

**THE EFFECTS OF POVERTY ON ENVIRONMENTAL SUSTAINABILITY: THE CASE  
STUDY OF THE KASSENA-NANKANA WEST DISTRICT, UPPER EAST REGION**

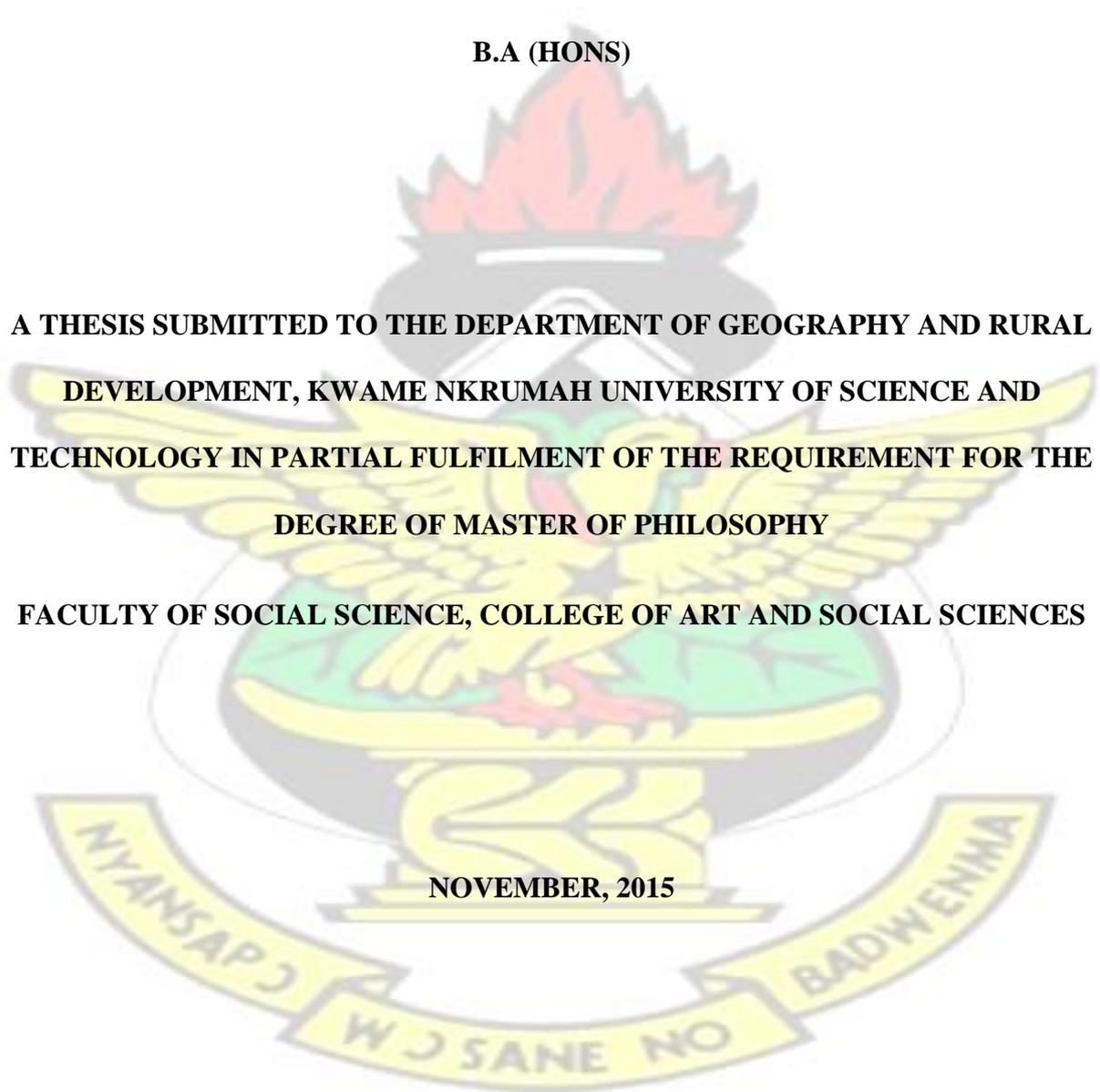
**BY**  
**JUSTICE ABUCHOW**

**B.A (HONS)**

**A THESIS SUBMITTED TO THE DEPARTMENT OF GEOGRAPHY AND RURAL  
DEVELOPMENT, KWAME NKRUMAH UNIVERSITY OF SCIENCE AND  
TECHNOLOGY IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE  
DEGREE OF MASTER OF PHILOSOPHY**

**FACULTY OF SOCIAL SCIENCE, COLLEGE OF ART AND SOCIAL SCIENCES**

**NOVEMBER, 2015**



# KNUST



**DECLARATION**

I hereby declare that this MPHIL thesis is my own work to the best of my knowledge. Except for the references cited, which I have duly acknowledged, no section of this thesis is a reproduction of anybody’s work submitted for the award of a degree in any University. I therefore take full responsibility for any error of reasoning and presentation of facts.

.....

Justice Abuchow

Date

(PG4582710)

(Student)

Date

Certified By

Mr. Joseph Koomson

.....

(Supervisor)

Mr. Foster Frempong

.....

(Supervisor)

Dr. Prince Osei-Wusu Adjei

.....

(Head of Department)



## ABSTRACT

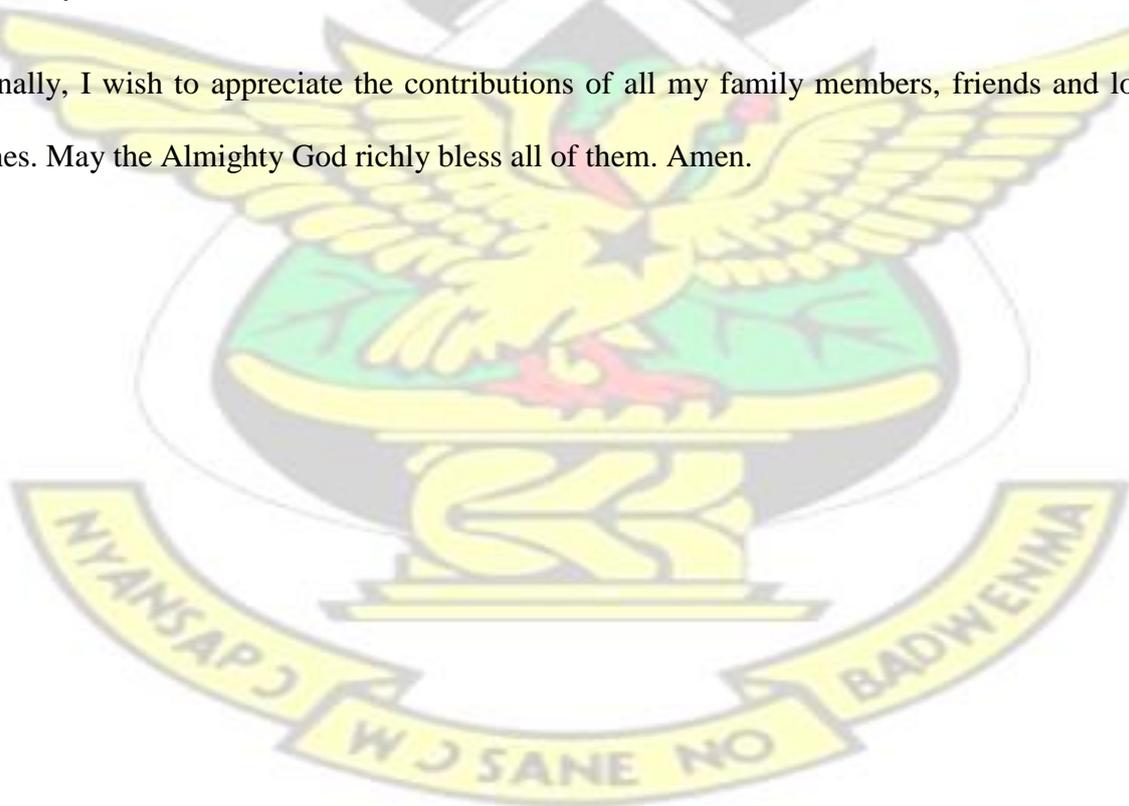
Poverty and environment nexus has been dominated by two schools of thought. The orthodox view suggests that poor people are forced to degrade landscape in response to population growth and economic marginalization. Hence of the view that poverty and environmental damage occur in a downward spiral in which it is assumed that the only way to avoid environmental degradation is to alleviate poverty. However, recent views argue that many poor people are able to adopt protective mechanisms through collective action which reduce the impacts of environmental change. The Kassena-Nankana West District (KNWD) is one of the worst degraded districts of the Upper East region with a high incidence of poverty. This study therefore examined the impact of poverty on the savannah forest in the KNWD of the Upper East Region of Ghana. FGDs and questionnaires were used to collect qualitative and quantitative data respectively. 370 households were selected at random from four communities in the District as respondents for the quantitative data. Both SPSS and Excel software were used to analyse the quantitative data while content analysis was used to analyse the qualitative data. Results from the study indicate that a total of 95.4% of respondents are either extremely poor or poor. Moreover, results indicated that the very poor, that is those who earn less than GH¢100 a month and those without formal education depend on the environment as a source of livelihood. Their activities included the production of charcoal and fuel wood from the forest reserve in the district. These activities have direct impact on the environment causing deforestation, forest degradation and fragmentation. The study therefore recommends that the KNWD, government agencies and NGOs should design and implement projects and programmes geared towards the reduction of poverty and should also build the capacities of heads of households to engage in alternative livelihood activities to supplement household's income from farming.

## ACKNOWLEDGEMENT

I express my profound gratitude to the Almighty God for His unceasing protection and guidance which saw me through to a perfect completion of this study. I am particularly thankful to my able supervisors, Mr. Joseph Koomson and Mr. Foster Frempong for their invaluable contributions without which the work would not have been completed.

I very much appreciate the advice and contributions made by Dr. Prince Osei-Wusu Adjei and Mr. James Boafo. I sincerely appreciate the efforts of my research assistants; Vasco, Emmanuel, Thompson and Patrick of Nakong, Katiu, Chiana and Kayoro respectively, they were very helpful during the data collection process. I wish to appreciate the contributions of the Kassena-Nankana West District Planning Officer and Mr Raymond, the Deputy District Forestry Officer.

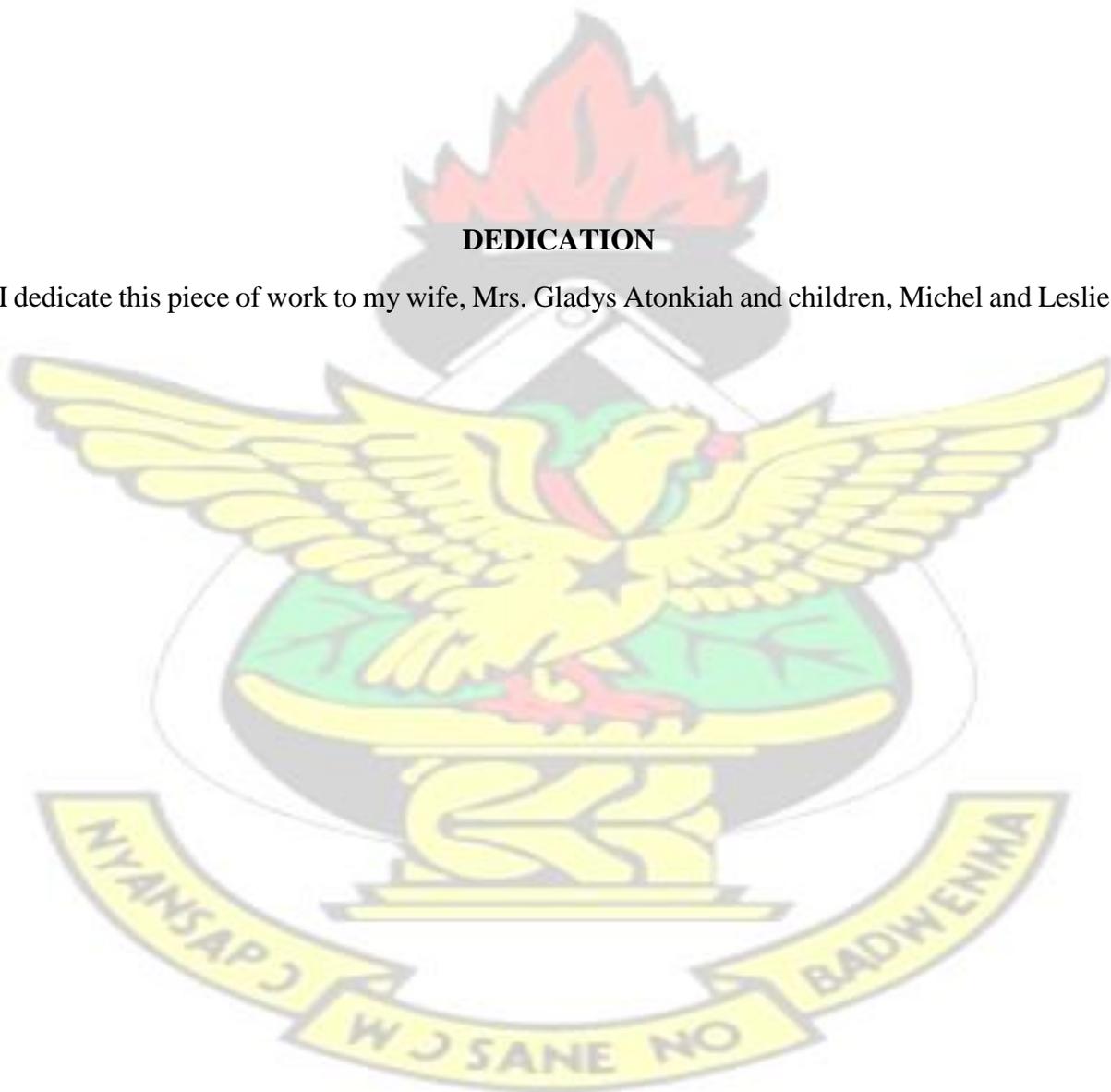
Finally, I wish to appreciate the contributions of all my family members, friends and loved ones. May the Almighty God richly bless all of them. Amen.



# KNUST

## **DEDICATION**

I dedicate this piece of work to my wife, Mrs. Gladys Atonkiah and children, Michel and Leslie.



## ACRONYMS

ADB	Asian Development Bank
BCR	Bruntland Commission Report
CIHI	Canadian Institute for Health Information
DFID	Department for International Development
DMCs	Developing Member Countries
DMTDP	District Medium Term Development Plan
EU	European Union
FAO	Food and Agricultural Organization
FGDs	Focus Group Discussions
GDP	Gross Domestic Product
GLSS	Ghana Living Standards Survey
GNADO	GIA/NABIO Agroforestry Development Organization
GOG	Government of Ghana
GPRS II	Growth and Poverty Reduction Strategy II
GPRTU	Ghana Private Roads Transport Union
GSS	Ghana Statistical Service
GYEEDA	Ghana Youth Employment and Entrepreneurship Development Agency
ICP	International Comparison Program
ILO	International Labour Organization
IMF	International Monetary Fund
IPC	International Poverty Centre
JHS	Junior High School
KNWDA	Kassena-Nankana West District Assembly
LESDEP	Local Entrepreneurial Skills Development Program
MDGs	Millennium Development Goals
MIQ	Minimum Income Question
MMW	Monthly Minimum Wage
NDPC	National Development Planning Commission

NHRC	Navrongo Health Research Centre
OECD	Organization for Economic Co-operation and Development
PPA	Participatory Poverty Assessment
PPP	Purchasing Power Parity
PRA	Participatory Rural Assessment
SHS	Senior High School
TUC	Trades Union Congress
UN	United Nations
UNCHE	United Nations Conference on Human Environment
UNDP	United Nations Development Programme
UNEP	United Nations Environment Program
UNGA	United Nations General Assembly
UNIDO	United Nations Industrial Development Organisation
UNMP	United Nations Millennium Project
WB	World Bank
WDR	World Development Report



# KNUST

## TABLE OF CONTENTS

DECLARATION .....	i
ABSTRACT .....	ii
ACKNOWLEDGEMENT .....	iii
DEDICATION .....	iv
ACRONYMS .....	v
LIST OF TABLES .....	xi
LIST OF FIGURES .....	xii
CHAPTER ONE: BACKGROUND TO THE STUDY .....	1
1.1 Introduction .....	1
1.2 Problem Statement .....	6
1.3 Research Questions .....	8
1.4 Objective of the Study. ....	8

1.5 Propositions .....	8
1.6 Research Methods .....	9
1.6.1 Types and Sources of Data .....	9
1.6.2. Sampling Method .....	10
1.6.3 Methods of Data Analyses .....	12
1.6.4 Fieldwork Activities .....	13
1.6.5 Ethical Consideration .....	13
1.6.6 Field Challenges .....	14
<b>CHAPTER TWO: REVIEW OF RELATED LITERATURE .....</b>	<b>15</b>
2.1 Introduction .....	15
2.2 Definitions and measurement of poverty .....	15
2.2.1 Concept of poverty .....	15
2.2.2 Measurement of Poverty .....	22
2.2.2.1 The Absolute Approach .....	23
2.2.2.2 The Relative Approach .....	25
2.2.2.3 The Participatory Poverty Assessment (PPA) .....	27
2.3 Causes of Poverty .....	29
2.4 Poverty Trends and Situations in Ghana .....	30
2.5 Environmental Sustainability .....	32

2.6 The Nexus between Poverty and Environmental Sustainability. ....	34
2.7 The Theoretical Perspective of the Study .....	39

