

Source: Field survey 2009

Livelihood of respondents

The majority of Africa's poor are based in rural areas and their heavy dependence on agriculture for their livelihoods has serious implication for the sustainability of the natural resource capital base (Lufumpa, 2005). In view of the above observation, it was important to determine the livelihoods of the people in the Sissala East District.

For the study, respondent were required to indicate their livelihood. As Table 11 shows, 73.28 percent indicated that they depended on Agriculture for their livelihood this was followed by charcoal burning with 8.62 percent. 5.17 percent were civil servant, 4.31 percent trading, 3.45 percent artisans and civil servants respectively. The results show that the main livelihood of the people in the study area is agriculture. The implication is that in the absence of modern technology, low productivity from agriculture will lead to low incomes and poverty. This, Abane (2005) revealed that over reliance of the people of Upper East, Upper West and Northern Region on agriculture means they have no hope of breaking out of the poverty trap, and the Sissala East District is no exception .

Table 11: Livelihoods of respondent in the Sissala East District

Livelihood	Frequency	Percent
Agriculture		
(Crop farming, livestock and fishing)	85	73.28
Charcoal burning	10	8.62
Civil Servant	6	5.17
Trading	5	4.31
Lumbering	4	3.45
Artisans	4	3.45
Small scale Sand and gold mining	1	0.86
Others	1	0.86
Total	116*	100.00

*The total number of responses is more than the number of respondents because of multiple responses.

Source: Filed survey, 2009

Remittance

Rural households may drive a part livelihood from farming, and part livelihood from migrant labour undertaking by absent household members in urban areas or other rural areas (Vandana, 2005). The study revealed that 25 percent of the respondents depended on remittances from relative migrants for part of their livelihoods, 75 percent indicated that they did not receive any remittances over the years. On the amount and frequency of remittance, all the respondents who said they received remittances indicated that there was no fixed amount or frequency of remittances. This discussion shows that remittance, as a source of livelihood is very insignificant in the district.

Livelihoods and environment degradation

To investigate the link between livelihoods and environmental degradation, respondents were first asked to indicate whether there is a link between livelihood activities and environmental degradation. The results revealed that they is a link between livelihood and environmental degradation. About 98.89 percent indicated there is a link between livelihood activities and environmental degradation while only 1.11 percent indicated that they is no link between livelihood and environmental degradation

Respondents were further asked to indicate the livelihood activities that degrade the environment. The result is presented in table 12 below. The table shows that 46.6 percent of the respondent agreed that agriculture activities degrade the environment, 41.7 percent indicated charcoal burning, 6.1 percent lumbering, 3.1 percent small scale sand and gold mining, and 2.5 percent indicated hunting. The result suggests that agriculture activities are

the major livelihood activities that degrade the environment in the study area followed by charcoal burning.

During the focus group discussion, it was revealed that 20 years ago, the people had their farms near to their homes but now they travel several kilometres to establish farms. They also disclosed that, the environment was been degraded through shifting cultivation, which involves cutting of trees and burning to establish new farms. It was further revealed, during the focus groups discussion that the environment was being degraded by Fulani herdsmen and that block farming system mostly practice by cotton farmers in the district has intensify the rate of soil degradation and deforestation. It was also revealed that farming constrains have forced them into charcoal burning for their livelihoods. This activity they said degrade the environment.

Table 12: Livelihood activities that degrades the environment in the Sissala East District

Livelihood activities	Frequency	Percent
Agriculture	76	46.6
Charcoal burning	68	47.7
Lumbering	10	6.1
Small scale sand and gold mining	5	3.1
Hunting	4	2.5
Total	163*	100.0

*The total number of responses were more than the number of respondents because of multiple responses

Source: Field survey 2009

Livelihoods, poverty and environmental degradation

WCED (1987) observed that those who are poor and hungry will often destroy their environment to survive. Poverty restricts the poor to act in ways that are damaging to the environment. The poor are unable to buy out of exposure to environmental risk and they are also unable to invest in alleviating the causes of environmental degradation (Mink, 1993). This section therefore analyses the relationship between livelihoods poverty and environmental degradation.