**CHAPTER THREE: THE PROFILE OF KASSENA-NANKANA WEST DISTRICT .....  
44**

3.1 Introduction .....	44
3.2 Summary .....	44
3.3 Locations and Size .....	45
3.4 Physical Environment .....	48
3.4.1 Climate.....	48
3.4.2 Vegetation .....	48
3.4.3 Soil .....	49
3.4.4 Relief and drainage .....	49
3.4.5 Interaction between climate, vegetation, soil, relief and drainage .....	49
3.5 Demographic characteristics and the built environment .....	50
3.6 Economic and livelihood activities .....	52
3.7 Poverty levels and vulnerability .....	54
3.8 Gender .....	55
3.9 Climate change .....	55

**CHAPTER FOUR: ANALYSIS OF THE EFFECTS OF POVERTY ON THE ENVIRONMENT ..... 57**

4.1. Introduction .....	57
-------------------------	----

4.2. Socio-demographic Characteristics of Respondents .....	57
4.3 Incidence of Poverty in the Kassena-Nankana West District .....	60
4.3.1 Perceptions of Poverty .....	60
4.3.2 Causes of Poverty .....	62
4.3.3 Effects of Poverty .....	64
4.3.4 Manifestations of Poverty .....	66
4.3.5 Measurement of Poverty in the study Communities .....	67
4.4 The Incidence of Poverty and Livelihood Activities .....	70
4.4.1 Income Level and Dependence on Forest .....	72
4.4.2 Educational Level and Dependence on Forest Reserves .....	74
4.5 The Effects of Livelihoods on the Environment .....	76
<b>CHAPTER FIVE: SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS .....</b>	<b>79</b>
5.1 Introduction .....	79
5.2 Summary of Main Findings .....	79
5.2.1 The levels of household poverty .....	80
5.2.2 Environmentally based livelihood activities of households .....	80
5.2.3 Effects of the environmentally based livelihood activities .....	81
5.2 Conclusion .....	81
5.3 Recommendations .....	83

5.3.1 Introduction of alternative livelihoods .....	83
5.3.2 Construction of irrigation facilities .....	84
5.3.3 Provision of subsidy and credit facilities .....	84
5.3.4 Adoption of Sustainable Methods of Charcoal and Fuel wood Production .....	85
5.3.5 Introduction of re-afforestation and afforestation programs .....	85
5.3.6 Recommendation for further research .....	85
<b>REFERENCES .....</b>	<b>86</b>
<b>APPENDICES .....</b>	<b>98</b>
APPENDIX A .....	98
APPENDIX B .....	105
APPENDIX C .....	107
APPENDICE D .....	108
<b>LIST OF TABLES</b>	
Table 1.1 Sample Size Determination for each study community.....	12
Table 4.1 Socio-Demographic Characteristics of Heads of Household .....	58
Table 4.2 Perceptions of Poverty in the study Communities .....	60
Table 4.3 Major Causes of Poverty in the Study Communities .....	63
Table 4.4 Major Effects of Poverty in the study Communities .....	65
Table 4.5 Manifestation of Poverty in the study Communities .....	67
Table 4.6 Poverty Rates in the study Communities .....	68
Table 4.7 The Level of Forest Dependence in the study Communities .....	71
Table 4.8 Income Level and Dependence on Forest in the study Communities .....	73
Table 4.9 Educational Levels and Dependence on Forest in the Communities.....	75

# KNUST



## LIST OF FIGURES

Figure 2.1: The Sustainable Livelihoods Framework ..... 40

Figure 2.2: The Modified Sustainable Livelihoods Framework ..... 40

# KNUST



## **CHAPTER ONE 1.0 BACKGROUND TO THE STUDY 1.1 Introduction**

The poor have traditionally taken the brunt of the blame for causing society's many problems including, more recently, environmental degradation. There is a general consensus that poverty is a major cause of environmental degradation. For example, in one of the conclusions of the Brundtland Commission Report (BCR), which incidentally has been accepted as the blue print for environmental conservation, it was explicitly stated that, poverty is a major cause of environmental problems and amelioration of poverty is a necessary and central condition of any effective programmes addressing the environment (Duraiappa, 1996). To a very large extent, most household's especially poor households naturally depend on the environment for their financial capital. Similarly, Jalal (1993), the Asian Development Bank's chief of the environment department says, "It is generally accepted that environmental degradation, rapid population growth and stagnant production are closely linked with the fast spread of acute poverty in many countries of Asia".

Furthermore, according to the 1992 World Development Report (WDR), the World Bank explicitly stated that, poor families who have to meet short term needs degrade the natural capital by excessive cutting of trees for firewood and failure to replace soil nutrients (World Bank, 1992). In September 2008, the World Bank released an update of its global and regional poverty estimates. This was followed by the release of country-specific poverty estimates on 14 October 2008. The new figures show that there are more poor people than previously estimated. Based on information for 25 developing member countries (DMCs) of the Asian Development Bank (ADB) comprising 95.3% of the population of all DMCs. The new data suggest that, in 2005 about 903 million people (27% of the population of the 25 countries) lived in extreme poverty, one third more than the previously estimated 664 million (20%). In addition, about 900 million people in the region are moderately poor, indicating that more than half of the region's population (1.8 billion people, 54%) is extremely poor or vulnerable to

poverty. The increase in the poverty numbers is not due to the use of higher poverty lines. It is because the cost of living in developing countries turns out to be higher than estimates suggested. This is a key result of the 2005 International Comparison Program (ICP) study in which the ADB played a major role. The new data on poverty imply that it is premature to expect the region to be free of poverty soon. The poverty update has stimulated vigorous discussions in many countries. Interestingly, many governments seem to accept the message behind the new data, namely, that the region has to do much more to address poverty and vulnerability (Bauer et al, 2008).

When international agencies talk about “poor people” they are generally referring to the 1.2 billion people defined as chronically poor on the basis of an income level of less than one dollar a day. This figure, set by the World Bank, is intended to represent the minimum amount required for a person to meet his or her daily physical needs. This monetary figure is a crude but easy to measure indicator of poverty and is currently the basis for defining the scope of Millennium Development Goal (MDG) 1 which includes a target to “halve the number of people living in extreme poverty”. However, it is a very blunt instrument for measuring a complex phenomenon. Furthermore, people's perceptions of poverty tend to change as countries get richer: in this sense the definition of poverty will always depend on what people, in a particular society, at a particular point in time, perceive as poor. Inequality can be as significant a measure of wellbeing as absolute levels of poverty. In the 1980 World Development Report (WDR), the World Bank described poverty as “a condition of life so characterized by malnutrition, illiteracy, and disease as to be beneath any reasonable definition of human decency” (Roe and Elliot, 2005).

Poverty exists in both developed and developing countries but it is rife in developing countries where more people are affected. About half the world’s people nearly three billion live on less

than US\$1 per day and the Gross Domestic Product (GDP) of the poorest 48 nations is less than the wealth of the world's three richest people combined. Poverty hinders world growth and serves as a constant factor of instability and environmental deterioration (Kendie and Martens, 2008). The disastrous consequences of poverty therefore need society's attention, especially in an era where globalization has made local and international economies increasingly interdependent.

Poverty, in all of its manifestations, remains a serious problem in Africa despite the fact that the incidence of poverty on the continent has recently been declining. The nature of poverty in Africa keeps its eradication as a central objective of socioeconomic development. Also, strategies for eradicating poverty in the African region have begun to pay more attention to the relationship between environmental degradation and poverty. This nexus of poverty and environmental damage has led to a situation where the poor are both the victims and perpetrators of environmental damage in Africa. Environmental degradation contributes to poverty through, among other things, worsened health and by constraining the productivity of those resources upon which the poor rely, while poverty restricts the poor to acting in ways that are damaging to the environment (Hope, 2008).

African poverty has many facets. It is characterized by lack of purchasing power, rural dominance, exposure to environmental risk, population displacement, insufficient access to social and economic services, rapid urbanization, and few opportunities for formal income generation. The poor in Africa are, however, not a homogeneous group. They instead fall into three categories. The first category can be designated as the chronic poor. These are individuals at the margin of society and who constantly suffer from extreme deprivation. The second category can be referred to as the borderline poor. These are individuals or households who are occasionally poor, such as the seasonally unemployed. The final category can be termed the newly poor. These are individuals or households who may be the direct victims of stagnant

economic performance in their countries. They include retrenched workers (Hope, 2004). Poverty can also be categorised into "absolute" and "relative" poverty (Sarlo, 2001). According to Gordon (2000), participating countries in an international social development summit held in Copenhagen in 1995 issued a declaration that all participating countries should develop measures of absolute and relative poverty (Gordon, 2000).

Undoubtedly, Africa is the poorest region in the world. It has the largest share of people living below US\$1 per day. Currently, an average of 41 percent of the population in sub-Saharan Africa lives in absolute poverty compared to 32 percent in South Asia. In 2001, 47 percent of the population of sub-Saharan Africa lived in absolute poverty, so poverty is declining in Africa (UNIDO, 2004). About 30 percent of Africa's population is classified as extremely poor (Hope, 2004).

The poverty situation in Africa can also be looked at from the point of view of the distribution of income. In many African countries, the disparity in income is quite significant. Compared to other regions of the world, Africa has the second most unequal income distribution next to Latin America. The most frequently used measure of income inequality is the Gini index. It ranges from zero (complete equality) to 100 (complete inequality). The most recent Gini index for sub-Saharan Africa is 72.2 (UNDP, 2006). In some countries such as South Africa, Namibia, Swaziland, Lesotho, Central African Republic, and Sierra Leone, for example the data indicate that the Gini index exceeds 57.5 with the richest 20 percent of their population accounting for more than 62 percent of total income or consumption compared to an average share of two percent.

Natural resources provide fundamental support to life and economic processes. Soils are the foundation of agriculture while more than 1.6 billion people depends on forest for their livelihood in some way, and water is essential for the sustenance and health of humankind and

indeed of all species. Properly managed, natural resources provide the foundation for maintaining and improving the quality of life of the world's population and can make invaluable contribution to sustainable growth. This foundation is coming under pressure from mismanagement; eleven percent of the earth's vegetated surface (1.2 billion hectares) has been significantly degraded by human activity over the past 45 years, affecting more than 900 million people in 100 countries. More than one fifth of the world's tropical forest has been cleared since 1990. Globally, 12 million to 15 million hectares of forest are lost every year, in addition to substantial areas of grasslands wetlands (ref. natural resource mgt). It went on to say that, the poor are usually most directly dependent on natural resources for their livelihoods, most vulnerable to the consequences of natural resource degradation.

The growing realization of the importance of environmental degradation has emerged repeatedly in many international conferences on human and his environment (Agyemang et al., 2007). The United Nations Conference on Human Environment (UNCHE) convened in Stockholm in 1972 and this gathering was the first of its kind on the issue of rapid deterioration of the global environment (Essam and Manzur, 1987). It was at this conference that the fragile and limited assimilative and carrying capacity of the global environment was brought into the sharp focus of the international community. The final communiqué was the urgent control measures that should be instituted to safeguard the environment for the present and future generation. This is because of the inter and intra generational equity implications of global resource consumption (Seitz, 1995; Agyemang et al., 2007). In 1992 the Earth Summit (20 years after the Stockholm, 1972) had environmental degradation as one of its major themes. One of the main functions assigned to the Governing Council of the United Nations Environmental Programme is to keep under review the world environmental situation in order to ensure that emerging environmental problems receive appropriate and adequate attention by governments of member states (Essam and Manzur, 1987).

The World Summit that took place in Johannesburg, South Africa in 2004 was purposed to assess the outcome of the declarations of the Earth Summit and the possible implementation of the Agenda 21 by member states. Despite these efforts to safeguard the natural environment and prevent further environmental degradation and the depletion of natural resources there is still unprecedented global increase in environmental and related problems (Agyemang et al., 2007).

## **1.2 Problem Statement**

Ghana is the first country in sub-Saharan Africa to have achieved the target of halving the proportion of population in extreme poverty as at 2006, well ahead of the target date. The overall poverty rate has declined substantially over the past two decades from 51.7% in 1991/92 to 28.5% in 2005/2006, indicating that the target could be achieved well ahead of the 2015 target of 26%. Similarly, the proportion of the population living below the extreme poverty line declined from 36.5% to 18.2% over the same period against the 2015 target of 19% (GSS, 2007). The decline in poverty had occurred due to the significant improvements in economic growth over the past decade with accompanied sound social and economic policies on poverty reduction as spelt out in the GPRS II. Despite the significant decline in poverty at the national level, some regions did not record improvements in poverty, particularly the three northern regions where high levels of poverty persist. Over 70% of the people whose incomes are below the poverty line can be found in the savannah area (Government of Ghana and UNDP, 2010).

In 1999, almost 80% of the populations in the Upper East region, where most households are food crop producers, were considered extremely poor (Whitehead, 2004). Most households in this region are vulnerable or already destitute. Rather than enjoying the positive trends for well-being in the rest of the country, households in the region were growing poorer. In fact, by 1989, there has arisen a

new phrase to describe certain households: “too poor to farm” (Whitehead, 2004). The poverty situation in the Kassena-Nankana West District is not different from what pertains in the region. Environmental resources in northern Ghana are characterized by dry savannah climate and vegetation, poor soils, and irregular rainfall patterns leading to poor yields and low levels of output. The area is one of the most degraded regions in Ghana, and this is further complicated by high illiteracy rate, absolute poverty, complex land tenure system and high population growth rate (Agyemang, 2011). It is estimated that in Ghana, the annual cost of environmental degradation is \$1.2 billion representing 10% of the total Gross Domestic Product (GDP) of the country. In northern Ghana, the estimated cost of environmental degradation is \$128.3 million, representing 4% of the Gross Domestic Product. In the savannah woodland vegetation of Ghana, it is estimated that 14.7 million hectares of the original 15.6 million hectares are under serious threat of environmental degradation (Agyemang, 2011). The situation in the Kassena-Nankana West District is not different from what pertains in the entire country. While the district has been under cultivation for many years, decades of deforestation coupled with intensive farming practices to feed a growing population have left the environment in this agriculturally dependent district severely degraded. The degradation and disappearance of common property resources is a major issue for poor households (Narayan et al, 2000). According to GIA/NABIO Agroforestry Development Organization (GNADO), a NonGovernmental Organization located in the Kassena-Nankana West District, the district is one of the worst degraded districts of the Upper East Region (GNADO, 2004). This study therefore seeks to assess the effects of poverty on environmental sustainability in the Kassena-Nankana West District of the Upper East Region.

### **1.3 Research Questions**

The following questions guided the study;

- i. What are the levels of poverty in the Kassena-Nankana West District? ii.  
What are the livelihood activities in the Kassena-Nankana West District?
- iii. What are the effects of the livelihood activities on the environment in the  
Kassena- iv.  
Nankana West District?

#### **1.4 Objective of the Study.**

The main objective of the research was to examine the effects of the livelihood activities of the poor on the savannah forest in the Kassena-Nankana West District.

The specific objectives included the following;

- (a) To examine the levels of poverty in the Kassena-Nankana West District
- (b) To examine the livelihood activities of the people in the Kassena-Nankana West District.
- (c) To assess the effect of the livelihood activities on the environment in the KassenaNankana West District.

#### **1.5 Propositions**

The study was guided by the following hypothesis;

- (i) Households in the Kassena-Nanakana West District depend on the environment for their livelihood.
- (ii) Poverty is the root cause of environmental degradation in the Kassena-Nankana West District.

#### **1.6 Research Methods**

This section deals with the research design, study population, sampling procedure, sample size determination, sources of data and information, research instruments, field work, ethical considerations and field challenges.

### 1.6.1 Types and Sources of Data

Quantitative and qualitative data on socio-demographic characteristics of heads of households in the communities were gathered. Both primary and secondary sources of data were used for the study. Primary data on demographic and socio-economic characteristics were elicited from the heads of households in the study communities whilst secondary source of data were collected from the Forestry Department and the Kassena-Nankana West District Assembly.

Questionnaires and Focus Group Discussions (FGDs) were the instruments employed to collect data for the study. In each case, questions were structured and read out to respondents in their own local dialect for clarity and understanding. This ensured that the data collection process was interactive and participatory, and that respondents understood the questions well. The interview method further helped to avoid call backs and non-response to questionnaires. It also gave the heads of household who were the units of inquiry the opportunity to participate in the survey process. FGDs were conducted to supplement the quantitative data obtained. In all, eight FGDs were conducted in each of the four study communities – Chiana, Katiu, Nakong and Kayoro. The respondents were grouped into male and female heads of households. The maximum and minimum number of discussants was 15 and 10 respectively. The discussions actively involved both male and female heads of households to unveil their perceptions on poverty and how it influenced the environment in the KassenaNankan West District. This is meant to examine the perception of poverty by the different sex groups.

The monthly income level of households was the main monetary indicator used to measure poverty in the study communities. Thus, the Monthly Minimum Wage (MMW) of Ghana Gh¢180 was adopted as an indicator of poverty. The households that earn far below the MMW were classified as very poor while those that earn a little below or exactly or a little above the MMW are categorized as poor. Finally, the households that earn far above the MMW were

classified as the non-poor. In addition, the educational level of the households was used to measure poverty. The households' heads without formal education were considered as very poor, because, they have no formal employable skill and are only engaged in farming. Also, those who have attained JHS education were classified as poor, because they have limited formal employable skills. Finally the heads that have attained SHS or Vocation, or Technical and Tertiary levels were considered non-poor because they have the adequate formal employable skills.

### **1.6.2. Sampling Method**

This includes the description of target population, sampling technique, sampling design, sampling frame and sample size for the study. These outlines were followed chronologically in the design of the study.

The heads of households were the units of inquiry who provided relevant information during the fieldwork. The households' population in the selected communities as estimated by the Navrongo Health Research Centre (NHRC) was as follows: Chiana (2677), Katiu (860), Nakong (360) and Kayoro (1033). In all 4,930 households population was estimated in the selected communities from which the final sample was draw

Households from four communities were randomly selected for data collection. To ensure that each of the households within each of the four communities had an equal chance of selection, the lottery approach of the simple random sampling method was adopted to select the three hundred and seventy households from the four communities (see Table 1.1, page 15). This was done in order to ensure a higher level of precision and representation. Thus, each household represents a sample unit. Within the household, the head of each of the selected household acted as the unit of inquiry (respondent) for the survey. For the qualitative data, the individuals

who formed the groups for the Focus Group Discussions were purposely sampled taking into consideration gender and age.

In order to achieve the objectives of the study and ensure the spatial spread of the findings, four communities were selected from the district for the household survey. These communities were Chiana, Katiu, Nakong and Kayoro. These communities were selected due to their proximity to the forest reserve and also there is a consensus that the households depend on the forest reserve for livelihoods. The total sample size was distributed proportionally to the population of each of the four communities. That is 199 households were selected in Chiana, 63 households in Katiu, 30 households in Nakong and 78 households in Kayoro (see Table 1.1, page 15). Therefore, in each community the selected households were proportional to the total number of households in that community. For the qualitative data, two FGDs, one for male and the other for female, consisting of fifteen (15) members per group were conducted in each community.

The sample frame consisted of all heads of household in Chiana, Katiu, Nakong and Kayoro. The Navrongo Health Research Centre (NHRC) estimated the number of households in the selected areas as follows; Chiana (2677), Katiu (860), Nakong (360) and Kayoro (1033). Hence the total household population from which the final sample was drawn stood at 4,930.

This refers to the number of observation necessary for a given study. Sample size is contingent on the amount of variation that exists in the population being studied, the actual size of the population, and the types of questions being asked coupled with the level of precision required and the needed confidence level (Gomez and Jones, 2010). The determination of the sample size can be done through a census, a published table or a formula. For the purpose of this study, the determination of the sample size was done through the use of a formula. This is because the number of possible individuals in the study area is large hence the use of the formula to come

out with the sample size. A formula was adopted from Gomez and Jones (2010),  $n = \frac{N}{1 + N(e)^2}$  where  $n$  is the sample size,  $N$  is the total number of households in the four selected communities;  $e$  is the margin of error. With a margin of error of 5 percent representing 95 percent confidence level, the final sample size for the study was determined as represented in Table 1.1.

**Table 1.1 Sample Size Determination for each study community**

Community	Household	Percentage	Sample Size
Chiana	2677	54	199
Katiu	860	17	63
Nakong	360	8	30
Kayoro	1033	21	78
Total	4930	100	370

**Source: Navrongo Health Research Centre, 2010**

From Table 1.1, the sample size of each community is arrived at by dividing the household population of that community by the total household population of the four communities and then multiplying the result by hundred percent. The resultant percentage is then multiplied by the sample size (370) to get the sample size for that community. For example, for Katiu =  $860/4930 \times 100\% = 17\%$ ,  $17/100 \times 370 = 63$ . This procedure is repeated for all the communities to arrive at the final sample size (370).

### **1.6.3 Methods of Data Analyses**

The study employed two main methods for the data analyses; the quantitative and qualitative methods. Statistical tools such as frequencies, percentages and chi-squares of the Statistical Package for Social Scientists (SPSS) were the main tools used for the analyses of the quantitative data. The data included the income levels of households, gender, educational levels of heads of households and their level of dependence on the environment. The Chisquare statistical test was used to establish the relationships and associations between the income levels and level of dependence on the savannah forest, and educational levels and the level of dependence of the households on the

savannah forest. The results of the quantitative analyses are presented in a table. Qualitatively, content analysis was employed to draw systematic conclusions from the FGDs. The qualitative data included perception, causes, effects and manifestation of poverty.

#### **1.6.4 Fieldwork Activities**

The fieldwork was divided into two separate activities; community entry and enumeration. The community entry included visiting the communities to seek permission from the chiefs and elders of the communities to undertake the study and also educating the people on the rationale and importance of the study as well as informing them about the duration of the study. The community entry also included selection and training of research assistants and preparation of field equipment. The enumeration stage involved the actual interviews of the sample. Heads of households were visited in their various houses, however, those who were sampled for the Focus Group Discussions determined the location and time of the discussion.

#### **1.6.5 Ethical Consideration**

Adherence to ethical issues are important in conducting research. The participants in a research have rights that must be protected (Murray and Begler, 2009). Some of the ethical issues such as obtaining permission from the appropriate people in order to gain access to the participants of the study, voluntary involvement of participants, educating participants on their right to ask questions, protecting the identity of participants and confidentiality of data, as well as not allowing participants to experience physical and emotional distress as a result of their participation in the study were adhered to in this study.

#### **1.6.6 Field Challenges**

Some of the field challenges include uncompromising attitude of some participants towards the research team, the difficulty of accessing some heads of departments for data, poor transportation system and the dispersed nature of the selected communities, among others. However, in order to eliminate or reduce the impact of these challenges on the reliability and

validity of the study, the research team had to further explain the purpose of the study to the understanding of some few respondents who were initially not interested in taking part in the study. Furthermore, several appointments were booked before some heads of departments were contacted for assistance in terms of data collection.

# KNUST



## **CHAPTER TWO 2.0 REVIEW OF RELATED LITERATURE 2.1 Introduction**

This chapter aims at reviewing the main contributions made by researchers, scholars and authors on the concept of poverty and the environment as well as the main linkages between the two concepts. It unveils some of the global views that people have shared particularly on the concept of poverty and the ideas expressed on the issue of poverty and environmental sustainability. The chapter is categorised into seven main sections with the first four sections looking at the definitions and concepts of poverty, measurement of poverty, causes of poverty and poverty trends and situations in Ghana respectively. The fifth and sixth sections reviews relevant literature on the definitions of environmental sustainability and the nexus between poverty and environmental sustainability respectively. The final section of the chapter describes the theoretical foundation of the study.

### **2.2 Definitions and measurement of poverty**

#### **2.2.1 Concept of poverty**

Poverty has a rich vocabulary, in all cultures and throughout history. The first poverty standard for individual families based on estimates of nutritional and other requirements was published by Rowntree's study in 1901. In the 1960s, the main focus was the level of income, reflected in macro-economic indicators like Gross National Product per head. In the 1970s, poverty became prominent, notably as a result of MacNamara's celebrated speech to the World Bank Board of Governors in Nairobi in 1973. Other factors that played a big role include the emphasis on relative deprivation, inspired by works in the United Kingdom by Runciman and Townsend (Philip and Rayan, 2004). Townsend had the opinion that poverty was not just a failure to meet minimum nutrition or subsistence levels, but rather a failure to keep up with the standards prevalent in a given society. Thus, following International Labor Organization's (ILOs) pioneering work in the mid-1970s, poverty became to be defined not just as a lack of income, but also as lack of access to health, education and other services (Philip and Rayan,

2004). However, while there is worldwide agreement on poverty reduction as an overriding goal, there is little agreement on the definition of poverty (Laderchi, R. C., Saith, R. and Stewart, F. (2003).

The definition of poverty assures a distinction between the traditional unidimensional approach and more recent multi-dimensional ones. Whereas the traditional approach refers only to one variable such as income or consumption, multi-dimensional ones, such as Sen's capability theory or studies derived from the concept of fuzzy sets extend the number of dimensions along which poverty is measured. The complex reality of poverty, however, makes it difficult to capture the nature of this phenomenon via a single uni- or multidimensional definition or measure (Fusco, 2003). The traditional approach to poverty is characterized by the fact that poor people are identified according to a shortfall in a monetary indicator. The theory implicitly underlying this assumption is the utilitarianism, theoretically based on the criteria of utility and practically on the use of income or expenditure as a proxy of well-being. From this time onwards, the criterion for defining poverty is based on income and thus poverty can be defined as a lack of economic welfare, i.e. income. In terms of this definition, absolute poverty refers to a lack of income in order to satisfy the essential requirements for physiological survival. Whilst relative poverty is a lack of income in order to reach the average standard of living in the society in which one lives (Fusco, 2003). In

2005, Fusco's view on the concept of poverty was being stressed on by the Food and Agricultural Organization (FAO) of the United Nations (UN) indicated that; The standard of living, hence poverty, may be represented by a uni-dimensional indicator (e.g. income) or a multi-dimensional approach (e.g. income, health conditions, family status, etc.). In the first case, poverty is defined by income poverty and the standard of living is defined in the space of economic welfare, a narrower concept than well-being. In the second case, the concept of poverty is closer to well-being, where other welfare indicators support income in defining poverty (FAO of UN, 2005). Any of the above choices entail additional problems, which

include; In the case of the uni-dimensional approach, you have to define what the appropriate single monetary indicator for standard of living is.

There are two natural candidates here, income and expenditures. Total expenditures are often used as an indicator of poverty, as they better reflect the concept of permanent income of an individual. In the case of the multi-dimensional approach, you have to define what the appropriate list of poverty indicators is and how to weigh them in order to get a comprehensive vision of poverty. For example, if you have low incomes and good health, are you richer than an ill individual with more income? If you are illiterate, yet in good health and with enough food, are you poor? An alternative view of the multi-dimensional approach could be that of explaining poverty with a set of indicators, leaving the task of defining how poverty is explained by which factor to statistical techniques. This raises the objection that simple correlation is not a causal relation: are you poor because you are in bad health? Or are you in bad health because you are poor? The answers to these questions may entail quite different anti-poverty policies (FAO of UN).

In his view, Aigbokham defined poverty as a state of long-term deprivation of well-being, a situation considered inadequate for decent living. There are, however, many debates on how well-being should be measured and what indicators should be used. There are two broad approaches to defining wellbeing. These are the „welfarist“ approach and the „non-welfarist“ approach. The „welfarist“ approach defines well-being in terms of the level of utility attained by an individual. The approach attaches great importance to the individual’s perception of what is useful to him or her. The „non-welfarist“ approach defines well-being independently of the individual’s perception of it. The approach relies on what planners consider desirable from a social point of view (Aigbokham, 2008).

In a related view, Boccanfuso (2004) expounds that the welfare approach refers to the numerous microeconomic precepts that postulates that economic actors are rational and that they behave in ways to maximize their benefit. Since economic welfare is not observable, the welfarist school has fallen back on real income and consumption expenditures as indicators of economic welfare. This is the approach advocated by the World Bank (WB), the International Monetary Fund (IMF) and the main development partners (Boccanfuso, 2004 cited in Philip and Rayan, 2004). The non-welfare approach is more sociological in nature. In contrast to the previous approach, this has to date been a multidimensional approach. There are two schools of thought under this approach; the first is the basic needs school and the second is the capabilities. The basic needs approach appeared in its operational guise in the 1970s in response to the policies for the fight against poverty proposed by the welfarists, and particularly to the policies of growth trumpeted as a tool for reducing poverty. It reviews poverty as a problem of unacceptable social inequality (Kanbur, 2002 cited in Philp and Rayan, 2004). Sen's (1981) school of capabilities approach was also developed in opposition to the welfare approach. The aim of this approach is for an individual or household to have the capacity to function well in society and not solely on the basis of its own function.

Today, the main focus on poverty continues to be on material deprivations, i.e., the failure to command private resources rather than the earliest definitions of poverty that centred on the inability to obtain adequate food and other basic necessities. Development experts, including Sen (1987), though, have argued that this notion of economic welfare remains too narrow to reflect individual well-being, spurring active efforts over the past several decades to expand the concept of poverty. One direction of expansion begins with recognition that even material deprivations may involve more than lack of private resources. If a village has no wiring for electricity, residents can have substantial income but no steady power source. If quality health

facilities do not exist, no amount of money may be enough to purchase effective, convenient care (Kamanou, et al 2005).

The absence of a consensus of definition for poverty has stimulated several concepts, definitions and ideas from researchers and institutions all with the aim of influencing the poverty discourse. It is on this background that, the International Poverty Centre (IPC) of the United Nations Development Programme (2006) indicated that, what poverty is taken to mean depends on who asks the question, how it is understood, and who responds. From this perspective, it has at least five clusters of meanings. The first is income-poverty or its common proxy (because less unreliable to measure) consumption-poverty. The second cluster of meanings is material lack or want. Besides income, this includes lack of or little wealth and lack or low quality of other assets such as shelter, clothing, and furniture, personal means of transport, radios or television, and so on. This also tends to include no or poor access to services. A third cluster of meanings derived from Amartya Sen, and is expressed as capability deprivation, referring to what we can or cannot do, can or cannot be. This includes but goes beyond material lack or want to include human capabilities, for example skills and physical abilities, and also self-respect in society. A fourth cluster takes a yet more broadly multi-dimensional view of deprivation, with material lack or want as only one of several mutually reinforcing dimensions.

The United Nations (UN) view on poverty provides a broader definition of the concept. According to the UN, poverty is defined as; „a human condition characterized by the sustained or chronic deprivation of the resources, capabilities, choices, security and power necessary for the enjoyment of an adequate standard of living and other civil, cultural, economic, political and social rights“ (UN, 2001). This definition brings together two important and related themes in contemporary understandings of poverty: the „capability approach“ of Nobel-prize winning

economist Amartya Sen and the „human rights“ approach. The „capability approach“ addresses poverty as „the deprivation of basic capabilities rather than merely as lowness of incomes“ (Sen, 1999). Suggested basic capabilities for a life with human dignity include the capability to live a human life of normal length, to ensure one’s bodily health and integrity, to be treated as someone whose worth is equal to that of others, to have control over one’s political and material environment (Nussbaum, 1999). The understanding of poverty as a deprivation of these capabilities thus includes situations of low income, under-nourishment, illiteracy, premature mortality, and also social stigmatization and low self-esteem. Similarly, in his paper, Practices of Poverty Measurement and Poverty Profile of Bangladesh, Ahmed (2004) defines poverty as forms of economic, social, and psychological deprivation among people arising from a lack of ownership and control of or access to resources for the attainment of a required minimum level of living. It is a multidimensional problem involving a deficiency of income, consumption, nutrition, health, education, housing, etc. (Ahmed, 2004). Just like the United Nation’s definition on poverty, Ahmed also provides a broader definition on the concept of poverty where he does not only link poverty with a lack of income but tries to encompass social and psychological deprivation with the concept.

According to the European Union (EU), poverty is referred to as “Persons, families, and groups of persons whose resources (material, cultural, and social) are so limited as to exclude them from the minimum acceptable way of life in the Member State to which they belong” (European Commission, 2007: 5 cited in Nyasulu, 2010). This definition concentrates on the individual entity, like person or groups of persons, whose level of resources would exclude them from the minimum acceptable way of life deemed acceptable by a member state. This definition is problematic because it assumes that it is okay to be under some conditions, however deplorable as long as the member state has not declared them as such. This definition abrogates responsibility by focusing on a less contentious issue of “person” or “group of persons” in a

member state. Poverty, however, is not what the member state says or thinks, or what a particular culture accepts. Poverty is poverty, regardless of one's geographic location. Poverty has everything to do with the dignity of the human spirit in particular conditions and not what is considered politically correct or culturally acceptable.

In reviewing literature on the definition and concept of poverty, two schools of thought have emerged; the traditional approach to poverty which is characterized by the fact that poor people are identified according to a shortfall in a monetary indication, and multidimensional approaches such as Sen's capabilities approach which allow us to have a more shaded comprehension of poverty because it takes into account its complex and pervasive nature. In terms of the traditional approach, absolute poverty is a lack of income in order to satisfy the essential requirements for physiological survival. However, in terms of the relative approach, poverty is a lack of income in order to reach the average standard of living in the society in which one live.

It is imperative to note that the two approaches have their pros and cons. The capabilities approach does not only change the measurement focus in poverty assessments, it alters quite significantly policy approaches to poverty alleviation by directing attention to the need to strengthen the capabilities of individuals and households to take action for the improvement of their own welfare. Moreover, it directs attention to political, social and economic constraints external to the individual or household, and thus emphasizes the importance of participatory democracy. The capabilities approach to the concept and definition of poverty is therefore broad and takes into account the complex and pervasive nature of poverty as compared to the traditional approach that identifies poverty with a shortfall in monetary indication. The main challenge of the traditional approach according to Fusco (2003) is that, it fails to capture the complex reality of poverty at the level of each individual and that income can't take account of the diversity and the vague aspect of poverty. Despite the weaknesses of this theory, the

simplicity of the computation of monetary indicators as well as the policy implications derived from them can happen to be useful in the framework of an overall strategy to fight poverty. For the purposes of this study, poverty is defined as the lack of adequate income to procure one's basic needs and wants of life.

### **2.2.2 Measurement of Poverty**

Poverty as has been defined in the earlier section is multidimensional, thus measuring it presents a number of challenges. Beyond low-income as a key indicator, there are also low human, social and financial capitals. The most common approach to measuring poverty is quantitative, money-metric measures, which use income or consumption to assess whether a household can afford to purchase a basic basket of goods at a given point in time. The basket ideally reflects local tastes, and adjusts for spatial price differentials across regions and urban or rural areas in a given country. Money-metric methods are widely used because they are objective, can be used as the basis for a range of socio-economic variables, and it is possible to adjust for differences between households, and intra household inequalities (Baker and Schuler, 2004).

Prior to 1992, the conventional way of measuring poverty in Canada was in terms of "relative" deprivation. You are poor, in this sense, if you are less well-off than most others in your community regardless of your actual standard of living. However, in 1992, The Fraser Institute published a book entitled, "*Poverty in Canada*", which argued that measuring poverty in a relative sense was really an attempt to redefine poverty as inequality.