For the study respondents were first asked to indicate whether there is a relationship between livelihood, poverty and environmental degradation. The results showed that the majority, (98.88) percent of the respondents indicated that there is a relationship between livelihood, poverty and environmental degradation while 2.22 percent disagreed with this.

Having established the perception of the respondent about the relationship between livelihood, poverty and environmental degradation, the study set out to investigate the causes of environmental degradation that are related to livelihood and poverty. The results showed that 31.15 percent of the respondents agreed that intensive agriculture is the major poverty and livelihood related cause that leads to environmental degradation in the Sissala East District, 24.86 percent indicated limited employment opportunities, 16.58 percent inability to afford other sources of domestic energy, 14.36 percent lack of sanitary facilities and 11.05 percent general ignorance (Table 13).

Participants in the focus group discussions explained that they experienced low agriculture productivity over the years because they could not afford chemical fertilizer and agro-pesticides. They further explained that the

only way they can increase agriculture productivity is by cultivating more lands to establish new farms, which involves clear-cutting of trees and burning. Cleaver and Seheiber (1994) revealed the vicious cycle of poverty where poverty leads to extension of cropping to marginal lands degrading them and the resulting degradation also in turn reduces yields which further impoverishes farmers. It was further revealed from the focus group discussion, which was carried out during the survey that in the face of poverty resulting from low agriculture productivity, they had no choice than to adopt coping strategies, which include bush burning for game and burning and selling charcoal to survive which degrades the environment.

Table 13: Causes of environmental degradation related to poverty in the Sissala East District

Causes	Frequency	Percent
Low agriculture productivity	60	33.15
Limited employment opportunities	45	24.86
Inability to afford other sources of Domestic energy	30	16.58
Lack of sanitary facilities	26	14.36
General ignorance	20	11.05
Total	181*	100.00

*The total number of responses is more than the number of respondents because of multiple responses.

Source: Field survey, 2009

In addition, it was revealed that charcoal and firewood was their only source of domestic fuel energy because they cannot afford other sources of energy such as LPG. Lele (1998) observed that environmental degradation is very often caused by poverty because the poor have no option but to exploit resources for short-term survival.

Management of poverty and environmental degradation

To establish if awareness has been created among respondents of environmental degradation and the importance of natural vegetation for the productive systems, the respondents were asked to indicate whether they know any institution that is involved in the management of poverty and environmental degradation issues in the study area. The results revealed that all the respondents knew certain institutions involved in the management of poverty and environmental problems.

Respondents were further asked to indicate the institutions responsible for the management of poverty and environmental related issues. The results are as shown in Table 14. The Table shows that 34.78 percent of the respondents indicated that NGO's were involved in the management of poverty and environmental related issues, 32.78 percent indicated the Sisalla East District Assembly 26.09 percent indicated the environmental Protection Agency (EPA), 4.35 percent indicated schools and 2.17 percent indicated the Ministry of Food and Agriculture (MOFA).

In the focus group discussions, it was revealed that Action Aid Ghana and NGO in the study area has created awareness among rural men and women in the district of environmental degradation more specifically the

environmental degradation emanating from their activities. Another environmental advocacy activity mentioned was the formation of friends of the environment. It was also revealed that bylaws exist on how to protect the environment but are not always enforced in the district.

Table14: Institutions involved in the management of poverty and environmental related issues.

Institutions	Frequency	Percent
NGO's	80	34.78
Sissala East District	75	32.61
Environmental Protection Agency	60	26.09
Schools	10	4.35
Ministry of food and agriculture (MOFA)	5	2.17
Total	230	100.00

Source: Field survey, 2009

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents summary, conclusions and recommendations of the study.

Summary

The study set out to examine the link between livelihoods, poverty and environmental degradation in the Sissala East District of the Upper West Region of Ghana. Five out of the 65 communities in the distric were sampled. The selected communities were Tumu, Kong, Bugubelle, Kunchogu, and Santejan. A combination of simple random sampling, systematic sampling and purposive Sampling were used to sample 90 respondents for the study.