Accordingly, poverty is generally understood to mean real deprivation and a "lack" of the basic necessities of life. The book set out a methodology to measure poverty in an approach sometimes referred to as "absolute" poverty. A follow-up study, also called *Poverty in Canada*, published in 1994 by The Fraser Institute, argued that both absolute and relative measures should be used in all studies of poverty (Sarlo, 2001). Similarly, according to Gordon (2000),

participating countries in an international social development summit held in Copenhagen in 1995 issued a declaration that all participating nations should develop measures of absolute and relative poverty (Gordon, 2000: 35).

According to the final report for Eurostat (2000), before the Second World War, most poverty standards were based on notions of absolute needs or minimum subsistence or basic necessities and were generally derived using budget standards, in which the food budget was commonly based on ideas of nutritional adequacy. In the post-war period poverty emerged in social scientific debates with a new conceptualization - as relative deprivation. A variety of methods have been developed to measure relative poverty but the one most commonly employed by national governments and in comparative studies, has been the use of an income (and sometimes expenditure) threshold (Eurostat, 2000). In their survey on: „the impact of poverty on health““, the Canadian Institute for Health Information (CIHI, 2003) outlined three main approaches to explain the meaning of poverty and how it is measured: the absolute, relative and subjective approaches.

### **2.2.2.1 The Absolute Approach**

After the World Summit on Social Development in Copenhagen in 1995, 117 countries adopted a declaration and programme of action, which included commitments to eradicate “absolute” poverty. Absolute poverty was defined as *“a condition characterized by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to services”*(Gordon, 2005).

By the absolute approach, poverty is defined based on the idea that individuals are poor if they have insufficient income to purchase some “objective” minimum bundle of goods (CIDI, 2003).

In his paper *“Estimates of Relative and Absolute Poverty Rates for the Working Population in Developing Countries”*, Sharpe (2001) indicates that, absolute poverty is defined in absolute

terms. The World Bank (1999) has developed an absolute poverty line for underdeveloped countries of one U.S. dollar per day per family (Sharpe, 2001). However, there has been a re-evaluation of the World Bank's "\$1 a day" poverty line since 1999. The international poverty line has been recalibrated at \$1.25 a day, using new data on purchasing power parities (PPPs), compiled by the International Comparison Program, and an expanded set of household income and expenditure surveys. This has been widely accepted as the international measure for absolute poverty (World Bank, 2008). In their working paper entitled "Chronic poverty: meanings and analytical frameworks", (David et al) indicated that absolute poverty is perceived as subsistence below the minimum requirements for physical wellbeing, generally based on a quantitative proxy indicator such as income or calories, but sometimes taking into account a broader package of goods and services (David et al, 2001). By the absolute approach, therefore, poverty is based on the capacity to survive, and thus based on a person's nutritional status. This therefore implies that an individual can be classified as poor if he/she is unable to purchase enough food to meet his/ her essential nutritional requirements. However, Gordon (2005) indicates that absolute poverty threshold is equal to two or more severe deprivations of basic human needs.

Several scholars and schools of thought have identified a myriad of problems with the concept and use of absolute poverty. According to the Food and Agricultural Organization (FAO) of the United Nations, the absolute approach to the measurement of poverty has two fundamental shortcomings- that the minimum diet costs may vary among households as they do not all share the same preferences of nutrition pattern, and secondly, non-food items are not considered (FAO, 2005). Similarly, Lister (1993) indicated, "within the absolute poverty approach human needs are interpreted as being predominantly physical need - that is, for food, shelter and clothing, rather than social needs. People are not, it is argued, simply individual organism

requiring replacement of sources of physical energy. They are social beings expected to perform socially demanding roles as workers, parents, partners, neighbours and friends” (Lister cited in Donkor, 1997). Furthermore, the Canadian Institute for Health Information expounds that a major disadvantage of the absolute approach is that it is extremely difficult to choose an objectively defined “minimum set of necessities”, and that this minimum standard will necessarily change over time (CIHI, 2005). Also, according to Woolard and Leibbrandt, the household's consumption behaviour is not taken into account. The minimum cost for attaining the necessary energy intake may be less than the expenditure level at which a household normally attains that kilojoules intake. People do not simply consume food in order to stay alive. They have preferences for particular types of food: a diet of maize meal and beans may provide all the necessary nutrients at very low cost, but it may be loathsome to the individual (Woolard and Leibbrandt, 1999). The measurement of poverty based on the nutritional intake of a household or individuals is therefore not sufficient.

#### **2.2.2.2 The Relative Approach**

By the relative approach, poverty refers to a standard of living defined in relation to the position of other people in the income or expenditure distribution. In this sense, poverty is basically a phenomenon of inequality. For example, one could define as poor those individuals that have incomes below 50 per cent of the average income of the society. Therefore, if average income grows because richer people gain more, people in relative poverty might increase. This concept automatically reflects changing social and economic conditions in a given country (FAO, 2005). Similarly, according to the Canadian Institute for Health Information, the relative concept of poverty defines individuals as poor if they have significantly less income than others around them. Relative measures of poverty define poor individuals as having less than some percentage (40% or 50%) of median equivalent income

(CIHI, 2003). Townsend also argued that, by the relative approach, individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the type of diet, participate in the activities and have the living conditions and amenities which are customary, or at least widely encouraged or approved, in the societies to which they belong. Their resources are so seriously below those commanded by the average individual or family that they are, in effect, excluded from ordinary living patterns, customs or activities (Townsend, 1979 cited in Townsend and Kennedy, 2004). Although this definition gained widespread currency, Fahey (2010) indicated that it proved difficult to implement since no agreed basis could be found for deciding how far below the standard of the 'average individual or family' one had to be counted as poor. Thus, the selection of appropriate poverty thresholds became arbitrary and was a persistent focus of debate in the field (Fahey, 2010). Another criticism to Townsend's definition was formulated by Sen (1983) who argues that the consequences of taking a rigid relativist view is that poverty cannot be eliminated, and an anti-poverty programme can never really be quite successful. A counter-critique to this argument is by Atkinson (1983), who replies that it is quite possible to imagine a society in which no one has less than a half the average income, and therefore where there is no poverty according to this definition (Bellu and Liberati, 2005).

In their report entitled 'the measurement of absolute poverty', Eurostat (2000) indicated that after the Second World War, a variety of methods have been developed to measure relative poverty but the one most commonly employed by national governments and comparative studies has been the use of an income threshold (Eurostat, 2000). By this measure therefore, for example the proportion of individuals or households living below a threshold of half national average could be considered as poor. According to Kamanou et al, many wealthier countries set poverty lines based on relative standards. In the United Kingdom, for example, the poverty line is 60 percent of the median income level (after taxes and benefits and adjusted for household size), an approach adopted broadly in the European Union. The relative

benchmark used in Europe reflect the belief that important deprivations are to be judged relative to the well-being of the bulk of society, approximated by the income level of the household at the mid-point of the income distribution (Kamanou, G. Morduch, J., Isidoro, P.D., Gibson, J., Havinga, I., Ward, M., Kakwani, N., Hyun, H.S., Glewwe, P., Bamberger, M., Grootaert, C. and Reddy, S. (2005).

There have been a number of criticisms of this standard of poverty. Eurostat argued that it is a measure of inequality not poverty and essentially arbitrary. It is also argued that this approach produces unreasonably large poverty rates in communities or countries with dispersed income distribution (Eurostat, 2000).

### **2.2.2.3 The Participatory Poverty Assessment (PPA)**

Participatory Poverty Assessments (PPA) evolved from Participatory Rural Appraisal (PRA) defined as a growing family of approaches and methods to enable local people to share, enhance and analyse their knowledge of life and conditions, to plan and to act (Chambers 1994, cited in Laderchi et al, 2003). Conventional poverty estimates, including both monetary and capability ones have been criticized for being externally imposed, and not taking into account the views of poor people themselves. The participatory approach, pioneered by Chambers, aims to change this, and get people themselves to participate in decisions about what it means to be poor, and the magnitude of poverty (Chambers 1994; Chambers 1997 cited in Laderchi et al, 2003). According to Ravallion (1998), the subjective poverty line developed in the 1970s, casts doubts over the objectivity of using “basic needs” in poverty measurement including nutritional requirements. If value judgments affect measurements, then the methods are not objective and therefore who is making such value judgments matter, and most likely they are the statisticians and researchers. Certain adjustments have been made to respond to these issues. Rather than dichotomizing their income between needs and luxury, this approach asks the Minimum Income Question (MIQ) where individuals or households are asked “at what income level is

considered absolutely minimal to survive” or “at what point will their families not be able to make both ends meet” (Ravallion 1998: 21 cited in Nunes, 2008). The Canadian Institute for Health Information (CIHI) points out that subjective approach argues that individuals are poor when they feel they do not have enough to get along. Proponents argue that the best way to assess how much income people need to make ends meet is to ask them. Thus, subjective poverty lines are constructed from surveys that ask questions such as: Living where you do now and meeting the expenses you consider necessary, what would be the very smallest income you and your family would need to make ends meet? It went further to state that, answers to this question increase with the respondent’s income, and estimates of subjective poverty lines take this phenomenon into account (CIHI, 2003). In a similar fashion, Hulme et al (2001) indicated that, the „subjective“ approach to understanding and measuring poverty argues that poverty and ill-being must be defined by „the poor“ or by communities with significant numbers of poor people. Meanings and definitions imposed from above are seen as disempowering poor people and removing their right to create and own knowledge (Hulme, D., Moore, K. and Shepherd A, 2001).

The use of the Participatory Poverty Assessment has the advantage of understanding poverty from the perspective of the poor, as it gives them the voice in the definition of their own poverty and analysis of what they know, experience, as well as their needs and wants. It therefore brings to bare dimensions of poverty, which might not be captured by professionals. Robb (1999), indicated that the participatory poverty assessment enables the views of the poor to be incorporated in national policy and opens up the process of policy dialogue to include a cross section of civil organization in the formulation of poverty reduction policies (Robb, 1999).

### 2.3 Causes of Poverty

In their working paper, "Chronic poverty: meanings and analytical framework", Hulme et al (2001) indicated that the causes of poverty can range from the simple (such as environmental determinism, which argues that poverty is the result of too many people living on poor lands that are unhealthy for humans) to the highly complex (such as theories of globalization e.g. Castells 2000 that attempt to weave all of these factors, and more, into an analysis that goes from the micro to the macro level). Thus, they classified the causes of poverty into four broad thematic areas as economic, social, political and environmental causes (Hulme et al, 2001). In their research, Okidi and Mugambe (2002) expressed that in view of the multidimensionality of poverty the World Development Report 2000/2001 identifies institutional, social, economic and human factors as the major causes of poverty. Furthermore, they stated that when countries are experiencing growth a sub section of a society may lag behind and slide into relative poverty when there is no political will to undertake appropriate social spending programs. They also identified lack of human and technical skills to exploit available income generating and life improving opportunities as both a cause and symptom of poverty (Okidi and Muambe, 2002).

According to Bourne (2005), many factors underlie the high incidence of poverty in the Caribbean, the major ones included low income and levels of unemployment; inequality of income and wealth within countries; the global inequality of income, access to resources and consumption; the volatile nature of the Caribbean economy as well as the absence of government-financed safety nets in most Caribbean counties (Bourne, 2002). In his report, Rynell (2008) indicated that macroeconomic performance is a key determinant of poverty. According to him, a strong economy typically results in reduction in poverty because more jobs are created, unemployment drops, and wages increase; on the other hand, recessions have a disproportionate impact on lower-income families because they cause rising unemployment, a reduction in work hours, and the stagnation of family incomes (Rynell,

2008). It is on this background that the World Bank indicated that, the decline of poverty in Ghana from around 42 percent in 1997 to 35 percent in 2003 was mostly due to acceleration in economic growth (World Bank, 2006).

#### **2.4 Poverty Trends and Situations in Ghana**

In Ghana, poverty is measured through the Ghana Living Standards Surveys (GLSS). In 1991/92 GLSS3 found that 51.7% of the population was living below the national poverty line. By 1998/99 (GLSS4), this had fallen to 39.5% and by 2005/06 (GLSS5) it had fallen to 28.5% (Ghana Statistical Service, 2007). In absolute terms the number of poor people in Ghana has fallen from 7.9 million in 1991/92 to 6.2 million in 2005/06 (Al-Hassan and Poulton, 2009). However, the fall in poverty has not been experienced equally around the country. GLSS5 figures show poverty headcount rates in the five southern regions of the country of between 12% (Greater Accra) and 20% (Ashanti, Central, Eastern, and Western). These regions have all seen dramatic falls in poverty since 1991/92 due to urban growth, minerals extraction and, in the recent survey period, a boom in the cocoa sector in response to higher world prices and domestic market reforms and production support. The “transitional” regions, Brong Ahafo and Volta, have also witnessed impressive falls in poverty to around 30% in 2005/06. However, poverty in the three northern regions - Northern, Upper East and Upper West – remains stubbornly high at 52-88%. In 2005/06 the three northern regions accounted for just under 22% of the population, but 45% of the headcount poor, 57% of the headcount extreme poor and 80% of extreme poverty severity in the country (Ghana Statistical Service, 2007). The livelihood classification used by GLSS shows poverty to be concentrated amongst “food crop farmers”, who are encountered disproportionately (but not exclusively) within the three northern regions. This group accounted for 43% of the population in 2005/06, but 69% of the headcount poor. Whilst the poverty rate amongst “food crop farmers” (68%) and “export crop farmers” (64%)

was similar in 1991/92, by 2005/06 it had fallen to just 24% amongst the latter group, but was still 46% amongst the former.

Poverty in Ghana is thus increasingly concentrated in the three northern regions, remote from Accra and international markets (although well placed for cross-border trade with Sahelian countries), and related amongst households for whom production of low value food crops is a major livelihood activity (Al-Hassan and Poulton, 2009).

Two poverty lines are set for the purposes of poverty study in the country. These are the lower poverty line of GH¢70 per adult per annum which represents what is needed to meet the nutritional needs of household members and the upper poverty line of GH¢90 per adult per annum which represents both food and non-food consumption (GSS, 2000). Individuals whose total expenditure falls below this line are considered to be in extreme poverty. It is assumed that these individuals would not be able to meet their calorie requirements even if they spent their entire earnings on food. However, an individual whose consumption level is above the upper poverty line is considered able to meet their nutritional requirements and at the same time satisfy their basic non-food needs (GSS, 2000).

Though incidence of overall poverty has declined at the national level, there remains a large proportion of the population living below the poverty line. Between 1991/92 and 1998/99 the decline in poverty was unevenly distributed with poverty reduction concentrated in Greater Accra and forest localities, while rural and urban poverty fell moderately except in the urban savannah. The trend changed between the period 1998/1999 and 2005/2006 when all the regions recorded marked improvements except Greater Accra and the Upper West which experienced worsening trend. The proportion of rural population living below the poverty line also declined substantially. Food crop farmers remain the poorest occupational group, while the situation of women has not significantly changed (GSS, 2008 cited in NDPC 2010).

Poverty at the districts also varied, it ranges from severe poverty areas to least poor areas.

Agona Swedru and Aboso in the Agona district as well as Towoboase and Abbankrom in the Mfantseman District (all in the Central region) are some of the relatively well-endowed communities whereas Essikado No.1 and No. 2 (Western Region), and Nkwantanang in Ajumako Enyan Essien District are in the poorest areas. Least poor communities include Amaful and Dwukwa; Ajumako and Kyebi (Eastern Region); Mankessim and Saltpond.

Awutu Efutu Senya district has a wide stretch of areas that have been demarcated as “high poor enclaves”. These include communities such as Akomatom, Kofikum, Amowi, and Kofi Ntowand Bosomabena. In the Northern region, Aaba, Nandom and Kunkwa are communities found in severe poverty areas in the West Mamprusi District. Tangni and Zankung in East Gonja District and Sakpeand Yagbogu in Yendi District are also least endowed (NDPC and UNDP, 2010).

## **2.5 Environmental Sustainability**

According to Sutton (2004), people became concerned about environmental sustainability when they discovered that aspects of the environment that they loved or depended on for survival or quality of life were threatened with extinction or serious degradation. There was an urgent concern about loss that made people think about sustainability and thus a need to maintain or keep doing something that they valued. He therefore defined environmental sustainability as the ability to maintain the qualities that are valued in the physical environment. In his view, threats to aspects of the environment such as water, air, timber, fish, solar energy, among others mean that there is a risk that these aspects of the environment will not be maintained (Sutton, 2004). Similarly, according to Masika and Joeke (1997), environmental sustainability refers to the maintenance of the ecosystem and the natural resource base. They concluded that environmental degradation signifies a failure in this regard. However, in their view, environmental degradation takes three forms: depletion of resources; pollution or overuse

of the waste-absorbing capacity of the environment; and reduction in biodiversity- a loss of some types of resources. The definition given by Sutton (2004) and that of Masika and Joeke (1997) seem to agree on the fact that environmental sustainability has to do with maintenance of the resources that are found in our environment. To this extent, Hardoy et al (1992), indicated that natural resources are used within a social context and that it is the rules and values associated with this context that determine the distribution of resources within the present generation and the next (Hardoy et al, 1992 cited in Masika and Joeke, 1997).