The sample was based on the clustering of the 65 communities into five zones. In each of the five zones, two focus group discussions were carried out. For the data analysis, the SPSS descriptive Statistics like frequencies, percentages, and cross tabulations were used.

The major findings of the study are:

- About 88.9 percent of the respondents earned less than US$1 per day defined as earnings below the poverty line. This shows evidence of poverty in the Sissala East District.

- The indicator of poverty identified by the respondents included inability to provide three square meals a day, longer times to nearest, hospital low educational attainment, high out migration and poor housing.
- The major indicators of environmental degradation identified by focus group discussions were extinction of plant species, poor sanitation, land pollution, and water pollution.
- About 89.89 percent of the respondents and focus group discussions agreed that environmental degradation is caused by livelihood activities in the study area such as agriculture, charcoal burning, small-scale sand and gold mining, lumbering and hunting. These activities they said leads to felling of trees, bush burning and overgrazing.
- The cause of environmental degradation linked to poverty and livelihoods identified were, intensive agriculture activities, limited employment opportunities, inability to afford other sources of domestic energy and lack of sanitary facilities.
- Intensive agriculture activities due to low agriculture productivity and limited employment opportunities are the major causes of poverty. These have forced them to adopt livelihood activities that degrade the environment.
- Certain institutions are involved in the management of poverty and environmental problems in the study area.

Conclusions

The study provides evidence of livelihoods, poverty-environment nexus in the study area. The link between livelihood, poverty and environmental degradation is complex and a major development challenge for the study area. For example, the high rate of environmental degradation has contributed to the destruction of natural habitats, threatening the survival of many animals and plant species. The study area is also characterized by youth migration.

Poverty has pushed the people into environmental degrading extensive farming, which involves clear-cutting of trees and burning to establish new farms, charcoal burning, and hunting to survive. Sanitation conditions in households in the sampled areas were very poor. There was wide spread deforestation, and rivers were dried up.

The need for poverty reduction and sustainable livelihood strategies in the study area is a matter of importance that cannot be over looked since the environment in the area is threatened by livelihood strategies of the people majority of who are poor.

Recommendations

The following recommendations are made to the Sissala East District, other stakeholders, and the Government of Ghana for adoption in other parts of the county suffering the problem of livelihoods, poverty and environmental degradation.

- The Sissala District Assembly and the MOFA should promote sustainable increase of production through Agriculture and land

management techniques that are more suitable to sedentary farming by creating awareness among the people of environmental degradation and the importance of natural vegetation for the productive system. This could be done by introducing participatory development of management systems and radio programmes on sustainable farm management.

- EPA, and the Sissala East District Assemble and N.G O, s should promote sustainable environmental management by increasing awareness among the people of the environmental degradation resulting from their livelihood activities through community discussions and radio talks on the indiscriminate felling of tress, waste disposable and control of bush fires.
- Engage in tree planting projects with particular attention to planting of draught resistant trees such as Neem and Shea.
- Form and promote green clubs in schools and the control and regulation of influx of large cattle herds from neighboring countries
- The District Assembly should implement poverty reduction strategies that should increase labour productivity and incomes of farmers in the District through, linking up farmers with potential credit providers, buyers of products and providers of inputs, improve infrastructure particularly access roads to the district and educational, facilities.
- The Government and District Assemble should help the people to reduce their over reliance on agriculture as their main source of livelihood by diversifying into alternative livelihood sources. They

should be supported to go into alternative income generating activities such as cottage industries, food processing and petty trading.