The United Nations Development Programme (2006), indicated that even though environmental sustainability was not explicitly defined in the Millennium Declaration, countries concur that „we must spare no effort to free all of humanity, and above all our children and grandchildren, from the threat of living on a planet irredeemably spoilt by human activities, and whose resources would no longer be sufficient for their needs“ (UNGA 2000 cited in UNDP, 2006). World leaders identify „respect for nature“ as a fundamental value required in the twenty-first century and call for a „new ethic of conservation and stewardship“ (UNDP, 2006). Even though world leaders in the Millennium Declaration did not come out with an explicit definition for environmental sustainability, they identified the preservation, management, and care of natural resources as key to the attainment of environmental sustainability. According to Esty et al (2005), the definition and measurement of sustainability is contested. While economist often emphasize on an accounting approach that focuses on the maintenance of capital stocks the environmentalists often focus on natural resource depletion and whether the current rates of resource use can be sustained into the distant future. They, however, defined environmental sustainability as the long-term maintenance of valued environmental resources in an evolving human context (Esty, D. C., Levy, M., Srebrotijak, T. and Sherbinin de A, 2005).

A critical observation made from the review of relevant literature on the definition and concept of environmental sustainability reveals that, researchers seem to agree on the fact that environmental sustainability has to do with the maintenance of resources that are found in our environment and thus environmental degradation signifies a failure in this regard.

## **2.6 The Nexus between Poverty and Environmental Sustainability.**

According to the United Nations Development Programme (2005), there exist a complex and dynamic relationship between environmental conditions, people's access to and control over environmental resources, and poverty. This relationship is being created by the dependence of the world's poor on fertile soils, clean water and healthy ecosystems for their livelihoods and well-being. An understanding of the nature of this relationship is a prerequisite for enduring success in the fight against poverty (UNDP, 2005). In the view of the United Nations Millennium Project (2005), environmental sustainability is the foundation on which strategies for achieving all the other Millennium Development Goals (MDGs) must be built, because environmental degradation is causally linked to problems of poverty, hunger, gender inequality and health (UN Millennium Project 2005 cited in UNDP, 2005). In their journal "Poverty-Environment-Gender Linkages", the Organization for Economic Co-operation and Development (OECD) (2001) indicated that the environment means soil- to grow food; water- to drink, wash and irrigate crops; and air to breathe, and a host of natural food and medicinal products, and hence preserving the environment actually means that safeguarding food production; sustaining livelihoods and preserving health. It concluded that poverty reduction; economic growth and the maintenance of life-supporting environmental resources are therefore inextricably linked (OECD, 2001).

According to Aggarwal (2006), the livelihood of the rural poor in developing countries depends critically on local natural resource-based activities such as crop and livestock production, fishing, hunting, fuel wood and minor forest product collection. In his view, given this

dependence, poor households adopt a number of short term and long term strategies in response to environmental stress. These include changes in consumption patterns (e.g. eating food that requires less cooking when fuel wood becomes scarce), changes in production strategies (e.g. growing crops more adaptive to poor soils), and migration among others (Aggarwal, 2006).

Poverty-environment linkages take different forms in rural and urban contexts. In rural areas, critical issues relate to access to natural resources such as land, forests, or fisheries and their sustainable use. In urban zones, the poverty-environment agenda centres on questions relating to the use of natural resources such as water or air as sinks for the disposal of human and industrial wastes, and their impact on the poor. However, this distinction has limitations as far as urban and rural environments cannot be considered in isolation from each other. For example, urban-based activities provide the rural poor with income diversification opportunities that can be critical in times of adverse climatic conditions. Regular seasonal migration to seek work in urban centres is also a common feature of the livelihood strategies of rural families. Conversely, urban-based activities often have negative impacts on neighbouring environments by transferring pollution or waste, converting surrounding agricultural land to urban uses, and overexploiting neighbouring forests through the collection of fuel wood. Urban and rural economies are strongly interdependent in many other ways (OECD, 2001).

The orthodox model of the relationship between poverty and environment suggests that rural poverty increases the forces behind environmental degradation. This was argued to be a key part of the explanation behind crisis models of environmental pressure such as the Himalayan theory of deforestation and soil erosion, the fuel wood crisis; desertification, and the negative impacts of shifting cultivation (Eckholm, 1976; Kasperson *et al*, 1996; Brown *et al*, 1998 cited in Forsyth *et al*, 1998). However, research has illustrated first, how new approaches to

understanding environmental change may redefine current conceptions about degradation, and secondly how organization and land management practices and skills of rural populations have frequently served to maintain and even enhance landscape productivity. Land management practices coupled with the skills of the rural poor, shaped by a range of both formal and informal institutions, may mitigate the impacts of environmental degradation. In addition, they also indicated that perceived environmental degradation by the international community may refer to changes to landscapes that human societies have themselves shaped over centuries of activity, and therefore are less easily defined as degradation (Berry 1989; Baland and Platteau, 1996 cited in Forsyth et al). However, this argument does not suggest that degradation does not occur, as indeed the disruption of local adaptive practices may lead to the abandonment of conservation practices.

According to the World Bank (2008) the linkage between growth, poverty, and environment are complex and run in both directions. Many (but not all) environmental problems improve as output levels rise, but, as with income disparities, they may get worse before they get better. In addition, the costs associated with environmental degradation such as the public health costs of pollution or soil nutrient loss from uncontrolled erosion often reduce productivity, resulting in lower rates of economic growth than would otherwise be the case (World Bank 1992a, 2003d cited in World Bank, 2008). Beyond this, people are frequently impoverished by a declining natural resource base and forced by their circumstances to further degrade the environment (WCED 1987; World Bank 1992a, 2003d cited in World Bank, 2008). In short, the natural environment often limits the economic opportunities of people in rural areas, and they, in turn, affect the quality of the resource base. Similarly, the health impacts of pollution most adversely affect the poor and may further restrict their chances to rise out of poverty, while poverty often forces low- income urban dwellers to reside in areas with poor or non-existent sanitation and greater vulnerability to the negative effects of natural and man -made hazards (World Bank,

2008). In their report, Masika and Joekes (1997) indicated that the linkages between poverty and environmental issues are depended upon how poverty is defined, by the type of environmental problem in question, and by which groups among the poor are affected (Masika and Joekes, 1997). Research and policy has tended to focus on the relationship between poverty and environmental degradation in terms of pointing out that the poor are both victims and agents of environmental degradation: victims in that they are more likely to live in ecologically vulnerable areas, agents in that they may have no option but deplete environmental resources thus contributing to environmental degradation (Sida 1996; Leach and Mearns 1991; UNEP 1995 cited in Masika and Joekes, 1997). However, it is also acknowledged that the poor often have practices that conserve the environment. Great physical and spatial variability in natural resource endowments also seem to complicate the picture (Redclift and Skea 1997 cited in Masika and Joekes, 1997).

According to Duraiappa (1996), there are a number of causality relationships that exist between poverty and environmental degradation. The most popular one is the povertyenvironmental degradation relationship, which states that it is poverty, which causes environmental degradation in the developing countries (Duraiappa, 1996). A counter argument to this relationship is the notion that it is not poverty but a combination of greed, power and wealth that causes environmental degradation in many developing countries (Boyce 1994 cited in Duraiappa, 1996). Another possible relationship, which may exist, is the notion that environmental degradation is a major causal factor causing indigenous poverty. Depending on the type of causality, different policy prescriptions need to be formulated in an attempt to addressing the poverty- environmental degradation issue (Duraiappa, 1996).

The key features of the traditional argument is that, poverty is viewed as one of the primary causes of environmental destruction, and that poor people in their present state cannot practice

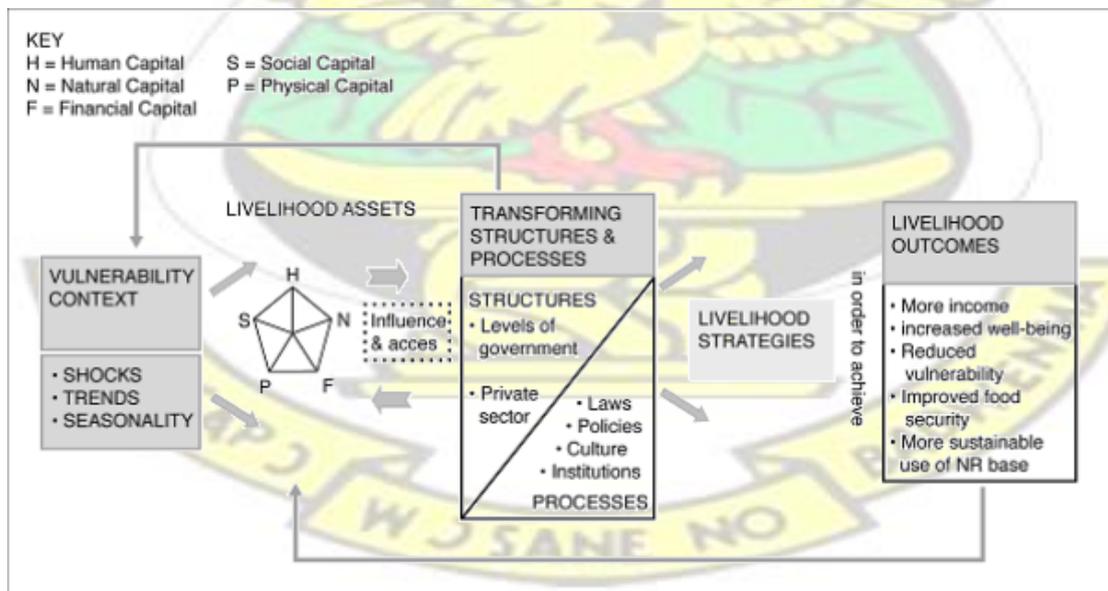
sustainable development. Therefore, eliminating poverty and poor people through (economic) growth becomes a key to environment sustainability (Broad 1994 cited in Nunan et al, 2002). However, Broad (1994) rejected this circular argument and attempts to break down the conventional notions of the poverty-environment linkages. Broad recognized that some poor people act not as environmental degraders, but as environmental sustainers and acknowledging that there are cases where the poor have become environmental activists (Nunan et al, 2002). The idea of a circular relationship between environment and poverty is now widely seen as too simplistic, ignoring the complex circumstances in which the poor find themselves (Ambler, 1999; Scherr, 2000 cited in Nunan, F., Grant, U., Bahiigwa, G., Muramira, T., Bajracharya, P., Pritchard, D. and Vargas, M. I, 2002). There has been a move away from the simplistic approach of viewing poverty and environmental degradation as being 'linked in a downward and mutually enforcing cycle' (Forsyth and Leach, 1998, p. 4 cited in Nunan, 2002), also referred to as the „poverty trap thesis“ (Prakash, 1997 cited in Nunan, 2002).

The controversy that surrounds the relationship between poverty and environmental degradation is very conspicuous. Consequently, two schools of thought emerged; one theory postulates that poverty is a direct cause of environmental degradation (Durning, 1989 cited in Aggrey, 2010). On the other hand, (Somonathan 1991 cited in Aggrey, 2010) argues that the poor do not have the resources or the means to cause environmental degradation. This lack of consensus on the relationship between poverty and environmental degradation suggests nexus governed by a complex web of factors (Aggrey et al, 2010). This study is in response to this challenge and focuses on the impact that poverty have on environmental sustainability in the Kassena-Nankana West District of the Upper East Region.

## 2.7 The Theoretical Perspective of the Study

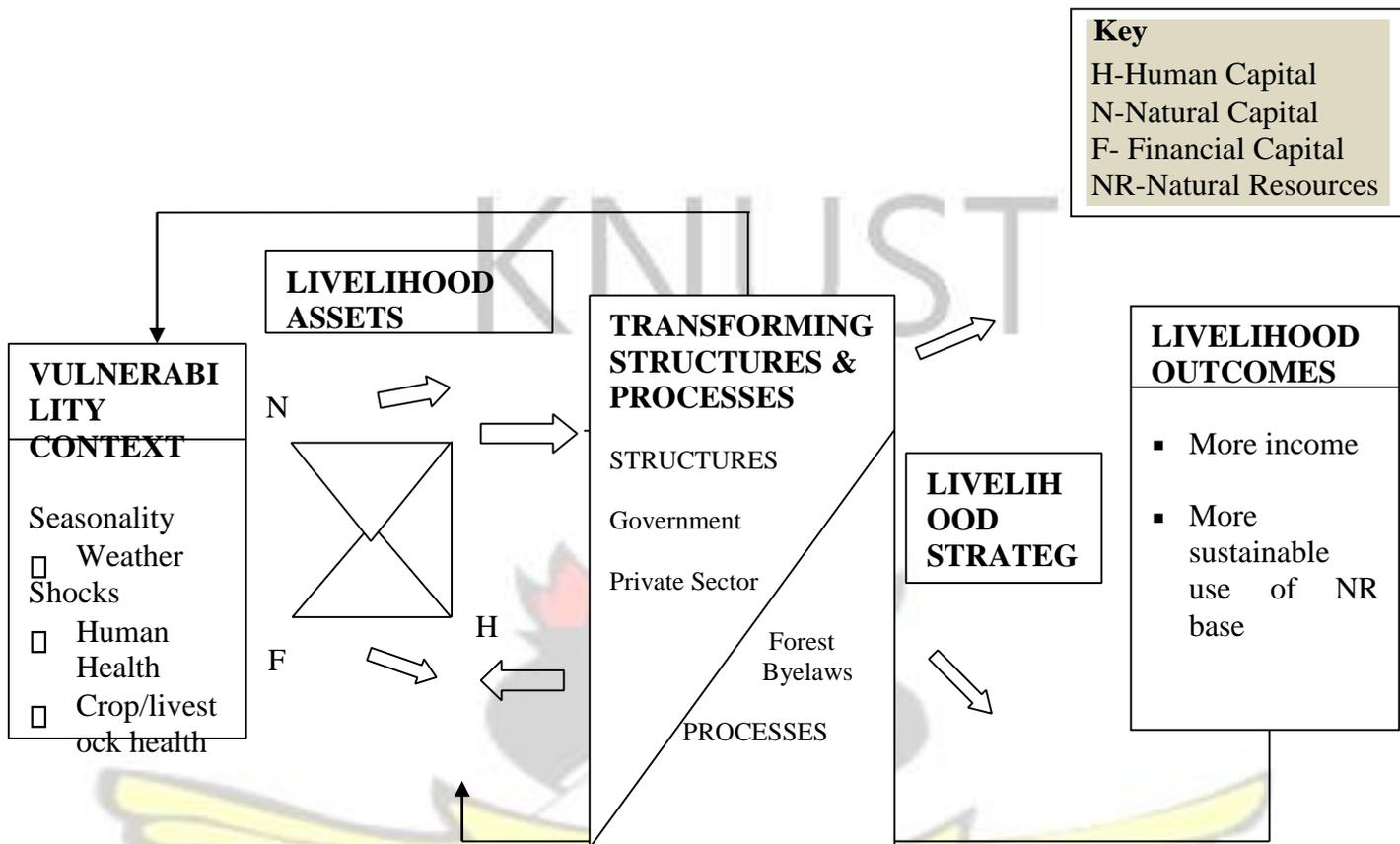
Studies of poverty and livelihoods are diverse conceptually and theoretically. In this connection, many ideas, with diverse conceptual relevance have emerged over the years to offer a pragmatic understanding to poverty and livelihoods. One of such concepts is the Sustainable Livelihoods Framework by the Department for International Development (DFID, 1999). This framework established the conceptual connection between livelihoods and assets of the poor in society. Particularly, the framework serves as an instrument for investigating the livelihoods of the poor while conceptualizing the factors of influence (Kollmair and Gamper, 2002). Considering the main objective of this study, which seeks to examine the impacts of the livelihood activities of the poor on the environment, the sustainable livelihoods framework was adopted and modified to provide a theoretical underpinning of the study. The framework has been modified in the context of the objectives of the study. Figures 2.1 and 2.2 presents the original and modified versions, respectively, of the sustainable livelihoods framework.

**Figure 2.1: The Sustainable Livelihoods Framework**



Source: DFID, 1999

**Figure 2.2: The Modified Sustainable Livelihoods Framework**



**Source; DFID, 1999**

Figure 2.1 is a diagrammatic presentation of the sustainable livelihoods framework as postulated by the DFID in 1999. The framework presents the major factors that affect people's livelihoods and the synergy between these factors. The framework contains five main concepts and frames namely vulnerability context, livelihood assets, transforming structures and processes, livelihood strategies and livelihood outcomes. The vulnerability context conceptualized that people's livelihoods are affected by trends, shocks and seasonality in the environment in which they live. In Figure 2.2, seasonality is a major factor that affects the major livelihood activity, which is farming, of the heads of households in the Kassena-Nankana West District of the Upper East Region. This includes the current vagaries of the weather, particularly rainfall that is received seasonally for the production of crops (Amikuzuno and Hathie, 2013). It is important to note that the major shocks that affect their livelihoods include their health condition and also the health of their crops and livestock.

The livelihoods approach frames people strengths including assets or capital endowments and how they endeavour to convert these into positive livelihood outcomes. These assets include human, financial, social, physical and natural capitals. These assets could also be interconnected to provide positive livelihood expectations for people. However, in the study communities, the prominent capital includes human and natural, which translates into financial capital in the long run (see Figure 2.2). Thus, the households naturally depend on the environment for their financial capital (Marchetta, 2011). This includes the use of wood for the production of charcoal and fuel wood. Most of the heads of households survive because of the help of key environmental services and food produced from natural capital. However, unsustainable extraction of this natural capital has consequences for the human capital through natural disasters such as forest fires.

The structures and processes in the framework (see Figure 2.1) represent organizations (private and public) and the policies and legislation, respectively, they set and implement that affect livelihoods. Most of these structures exist in the domain of the government with the private organization playing supporting role. Structures (private and public organizations) are very important because they make the processes (policies and legislations) to function. On the other hand, processes can transform the livelihoods of the poor and therefore represent the main focus of donor activities. In the context of the study area, the structures are the local entities at the District Assembly while the processes are the poverty alleviation policies they have designed and implemented over the years. However, it is important to emphasise that both the structures and processes in the study area have failed to achieve their objectives over the years, because the Upper East Region remains the poorest in Ghana in term of incidence (GSS, 2006).

Livelihood strategies are the range and combination of various activities and choices that people undertake and make respectively in order to achieve their livelihood goals (see Figure 2.1). These activities and choices include productive activities, investment strategies, and a

reproductive choice that provides and enhances the livelihoods of the poor. It is imperative to note that livelihood strategies are made at every level within geographic areas, across sectors, within households and over time (DFID, 1999). For instance, at the household level, different members of the household may live and work in different places, temporarily or permanently. In the study area, where livelihoods are predicated on the natural environment (farming, charcoal and fuel wood production), it is possible that their livelihood strategies may include productive activities and investment strategies.

Finally, the livelihood outcomes are the results of the livelihood strategies, which include more income, increased well-being, reduced vulnerability, improved food security and more sustainable use of natural resource base. Thus, the pursues of the poor are geared toward achieving the aforementioned. However, in the Kassena-Nankana West District of the Upper East Region, the livelihood activities of the poor has detrimental effects on the environment, which may worsen the plights of the poor in the long run.

To surmise, the sustainable livelihood framework, which presents the main factors that affect the livelihoods of the poor, provides the theoretical foundation of the study on which the analyses were based. The framework has therefore placed the study in an erudite perspective.

## **CHAPTER THREE 3.0 THE PROFILE OF KASSENA-NANKANA WEST DISTRICT**

### **3.1 Introduction**

This chapter presents the situational analysis of the Kassena-Nankana West District. The background information of the study area provides information on the geographical and socio-economic characteristics of the area in relation to the objectives of the study. Analysis of this data revealed the incidence of poverty and the extent to which human activities have degraded the environment in the Kassena-Nankana West District. The chapter also contains maps showing the Kassena-Nankana West District in the national context and the geographical location of the study communities; Chiana, Katiu, Nankong and Kayoro in the district. The main source of information on this chapter is secondary and it is contained in the Districts Medium Term Development Plan (DMTDP) of 2010.

### **3.2 Summary**

The Kassena-Nankana West District is found in the Upper East Region and shares boundaries with Burkina Faso, Bongo District, Bolgatanga Municipality, Kassena-Nankana East District, Builsa District and Sissala East to the North, North East, East, South, South West and west respectively. The District has a total land area of approximately 1,004 sq km. The relief of the District is generally low lying and undulating with isolated hills and mainly drained by the River Sissili and its tributaries. The Kassena-Nankana West District experiences a prolonged dry season which is characterised by a warm, dusty and dry hamattan air mass which blows in the north easterly direction across the whole district from the Sahara desert. The vegetation is mainly Sahel savannah type. The District is experiencing climate change and its attended impacts which can be attributed to direct and indirect human activities. The estimated total population of the district is about 120, 729 with an estimated population growth rate of one (1) percent.

### **3.3 Locations and Size**

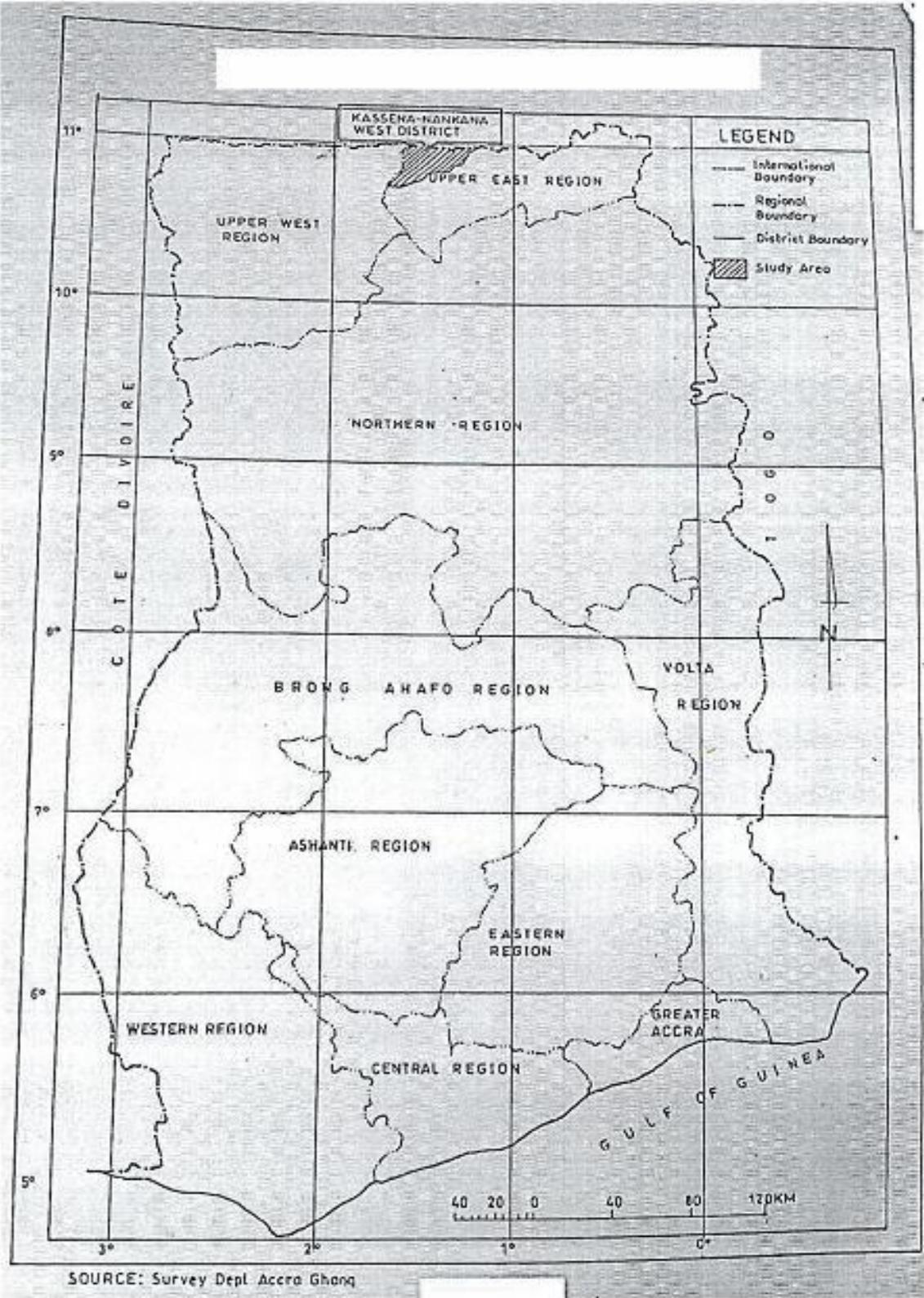
The Kassena-Nankana West District is one of the nine districts in the Upper East Region of

Ghana. It is located approximately between latitude 10.97° North and longitude 01.10 West. The district has a total land area of approximately 1,004 sq km.

The Kassena-Nankana West District shares boundaries with Burkina Faso, Bongo district, Bolgatanga Municipality, Kassena-Nankana, Builsa District and Sissala East to the North, North East, East, South, South West and West respectively.

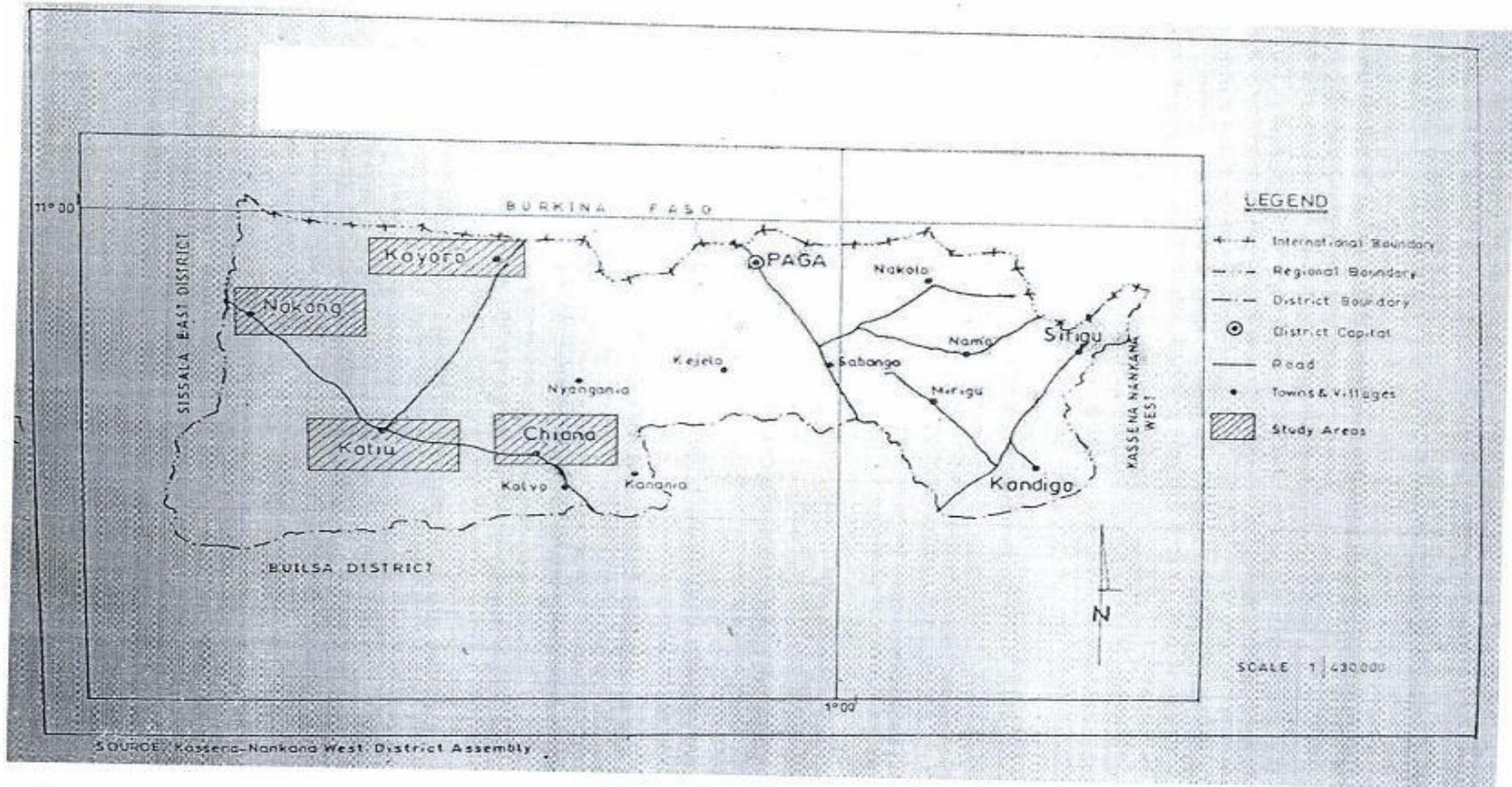


**Study area in national context**



**Source: Survey Dept. Accra Ghana**

Map of the Kassena-Nankana West District showing the study communities



Source; Kassena – Nankana West District Assembly



# 47 KNUST



### **3.4 Physical Environment**

#### **3.4.1 Climate**

The Kassena-Nankana West District is part of the interior continental climatic zone of the country characterized by pronounced dry and wet seasons. The two seasons are influenced by two oscillating air masses. First is the warm, dusty and dry harmattan air mass, which blows, in the north easterly direction across the whole district from the Sahara desert.

During its period of influence (late November – early March) rainfall is entirely absent, vapour pressure is very low (less than 10mb) and relative humidity rarely exceeds 20% during the day but may rise to 60% during the nights and early mornings.

Temperatures are usually modest at this time of the year by tropical standards (26°C – 28°C). May to October is the wet season. During this period, the whole of West African sub-region including Kassena-Nankana West District is under the influence of a deep tropical maritime air mass. This air mass together with rising convection currents provides the district with rains. The total rainfall amounts to averagely 950mm per annum. The above phenomenon adversely affects the water table and reduces underground water. Water harvesting is probably a viable option.

#### **3.4.2 Vegetation**

The vegetation is mainly of Sahel Savannah type consisting of open savannah with fire swept grassland separating deciduous trees among which may be seen a few broad-leafed and fireleached tree species. Some of the most densely vegetated parts of this district can be found along river basins and forest reserves. Examples are the Sissili and Asibelika basins. Most of these trees in the forest areas shed their leaves during the dry season. The activities of man over the years have also affected the original vegetation considerably. Common trees, which are also of economic importance, include Dawadawa, Sheanut, Baobab, Nim and Mango. The low

vegetation cover of the area hampers sufficient rainfall thereby reducing underground water supply.

### **3.4.3 Soil**

Two main soil types can be found in the district. These soil types are the Savanna Ochrosols and the Ground Water Laterite. The Northern and Eastern parts of the District are covered by the Savannah Ochrosols, while the rest of the District is characterized by ground water laterite. The Savannah Ochrosols are porous, well drained, loamy, and mildly acidic interspersed with patches of black or dark grey clay soils. This soil type is suitable for cultivation of cereals and legumes. The ground water laterites are developed over shale and granite. Due to the underlying rock type, they become water logged during the rainy season and dry up during the dry season, thus causing cemented layers of iron-stone which make cultivation difficult. This would probably affect food security in the district.

### **3.4.4 Relief and drainage**

The District is underlain mainly by Birrimian and Granitic rock formation. The relief of the District is generally low lying and undulating with isolated hills rising up to 300 meters in the Western part of the District. Notably among these hills are Fie, (9280 metres), Busono (350metres), and Zambao (360metres) and Atamolga. The Sissili River and its tributaries mainly drain the district. There are however some few dugouts and ponds, which are used for livestock rearing, crop production and domestic purposes.

### **3.4.5 Interaction between climate, vegetation, soil, relief and drainage**

The combined effect of unfavourable climatic conditions and low vegetative cover characterized by prolonged dry season thereby reducing underground water supply coupled with the presence of Ground Water Laterite type of soil in some parts of the district poses a great threat to food security. However, the presence of the Sissili River and its tributaries in the

district is a potential that can be harnessed for the construction of irrigation facilities to supplement rain fed agriculture. Water harvesting could also be a viable option.

### **3.5 Demographic characteristics and the built environment**

The estimated total population of the District is 120,729, with an estimated population growth rate of 1%. The population density is 120 persons per square kilometer. The population is about 90 percent rural with a dependency ratio of 1:1.1

Forty one (41) percent of the total population is below 15 years while the aged form 6.2% of the total population. The females constitute 51.9 percent of the population in the district. The above characteristics imply the need for the provision of basic social services such as schools, health centers, boreholes, toilets among others as well as the need to actively involve women in decision-making processes.

The structural arrangement of urban and rural settlements in the Kassena-Nankana West District is mainly dispersed in character, scattered in pattern, form and existence. The settlements are far apart thus making it difficult for the provision of basic infrastructure and services. Population is concentrated in the urban areas where preference is shifted towards to the disadvantage of the rural areas whose environmental resources have much potential for increased socio-economic growth. There are 132 communities of varied sizes in the district. Using the 2000 National Population Census figures, most of the communities in the district have sparse population densities, which have implication for spatial planning perspective in the District Medium Term Development Plan (DMDP).

The District has a total feeder road length of 156.9km. Engineered road constitute 127.9km while unengineered ones are 29km. The above statistics on the District roads shows that many more communities are not linked to motorable roads. There is therefore the need to open up

more feeders" roads and engineer them for easy movement of people and for the transportation of Agricultural produce to the marketing centres.

On communication, Ghana Telecom operates in the district from Navrongo. There are no landline telecommunication facilities in the District. Mobile network facilities are however available in the district. The people in the district benefit from the following mobile phone services (MTN, Expresso, Vodafone and Tigo). The services of these networks are quite high for the ordinary people in the district considering the poverty incidence of the district, which stands at 0.688. An extension of landline telephone facilities to the district would increase access to information and Internet facilities.

In terms of transportation, the principal modes of transport in KNWD are roads and footpaths while modals include vehicles (private cars, passenger buses, taxis, buses and cargo trucks), motor bikes and bicycles with the last two being predominant. Donkey carts are also used as means of transporting goods especially farm produce. The major transport service providers include the Ghana Private Road Transport Union (GPRTU) of the Trades Union Congress (TUC), State Transport Corporation and other allied transport companies. The above is peculiar to the eastern and central part of the district. However, the extreme west of the district is quite remote and Lorries ply their roads only on market days. There is therefore the need to open up the area by creating access roads to facilitate the movement of goods and persons.

Residents of the Kassena-Nankana West rely on fuel wood, charcoal and gas for cooking and other domestic purposes. Access to gas in the district is rather grossly inadequate. On the part of hydroelectricity, the district is connected to the national grid, however over 60% of the communities are not connected to electricity. Access to electricity in the district would attract agro-based industries, which would offer employment to the youth. There is great potential for

the generation and use of solar energy to complement other sources of energy, which needs to be exploited.

### **3.6 Economic and livelihood activities**

Agriculture is the dominant economic activity in the district. The sector employs over 68.7% of the people. Male farmers population stands at 33,307 (48.4%) and female farmers 35,509 (51.6%). The major crops grown are maize, millet, sorghum, rice, groundnuts, leafy vegetables, cowpea, bambara beans, okro, cotton, tomatoes and onion. Livestock reared in the district include cattle, sheep, goat, pigs, guinea fowls, fowls and other domestic animals like donkeys. Fish farming involving Tilapia and Mudfish are quite significant. Farm sizes are quite small and yields are very low as compared to other parts of the country due in part to poor soils and unreliable rainfall. There are few dams and dugouts, which are being used for dry season farming. This has implications for food insecurity.