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APPENDICES

APPENDIX A

POPULATION, HOUSEHOLD NUMBERS AND NUMBER OF HOUSES IN THE SISSALA EAST DISTRICT

Communities	Population	Total Houses	Total Households
Tumu	8,858	875	1,587
Limiere	48	6	9
Katina	22	4	9
Kupulima	477	31	58
Dimajan No. 1	239	24	37
Dimajan No. 2	169	14	18
Chinchan	491	35	57
Bakwala	142	17	21
Tafiasi	679	49	83
Nanchala	196	18	32
Kasapori Kasana	181	13	23
Sule Belle	701	40	52
Gbarima	399	21	39
Kandia	483	36	61
Sorbelle	141	12	27
Nadakul	31	3	3
Dangi	195	23	28
Lilixi	720	64	86
Kowie	515	44	50
Kong	1,206	86	140

Nankowie	469	44	50
Sakai	1,926	129	184
Wallembelle	3,670	240	401
Sakalow	831	45	89
Timbaga	554	60	53
Bendei	17	3	3
Vamboi	1,000	66	117
Bugbelle	1,859	113	192
Sentie	665	55	80
Jijeng	739	49	79
Bechemboi	646	69	79
Wahabu	333	23	57
Halemboi	27	4	4
Tanvielle	107	4	10
Netalu	51	6	6
Tanla	86	5	9
Pina	177	29	27
Navariwie	134	14	15
Wuru	497	35	58
Krapun	192	21	24
Kawilla	13	32	85
Banu	399	31	38
Basisan	276	27	31
Kuncholgo	201	22	29
Bujan	765	43	73

Nabugubelle	1,339	97	150
Dollibizon	497	34	55
Suduujan	252	18	29
Sumboru	280	10	32
Yigentu	406	22	46
Pieng	1,336	90	123
Chalu	2,073	110	281
Kulfuo	1,048	66	136
Mwanduanu	1,248	88	136
Tarsaw	907	75	116
Kurobol	693	48	81
Nablilo	1,985	88	242
Babujan	765	43	73
Gbengabisi	437	37	56
Santijan	252	18	29
Giwosi (192)	486	15	53
Du	137	10	15
Bawisibelle	1,301	84	127
Komo	595	28	65
Kalaxi	80	5	10
TOTAL	48,444	7,5652	3,764

Source: Ghana Statistical Service, (2005)

APPENDIX B

INTERVIEW SCHEDULE FOR HOUSEHOLD HEADS

This is an interview schedule design in order to collect data on poverty livelihoods and environmental degradation. The main purpose of the study is to write a dissertation to the University of Cape Coast in partial fulfillment of the requirements for the award of a Master of Arts Degree in Development Management. I will be very grateful if you could give the necessary and correct information. Your responses will be treated in strict confidence.

Section 1: Background of respondent

1. Sex: Male [ ] Female [ ]
2. Age (years) ----------
3. What is your level of education?

   None [ ]

   Primary School [ ]

   Junior High School [ ]

   Senior High School [ ]

   Post Technical [ ]

   Tertiary [ ]

   Others (Specify)
4. What is the size of your household? ----------
5. How many of your household members fall in the following age ranges.

Age (years)	Number
0 - 15	
16 – 45	
46 – 60	
60 and above	

Section 2: Poverty Profile

6. What is the income per month/year of your household and the source(s) of your income?

Source of income	Head of household		Others	
	Monthly	Yearly	Monthly	Yearly
Cereals				
Legumes				
Roots				
Fruits				
Livestock				
Artisan				
Salary				
Herbalist				
Petty Trading				
Others (Specify)				

7. In your own view, would you say poverty is existing in the Sissala East District?

Yes [ ] No [ ]

8. If yes, what is the extent of poverty in the Sissala East District?

   Very high [ ] High [ ] Average [ ] Low [ ] Very low [ ]

9. Which of the following are the causes of poverty in the Sissala East District?

   a. Low income

   b. Low agriculture

   c. Lack of employment opportunity

   d. Low educational attainment

   e. Our migration

   f. Poor infrastructure

10. What do you consider to be the major indicators of poverty in each of the following in the Sissala East District?

Description	**Indicators**
(a). Food and Nutrition	Malnutrition Under feeding Inability to provide three square meals a day. Day without food Borrowing of food
(b). Health	Inadequate healthy service. High rate of mortality Longer times to nearest hospital
(c). Education	High school drop outs Inadequate educational facilities. Low educational attainment
(d). Economic	High rate of unemployment