Trading and commercial activities in the district revolves mainly around foodstuff, semiprocessed food and crafts. These commodities are sold in the local markets and outside the district. The three (3) day and six (6) day market cycles play a very important role in the local economy. Commodities traded in ranges from foodstuffs and livestock to manufactured goods. The main markets are Chiana, Paga, Sirigu, Kandiga, Mirigu, Katiu, Nakong and Kayoro.

The Kassena-Nankana West District has no large scale manufacturing industries. It is characterized by small-scale food processing, craft and manufacturing industries. Examples include smock weaving, pottery and blacksmithing. Processing of foodstuff, cash crops and goods are common features of the local economy. The major small scale industrial activities include the following: Shea butter extraction, Pito brewing, Milling or grinding of millet etc for domestic use, Dawadawa Processing, Weaving and dressmaking, Pottery, Rice Milling, Soap making.

Most of these small-scale industries are sole proprietorship businesses and hardly employ people. The sector is dominated by females and needs to be organized into groups and their capacities built to enhance their businesses. There are also varied business types in the district, which needs to be developed in order to boost the local economy. These include: Hairdressers, Tailors and dress makers, Bakers, Shea butter extractors, Bee Keepers, Guinea fowl rearers, Smock weavers, Pottery as well as Batik tie and dye.

The district has one banking institution, the Naara Rural Bank Limited located in Paga with branches at Chiana and Sirigu. There are also non-banking institutions in the district, which collaborate with the financial institutions to offer credit to groups and individuals. Such institutions include Non-governmental Organizations, Community Based Rural Development Project and National Board for Small Scale Industries. In addition, non-formal credit arrangements such as “Susu” are available for traders and small-scale producers.

The level of unemployment is very high in the district especially among the youth. Agriculture pursuits dominate the employment scene. Over 70 percent of the active population is into agriculture and the unemployment situation is worse during the prolonged dry season when no farming activity can take place. Dry season gardening is practiced in communities where there are small-scale dams. This invariably compels most of the youth to migrate to the southern part of the country in search of jobs. Other areas that offer employment opportunities to the people include the public services, retail trade, food processing, pottery and other agro-based processing. The above characteristics do affect the growth and expansion of the district economy.

### **3.7 Poverty levels and vulnerability**

The population of the district is about 68.7% rural basically engaged in Agriculture. The people actively farm for about four months in a year and virtually rendered underemployment or

unemployed for the rest of the year. Household incomes are low and dependent on the rainfall pattern of the year. Most households ran out of food every year from March onwards.

The situation can be worse off in years where there is drought or flood. In extreme cases farmers eat up all their seeds or sell them to meet other expenses or they adopt coping mechanism like eating of leaves and fruits of certain trees to survive. The above circumstances in which the people find themselves make it highly impossible for them to meet their community contribution towards the provision of potable water and sanitation facilities.

The illiteracy rate in the district is quite high about 55.7 percent of the youth are illiterate. This situation has poverty implications for the development of the district. The combination of the above factors in part probably account for the low health Insurance coverage in the district.

Women are generally less active in decision-making. They do not have adequate access to productive resources and are only responsible for the bulk of the household activities. Even though the people of the district are relatively poor, premium is given to high funeral expenses which further worsen their plight.

The above factors invariable render the people vulnerable to contributing towards the capital cost, operation and maintenance of water and sanitation facilities among others.

### **3.8 Gender**

In the Kassena Nankana West District, women are generally disadvantaged as compared to men. This situation is attributed to the traditional belief systems about sex roles and the marriage and dowry system. Men are regarded as heads of families and breadwinners while the women are limited to domestic sphere in that they are responsible for the households and childcare among others.

In the district, men and women work together, however, the men are considered the primary decision makers. Invariably the dowry system makes the wife the „property“ of her husband thereby giving the man the right to use her resources including labour. Women are required first to meet their obligations of working full time on husband“s farm(s) before their independent farm(s). Representation in community organizations such as Water and Sanitation Committees, Unit Committees, Area councils, District Assembly, Village Development Committees and other decision making structures is grossly inadequate. Women are seen more when labour is required for such activities as food preparation and fetching of water. The workload of women in the district has increased due to harsh economic conditions.

As regards enrolment in the schools, there are more males than females in schools. The females drop out of school especially at the upper primary and JHS levels. Concerning basic school examinations, performance of males usually exceeds that of females. For instance in the 2008/09 years, 52.6% of those who passed were males. Women are therefore vulnerable to poverty in the district than their male counterparts.

### **3.9 Climate change**

The Kassena-Nankana West District Assembly like other districts in the Upper East Region is experiencing climate change and its attendant impacts. This phenomenon can be attributed to direct or indirect human activity that alters the composition of the atmosphere. It could also be attributed to national climate variability overtime. Climate change effects has been experienced in the area of increased land degradation, loss of croplands, reduction in livestock size and nutrition, disruption of sources of livelihood, destruction of structures, property, crop and animal species, pollution of water sources and drying up of river courses. Other impact of climate change in the district includes high temperature, increase in evapotranspiration rates, erratic rainfalls and flooding especially in 2007.

## CHAPTER FOUR 4.0 ANALYSIS OF THE EFFECTS OF POVERTY ON THE ENVIRONMENT 4.1. Introduction

This chapter analyses the data gathered from the field with the aim of addressing the objectives of the study. The chapter examines the demographic characteristics of respondents, perception and nature of poverty, the state of the environment, as well as the relationship that exist between poverty and the environment in Chiana, Katiu, Nakong and Kayoro communities of the Kassena-Nankana West District in the Upper East Region.

Environmental degradation in the study area was measured through the assessment of human activities such as indiscriminate felling down of trees for charcoal production and fuel wood extraction. These products are sold to supplement household income from farming. In addition, charcoal and fuel wood is the main sources of energy for the households. The study, thus, established the synergy between poverty and the consumption of charcoal and fuel wood in the study communities.

### 4.2. Socio-demographic Characteristics of Respondents

A discussion of the social and demographic characteristics of the heads of households is very important, as this provides the basis for answering the research questions of the study. Some of the socio-demographic characteristics discussed in this study include gender, age, income and educational levels of household heads. Thus, in the analysis of the impact of poverty on the environment, these characteristics are relevant in determining the poverty levels of households, the dynamics of poverty that prevail in the study area and how these affect the environment. Table 4.1 provides a summary of descriptive analyses of some selected sociodemographic characteristics of the heads of households that are relevant to the overall objective of the study.

**Table 4.1 Socio-Demographic Characteristics of Heads of Household**

Variables	Attributes	Frequency	Percentage
<i>Gender</i>	▪ Male	297	80.3

	▪ Female	73	19.7
	<b>Total</b>	<b>370</b>	<b>100</b>
<i>Age</i>	▪ 20-30 years	24	6.5
	▪ 31-40 years	198	53.5
	▪ 41-50 years	127	34.3
	▪ 50 years and above	21	5.7
	<b>Total</b>	<b>370</b>	<b>100</b>
<i>Income level</i>	▪ < GH¢ 100	274	74
	▪ GH¢ 101-200	37	10
	▪ GH¢ 201-300	18	5
	▪ GH¢ 301-400	2	0.5
	▪ GH¢401-500	15	4
	▪ >GH¢ 500	24	6.5
	<b>Total</b>	<b>370</b>	<b>100</b>
<i>Educational level</i>	▪ No formal Education	233	63.0
	▪ Primary	47	12.7
	▪ JHS/Middle School	67	18.1
	▪ SHS/Tec/Vocational	17	4.6
	▪ Tertiary	6	1.6
	<b>Total</b>	<b>370</b>	<b>100</b>

**Source: Fieldwork, 2013**

From Table 4.1, it can be deduced that 80.3% of the heads of households were males while 19.7% were females. It was observed that the study had more representation in terms of males as compared to females. This can be attributed to the fact that most households in the

Upper East Region of Ghana consider males as heads except in some few cases where the husband is deceased and the elderly male child is young to be the head. In this case, the wife of the deceased husband is considered as the head of the household.

Table 4.1 indicated clearly that 6.5% of respondents were in the age range of 20-30 years, 53.5% were in the age range of 31-40 years, 34.3% were in the age range of 41-50 years, and 5.7% were over the age of 50 years. The various percentages indicate that the various age groups were fairly represented in the study. This allowed for the gathering of views on poverty and environment from all age groups in the study communities. In addition, the views of the various age groups helped to assess the diversity of poverty and its impacts on their lives and the environment.

It is important to emphasise that education is key when measuring poverty. In this connection, poverty has been defined as the lack of knowledge (Adjei, 2008). Therefore, the educational level of the heads of households was one of the indicators for measuring poverty in the study communities. Thus, gathering data on the educational level of the heads of households was paramount in this study. Therefore, from Table 4.1, it is indicative that, 63% of heads of households indicated that they had no formal education, 12.7% had attained primary school level education, 18.1% indicated that they had completed JHS or middle school, 4.6% said that they had completed SHS/ Technician/ Vocational school, and only 1.6% indicated that they had attained tertiary level education. It is key to emphasise that more than half of the heads of households had no formal education and this have implications on the levels of poverty in the communities.

Table 4.1 also indicates that 274 heads of household representing 74% of respondents earned an income of less than GHC100. 55 heads of households representing 15% had monthly income of GHC100 to GHC300. Only 41 heads of households earned a monthly income above

GHC300. It is significant to note that majority of the respondents who earned more than GHC300 were resident government workers such as teachers and health workers such as nurses.

### 4.3 Incidence of Poverty in the Kassena-Nankana West District

#### 4.3.1 Perceptions of Poverty

The Participatory Poverty Assessment (Chambers 1994, cited in Laderchi et al, 2003), tool was employed to ascertain the perceptions of poverty from the study communities. This method was adopted to encourage the involvement of the heads of households in analysing their own poverty situation. The views expressed by both the male and female groups during the focus group discussions were similar in character and also confirm those of existing literature. Table 4.2 presents the perception of poverty by both the male and female groups in the study communities.

**Table 4.2 Perceptions of Poverty in the study Communities**

Male Heads	Female Heads
Inability to fulfil ones wants	Inability to pay your children's school fees,
Inability to afford three square meals	Inability to pay for Health Insurance
Inability to build a block house,	Having no one to help you
Inability to pay children's school fees and buy clothes for them	Inability to provide for your children,
Inability to purchase farm inputs,	Having unsustainable source of income,
Having unsustainable source of income,	Inability to afford three square meals
Having no assets like land	Inability to purchase a new clothe during festive occasions.

**Source: Fieldwork, 2013**

From Table 4.2 that the perception of poverty by both the male and female groups are similar; an indication that they all experience similar deplorable conditions in the communities. Notwithstanding that, the female heads emphasized more on the inability to provide the basic needs of their households especially food. This was evident when a female head from Chiana noted; *“poverty is the inability to feed your family”* (Fieldwork, 2013).

Another female head in Kayoro noted “*I and my children slept with hunger yesterday and that is poverty*” (Fieldwork, 2013).

Moreover, the male heads emphasized lack of land, farm inputs and housing as the main indicators of poverty. Generally, these are the very determinants of poverty among male heads of households in the rural areas. It is important to emphasize that the male groups used analogies to explain the concept of poverty. In this connection, an elderly male head in Katiu noted; “*Poverty is like fire that eats the human body, if you are not poor you would not feel how hot this fire is*” (Fieldwork, 2013). This confirms the findings of Narayan et al, 2000, when a respondent was asked to explain what poverty meant and the respondent noted; “*Poverty is like heat; you cannot see it; you can only feel it; so to know poverty you have to go through it*” (Narayan et al, 2000).

Although both the male and female groups expressed different views on poverty, they were very concerned about the lack of sustainable source of income. It was evident from the survey that majority of respondents were poor because they were engaged in subsistent farming which does not offer a reliable source of income due to its seasonal nature. The situation was further worsened in recent times because they did not get good harvest from their farming activities due to the recent poor weather conditions coupled with inadequate farm inputs.

It is evident from the discussions that the heads of households were expected to play roles such as the provision of the basic needs of their respective households, attending and contributing to social gatherings such as funerals and providing the educational needs of their children especially when they graduate from the basic school. Therefore, the lack of sustainable source of income prevents household heads from performing these roles, which is considered as poverty.

The combination of the individual views of both the male and female heads of households on the concept and meaning of poverty is similar to that of the World Bank (2009), which defined poverty as hunger, lack of shelter, being sick and not able to seek medical care, not having access to school and not knowing how to read, not having a job, fear for the future, living one day at a time, is losing a child to illness brought about by unclean water, is powerlessness, lack of representations and freedom (World Bank, 2009).

#### 4.3.2 Causes of Poverty

Politically, conservative theoreticians blame the poor for creating their own problems, and agree that with harder work and better choices the poor could have avoided their problems.

The causes of poverty can therefore be attributable to individual deficiencies (Bradshaw, 2006).

Bradshaw's (2006) view on the causes of poverty is similar to that of Lewis, in his concept of the 'culture of poverty', Lewis observed that laziness is a major cause of poverty in society. If the culture of any society is supportive of hard work, social conditions of that society automatically improves (Lewis cited in Khan, 2005). In contrast with the views of Bradshaw and Lewis, Bourne (2005), observed that many factors underlie the high incidence of poverty; the major ones include low income and high levels of unemployment.

In the study communities, both the male and female respondents expressed their opinions on the causes of poverty. Their views have been presented in Table 4.3.

**Table 4.3 Major Causes of Poverty in the Study Communities**

Major Causes
Fluctuating season
Large family sizes
Erratic rainfall pattern
Infertile land and bushfires,
Lack of irrigation facilities
Poor quality of education and illiteracy
Sickness and death, as well as conflict

**Source: Fieldwork, 2013**

Most of the views represented in Table 4.3 are those of the male heads of households. These views actually represent the general and major causes of poverty in most Ghanaian communities, particularly in the Upper East Region. Despite these, others have mystical views on the causes of poverty. This was evident when a male head of household in Chiana attributed the cause of poverty in their community to be a curse from the gods. In his view, their gods have the power to give them riches, however, the stubbornness of community members causes the gods to neglect them. This perception is consistent with the religious doctrine that equate wealth with the favour of God. This was central to the protestant reformation that considered the blind, crippled, or deformed people as punishment by God for either their or parents' sins (Bradshaw, 2006).

On the other hand, the causes of poverty among the female heads of households are dependent on the financial conditions of their husbands. This is due to the fact that women depend on their husbands for their survival. Thus, a wife and her children are likely to become poor if the husband is jobless. For instance, if the husband is lazy or does not want to work, or if he is sick. The situation becomes worse if the man is deceased. To emphasize this, a female head from Kayoro with twins indicated that;

*“I am a widow with five children, I have to work on our farm alone. So, I only cultivate on a small piece of land that I can work on. The harvest on this farm cannot feed my children and me for the whole year, so the death of my husband has caused my poverty”* (Female, 2013).

Some further explained that family properties such as land, cattle, sheep, goats, fowls and guinea fowls among others can only be inherited by male heads of households. It is important to note that traditionally, a female has no right to inherit any property from the family in the four study communities. They lamented that, this system of inheritance makes females vulnerable to

poverty and seasonal shocks in their various communities. The views of the female heads of households are consistent with the observations made by Kyei (2005), in his study on Nadowli women and poverty alleviation. He observed that, poverty among women in the three northern regions of Ghana is caused by lack of control and ownership of resources. Resources such as land, buildings, livestock, poultry, water bodies, farm produce, bullocks, radio, bicycle, and labour are owned and controlled by men. Traditional norms do not permit wives to inherit the properties of their husbands.

It was evident from the discussions that, while the views of the female heads of households on the causes of poverty in their community centred on the actions or inactions of their husbands, their male counterparts were of the view that lack of alternative sources of income aside farming, coupled with the absence of irrigation facilities to supplement rain fed agriculture are the major causes of poverty in their communities.

#### **4.3.3 Effects of Poverty**

Murali and Oyeboade (2004) found a close link between poverty and the economic status of an individual. Their study revealed that poverty has direct and indirect effects on the social, mental and physical wellbeing of an individual. In a related literature, Oluoch-Kosura et al.

(2002) indicated that poor people are more likely to draw from their productive assets more frequently in order to cope with a given level or kind of shock such as selling land and livestock or withdrawing children from school in order for them to support family subsistence.

The general view on the effects of poverty from the study that was expressed by both male and female groups was that poverty is the root cause of the depletion of the forest cover. They explained that almost all the people who are engaged in the felling of trees for fuel wood and charcoal production are poor and that apart from farming there is no alternative livelihoods in the communities. Furthermore, fuel wood and charcoal production does not earn them enough income. Even though felling of trees depletes the environment and is prohibited by law, the

local people have no option but to engage in these activities to supplement their income. In a related finding, Neena (2000) observed that poverty restricts the capacity of the poor to act in ways, which are not suitable for the environment. The major effects of poverty from both male and female groups have been presented in Table 4.4.

**Table 4.4 Major Effects of Poverty in the study Communities**

Major Effects
Depletion of forest cover, environmental degradation
School drop outs
Emotional depression and confusion
Ill health and death
Stealing
Separation and divorce

**Source: Fieldwork, 2013**

The views presented in Table 4.4 represent views from both the male and female heads of households. However, the male heads of households considered social exclusion as an effect of poverty that is very disturbing and disgraceful to them. They complained during the focus group discussions that the poor do not take part in decision making in the communities. In this regard, they explained that organisers of social gatherings such as meetings either do not invite the poor or when they are invited they just listen to what the rich and the privileged say during meetings. The contributions of the poor are not considered during meetings. To further explain this a respondent in Chiana indicated that,

*“Poverty is like a hot object nobody wants to touch it”* (Male, 2013). Another respondent in Katiu also said; *“Poverty can turn a family head into a child”* (Male, 2013).