	Lack of capital Low productivity in agriculture. Lack of infrastructure Low income
(e). Housing	Sandcrete wall Landcrete wall Atakpame Zinc roof Grass or thatch roof

Section 3: Evidence of environmental degradation in the Sissala East District

11. In your own opinion, would you say the environment is degraded in the Sissala East District?

    Yes [ ] No [ ]

12. If yes, what is the evidence of environment degradation?

a. Extension of plant species [ ]

b. Poor sanitation [ ]

c. Water pollution [ ]

d. Air pollution [ ]

e. Land pollution [ ]

f. Extinction of Animal Species [ ]

g. Others Specify ----------

13. Which of the following energy sources do you use for domestic purposes?

a. LPG [ ]

b. Charcoal [ ]

c. Firewood [ ]

d. Others Specify ----------

14. What is your source of livelihood? (You may mention more than one).

a. Agriculture (farming, fishing, livestock) [ ]

b. Civil servant [ ]

c. Lumbering [ ]

d. Trading [ ]

e. Sand and small scale mining [ ]

f. Charcoal burning [ ]

g. Artisan [ ]

h. Other (Specify) [ ]

15. Do you receive any remittance?

Yes [ ] No [ ]

16. If yes, mention the source, amount of remittance and how frequent?

Source of remittance	**Source of remittance**	**Frequent**
		Daily Weekly Monthly Quarterly Annually Others (Specify

Section 6: Relationship between Livelihoods, poverty and Environmental Degradation in the Sissala East District

17. Do you think there is relationship between livelihood strategies, poverty and environmental degradation in the Sissala East district?

    Yes [ ] No [ ]

18. If yes, which of the following livelihood activities are linked to environmental degradation?

    a. Agriculture (farming, fishing, livestock) [ ]
    b. Lumbering [ ]
    c. Charcoal burning [ ]
    d. Hunting [ ]
    e. Sand / small scale mining [ ]
    f. Trading [ ]
    g. Teaching [ ]
    h. Others (Specify) [ ]

19. Do you think there is any link between livelihoods, poverty and environmental degradation?

    Yes [ ] No [ ]

20. If yes, which of the following do you consider to be the major reasons for the relationship between livelihood activities, poverty and environmental degradation?

    (Note you may tick more than one)

a. Inability to afford other sources of domestic fuel [ ]
b. Limited employment opportunities [ ]
c. Lack of waste management facilities [ ]

d. Low agriculture productivity [ ]

e. General ignorance [ ]

f. Lack of livelihood intervention [ ]

g. Others (Specify) [ ]

Section 6: Measures to prevent poverty and environmental degradation

21. Do you know any institution that is involved in the management of poverty and environmental related issues?

    Yes [ ] No [ ]

22. If yes mention them

    a. The Environmental Protection Agency (EPA) [ ]

    b. The Municipal Assembly [ ]

    c. Environmental NGO's [ ]

    d. Others (Specify) [ ]

23. What measures can be taken to improve management of livelihoods, poverty and environmental problems?

    a. Livelihood intervention programmes [ ]

    b. Implementation of poverty alleviation programmes [ ]

    c. Public education on the dangers of environmental degradation [ ]

    d. Prevention and control of livelihood activities that affect the environment [ ]

    e. Other (Specify) [ ]

24. Any other comments……..……

APPENDIX C

FOCUS GROUP DISCUSSION GUIDE

1. Explain the meaning of livelihoods
2. Explain the meaning of poverty
3. Explain the meaning of environmental degradation
4. Describe the nature of environmental degradation in the Sissala East District
5. Identify causes of poverty and environmental degradation
6. Discuss the relationship between poverty livelihood activities and environmental degradation
7. Discuss the relationship between poverty and environmental degradation
8. Suggestion of measures to control poverty and environmental degradation