They explained that when there is a family meeting and a member of the family who is considered as rich is not present then all the members of the family would have to wait for that person to come. On the other hand, the family will not even notice the absence of the poor man

during meetings. They explained that when one is poor, it is often coupled with shyness to partake in public gatherings.

In conclusion, a total of 95.4% of the heads of households from the four study communities considered themselves to be either extremely poor or poor. It can therefore be said that poverty is endemic in the District with high incidence rate. A critical analysis of their perceptions on poverty reveals that any intervention geared towards the reduction or elimination of poverty should be aimed at the creation of job opportunities and the empowerment of women to be self-reliant in order to reduce their over-dependence on their husbands for their livelihood.

#### 4.3.4 Manifestations of Poverty

It was revealed that poverty manifests itself in a myriad of ways in the various communities.

In an attempt to describe what poverty is, one of the male heads of household in Nakong said,

*“Just take a good look at me, poverty is written all over my body. I am wearing tattered clothing, my sleepers is the only footwear I have, and my children who should have been in the secondary school are sitting in the house because I do not have money to pay their school fees”*

(Male, 2013).

This was a description of poverty that brought to bear the various ways in which poverty manifests itself in the study communities in the Kassena-Nankana West District. Both the male and female heads of households presents both similar and different manifestations of poverty among their households. The manifestations of poverty among them are summarized and presented in Table 4.5.

**Table 4.5 Manifestation of Poverty in the study Communities**

Male Heads	Female Heads
Landlessness or inability to own a large farm	Wearing of tattered clothes
Having no motor bicycle	Inability to prepare meals for children

Children dropping out of school	Buying food items on credit
Not having livestock such as cows, sheep and goats	Preparing meals without meat or fish
Not being able to organise communal labour	Not being able to afford a gas cooker
Living in a dilapidated house	Living in a dilapidated house

**Source: Fieldwork, 2013**

It was evident that, the incidence of poverty in the community was high and the conditions in which the poor find themselves were deplorable that they had no option than to find ways of coping with these conditions. The consequence of this leaves the environment especially the forest at the mercy of the poor. Many of the heads alluded to the fact that they resort to the cutting down of trees as a coping strategy to their poverty situation.

#### **4.3.5 Measurement of Poverty in the study Communities**

Throughout history, income and consumption have been the traditional indicators of poverty. These indicators have influenced poverty policies and programme over the years. The use of income allows for a distinction to be made between different income sources and when that is done, income may be easily compared with data from other sources, thus providing a check on the quality of data in household survey (World Bank, 2002). This is why most studies aimed at understanding poverty focus on the income dimension. In this connection, Townsend (2006) defines poverty as the lack of income and other resources necessary to obtain the conditions of life that constitute diets, material goods, and amenities. Based on this, the study also adopted the income approach to measure poverty in the study communities. In order to do this, data was collected on the monthly income level of households and compared with the Monthly Minimum Wage (MMW) of GH¢180 in Ghana.

The results are presented in Table 4.6.

**Table 4.6 Poverty Rates in the study Communities**

<b>Monthly Income Level</b>	<b>Frequency</b>	<b>Percent</b>	<b>Poverty Category MMW (Gh¢180)</b>
< GH¢ 100	274	74	Very poor
GH¢ 101-200	37	10	Poor
GH¢ 201-300	18	5	Non-poor
GH¢ 301-400	2	0.5	Non-poor
GH¢401-500	15	4	Non-poor
>GH¢ 500	24	6.5	Non-poor
<b>Total</b>	<b>370</b>	<b>100</b>	-

**Source: Fieldwork, 2013**

From Table 4.6, 74% of the household heads earn far below the Monthly Minimum Wage, that is far less than GH¢100 in a month. This category is the very poor according to the classification of the study. It is important to note that about 92% of this category (the very poor) are farmers. Moreover, 10% earn between GH¢101-200, thus, a little below or exactly or a little above the Monthly Minimum Wage. This category consists of the poor in the communities according to the classification for the study. Also, 5% earn between GH¢201-300, thus, above the Monthly Minimum Wage. This category is the non-poor in the communities. Finally, 0.5%, 4% and 6.5% earn from GH¢301-400, GH¢401-500 and above GH¢500 respectively. These categories earn far above the Monthly Minimum Wage and are also considered non-poor in the study communities. A greater proportion of these categories, particularly those who earn above GH¢500, are civil servants, notably teachers.

The various income categories indicate the incidence of income poverty in the study communities. However, it is important to note that more than half (see, Table 4.6) of the households earn far below the Monthly Minimum Wage. This is an indication that majority of the households in the selected communities are very poor. This supports the findings that the Upper East is the poorest Region in Ghana and that among 10 people, 9 of them are poor

(Canagarajah and Pörtner, 2003; GSS, 2006). The income approach to poverty measurement offers a consistent way of measuring poverty in the study area. This is because income determines other indicators of poverty such as consumption and wellbeing (Edward, 2006).

Furthermore, the adequacy of their monthly income to meet the monthly needs of their households was verified. Estimates suggest that only 15% of them claimed their monthly income was adequate while 85% indicated otherwise. This confirms the views expressed by Bourne (2005) that, many factors underlie the high incidence of poverty; the major ones include low income and high levels of unemployment. Similarly, Hashim (1998) emphasizes that, income levels can be a major factor in eradicating poverty. He is of the view that in order to eradicate poverty there is the need to raise income levels as well as increase employment (Hashim, 1998).

#### **4.4 The Incidence of Poverty and Livelihood Activities**

Many studies on population growth and unsustainable consumption patterns of the poor and their life-styles have discovered that the natural resource base including the forest has been shrinking and environmental conditions are also deteriorating rapidly. Neena (2000) observed that the reduction of forest cover contributes to poverty through worsened health. Poverty, thus, restricts the capacity of the poor to act in ways, which are not environmentally friendly. The problems of poverty and environment connection are endemic in the developing countries in the global south. For instance, Nepal and Bangladesh have suffered from various environmental problems such as increasingly devastating floods, often believed to be resulting from large-scale deforestation (Shah, 2005).

The situation is similar in the study communities. It was revealed that, there were reports of incessant drought in the Kassena-Nankana West District. This had negatively affected farming activities, leading to the over dependence on the forest for wood and charcoal production as a source of livelihood, which had resulted in deforestation in the area. Table 4.7 presents a spatial

variation of the degree of dependence on the forest reserve among the various study communities. From Table 4.7, those who depend directly on the forest refers to those who are engaged in the felling down of trees for the production of fuel wood and charcoal as a source of livelihood while those who depend indirectly on the forest are the direct consumers of the fuel wood and charcoal.

**Table 4.7 The Level of Forest Dependence in the study Communities**

Community	Forest Dependence				Total
	Direct	Indirect	Both Direct & Indirect	None	
Nakong	28	1	1	0	30
Katiu	59	2	2	0	63
Chiana	113	60	26	0	199
Kayoro	65	11	0	2	78
<b>Total</b>	<b>265</b>	<b>74</b>	<b>29</b>	<b>2</b>	<b>370</b>

**Source: Fieldwork, 2013**  $\chi^2 (9, N=370) = 61.61, P < 0.05$

From Table 4.7, 72% of heads of households depend on the forest reserve in the four communities for their livelihood. Thus, 72% derive their livelihoods directly from the forest. These livelihoods include charcoal production, fuel wood extraction and hunting to a minor extent. On the other hand, 20% of the heads of households depend on the forest indirectly, meaning they are the direct consumers of charcoal and fuel wood. It is very important to point out that the very poor are those who depend directly on the forest (see Table 4.8, page 78). While the non-poor remain the consumers of the charcoal and fuel wood extracted from the forest because of their ability to afford these products financially. Moreover, 7% depend on the forest directly and indirectly, while 1% of the heads do not depend on the forest at all. Those who depend on it directly and indirectly are those whose sources of income are not stable and fluctuate seasonally. When it happens that way, they rely on charcoal and fuel wood production to supplement their income. Thus, their engagement in these activities is subject to the seasonal

short falls of their income. In a related literature, the DFID (1999) indicated in the sustainable livelihoods framework (see Figure 2.1) that seasonality is a major factor that affects the livelihoods of the poor, thus, making them vulnerable.

The study also posits that most households in the Kassena-Nankana West District depend on the forest products for their livelihoods. The Chi-square statistical analysis (see Table 4.7) confirms that there is a strong relationship between the communities and the level of dependence on forest products for their livelihoods. Thus, in each of the communities, there are households that depend either directly or indirectly or both on the environment (forest). However, majority of the households depend on the environment directly. Similarly, Marchetta (2013) indicated that, livelihoods of rural households in Northern Ghana are predicated on natural resources.

#### **4.4.1 Income Level and Dependence on Forest**

Many studies (for example, Narain et al, 2005) have established a link between poverty and the environment. While some (for instance see Ravnborg, 2003) argue that the poor degrades the environment by depending directly on it, others argue that environmental degradation exacerbate the problems of the poor. It is on this background that Duraiappah (1996) categorized poverty as indigenous and exogenous poverty. Indigenous poverty is poverty caused by environmental degradation while exogenous poverty is poverty caused by other factors rather than environmental degradation (Duraiappah, 1996). This vicious cycle of poverty-environment connections have therefore captured the imagination of many researchers. In relative terms, this connection has been explained particularly in the global South where poverty and environmental degradation is endemic. Thus, people with low income levels turn to depend on the environment for alternative livelihood sources (Chao, 2012). This study also aims to establish the relationship between monthly income levels and the dependence on the

environment in the Kassena-Nankana West District in the Upper East Region. The results are presented in Table 4.8.

**Table 4.8 Income Level and Dependence on Forest in the study Communities**

Income Level	Forest Dependence				Total
	Direct	Indirect	Both Direct & Indirect	None	
< GH¢ 100	190	53	29	2	274
GH¢ 101-200	28	9	0	0	37
GH¢ 201-300	11	7	0	0	18
GH¢ 301-400	0	2	0	0	2
GH¢ 401-500	15	0	0	0	15
>GH¢ 500	21	3	0	0	24
<b>Total</b>	<b>265</b>	<b>74</b>	<b>29</b>	<b>2</b>	<b>370</b>

**Source: Fieldwork, 2013**  $\chi^2 (15, N=370) = 29.078, P < 0.05$

From Table 4.8, it can be seen that over 69% of the very poor, that is those who earn far below the Monthly Minimum Wage (<GH¢100) depend on the forest directly. Moreover, this same category makes up 72% of all those who depend directly on the savannah forest. In all, over half (51%) of the respondents earn far below the Monthly Minimum Wage and are directly dependent on the forest for their livelihoods. Inferentially, the Chi-square statistical analysis indicates that there is a significantly direct relationship between income levels and the level of dependence on forest products, particularly wood for livelihoods. Thus, despite the fact that each income category depends on the forest either directly or indirectly or both, there is still a significant difference between the income levels and the level of dependence. This could be seen from Table 4. 8, where more than half of the households are very poor and depend on wood from the savannah forest for charcoal and fuel wood production. It is also important to note that, the very poor do not degrade the forest intentionally but the harsh conditions in which they live, coupled with the lack of alternative livelihoods compel them to engage in these

activities. Thus, the forest products serve as livelihoods alternative that provides a safety net in times of need.

In a related study, Yemiru et al, (2010) indicate that forest products are the most important sources of income contributing to 34% and 53% of household per capita income and per cash income, respectively in the Bale Highlands in Southern Ethiopia. They also emphasise that forest income also helps 20% of the population to remain above the poverty line. In addition, Vedeld et al. (2004) maintained that the main sources of forest environmental incomes are fuel wood, wild foods, and fodder for animals. Furthermore, they indicated that forest environmental income has a strong and significant equalizing effect on local income distribution. Thus, the valuation of forest income could be considerably higher than income from farming activities, which is usually seasonal.

On the other hand, the households that earn above the Monthly Minimum Wage constituting about 16% of respondents depend minimally on the environment. These categories of household heads are civil servants such as teachers and health workers, and traders including petty trading who are the direct consumers of the forest products extracted by the very poor. To conclude, the very poor get their income from the high-income earners predominantly civil servants, in the communities.

#### **4.4.2 Educational Level and Dependence on Forest Reserves**

Level of educational attainment (knowledge) is sometimes used to measure income poverty. This is because individuals with higher levels of education gain employable skills and thus have a greater percentage of being employed than those with lower levels of education. The study therefore aims to establish the connection between educational attainments and the level of dependence on forest products in the study communities. Table 4.9 presents the results.

**Table 4.9 Educational Levels and Dependence on Forest in the Communities**

Educational Level of Respondents	Forest Dependence				Total
	Direct	Indirect	Both Direct & Indirect	None	
No formal Education	156	54	21	2	233
Primary	38	1	8	0	47
JHS/Middle School	60	7	0	0	67
SHS/Tec/Voc	9	8	0	0	17
Tertiary	2	4	0	0	6
<b>Total</b>	<b>265</b>	<b>74</b>	<b>29</b>	<b>2</b>	<b>370</b>

Source: Fieldwork, 2013  $\chi^2 (12, N=370) = 44.525, P < 0.05$

From Table 4.9, it can be inferred that about 67% of those who have no formal education depend on forest resources directly. Furthermore, more than half (59%) of the heads that depend on forest directly have no formal education. This group are those whose incomes fall below the Monthly Minimum Wage and are considered very poor according to the study.

Thus, because, they have no formal education, they have limited formal job opportunities. For these heads of households, the only opportunities are farming, charcoal and fuel wood production. To confirm this, an inferential statistical analysis was adopted. Thus, the Chisquare analysis (refer to Table 4.9) indicates a strong relationship between educational levels and the levels of forest dependence in the study communities. Hence, despite the fact that each educational category depends on the forest either directly or indirectly or both, there is a significant difference between the educational levels and the level of dependence. Therefore, it could be inferred from Table 4.9, that more than half of the households' heads have no formal education and depend on forest resources for livelihoods. It can therefore be concluded that those without formal education depend on forest products than those with some sort of formal education. Those with some sort of formal education are likely to be employed in the formal sector including teaching and other civil services.

In a related study, Middleton, (2007) found that, higher educational level reduces out-of-work poverty by increasing the likelihood of being in paid work, and reduces in-work poverty by increasing earnings. Similarly, Servaas (2008) indicates, that there is a probability of finding employment rises with higher levels of education, and that earnings are higher for people with higher levels of education.

#### **4.5 The Effects of Livelihoods on the Environment**

Historically, man has depended on the environment for livelihood. The environment has been the main source of man's needs. As a result, the activities of man have effects on the environment. In Ghana more specifically, degradation of environment, particularly forests is assuming an alarming rate (Blay et al, 2009). Deforestation in Ghana is attributed to the livelihood and economic activities including legal and illicit logging, clearing of trees to increase arable land, charcoal and fuel wood production (Boafo, 2013). In the northern part of Ghana, unsustainable charcoal and firewood production, forest fires and agriculture expansion are identified as the major causes of deforestation (Agyeman et al, 2012).

This study also sought to examine the direct effect of the livelihood activities of the heads respondents on the environment. The descriptive and inferential analyses (see Tables 4.8 and 4.9) indicate that the very poor (those who earn less than GH¢100 a month and those without formal education) mostly depend on the environment. Their activities include the production of charcoal and fuel wood from the forest reserve in the District. These activities have direct impact on the environment causing deforestation, forest degradation and fragmentation. Findings from the survey suggest that individuals in the study areas engage in unsustainable methods of production, where trees fell are not replaced. The heads of households emphasized that the use of unsustainable methods of charcoal and fuel production has reduced both the quantity of tree and quality of the forest in general. They also maintained that the recent erratic weather pattern, particularly the lack of rainfall in the District is as a result of deforestation. In addition,

they claimed charcoal production has rendered the soil infertile in some places in the District. However, the study could not substantiate this claim empirically because it was not part of the objectives of the objectives of the study. Therefore, the longterm effect of this is that, the savannah woodlots, which is wood deficient will gradually turn into a desert.

It can be deduced from the discussions that forest reserves in the Kassena-Nankana West District is a significant part of the livelihood of the rural dwellers. Despite playing a significant role in the lives of the people in the District, the effects are also severe and cannot be ignored. In exacerbating their dependence on the forest reserve in the District, community members neglect the protection of the few forest resources available. It was observed that the perennial bush fires had been on the increase in the District. This was confirmed by about 93.8% of heads, which indicated that, perennial bushfires destroy the forest. They attributed the causes of the bushfires to the use of fire for clearing land by farmers, which often escalates. Thus, apart from the rampant hunting activities of community members, it was also observed that these bush fires contribute to the loss of biodiversity in the communities. Results from the survey indicated that about 93.5% of heads of households agreed that their continual dependence on the forest has resulted in the loss of biodiversity in their communities. This practice they claimed has resulted in some animals such as grass-cutter becoming extinct.

Operationally, the sustainable livelihoods framework (see Figures 2.1 and 2.2 pages 44 and 45) indicates that most of the heads of households survive because of the help of key environmental services and food produced from natural capital. However, unsustainable extraction of this natural capital has consequences for the human capital through natural disasters such as forest fires. This is exactly the case in the Kassena-Nankana West District.

Similarly, Ananget et al. (2011) identified that deforestation, diminishing wildlife population, bush fires and nutrient depletion were the critical environmental effects of charcoal

production in the Gushegu District of the Northern Region. In a related study in the Wa East, Sissala East and Sissala West Districts of the Upper West Region, Lurimuah (2011) emphasised that the key drivers of forest change are bush fires, charcoal activities, grazing and land preparation for farming.

# KNUST



## **CHAPTER FIVE 5.0 SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS 5.1 Introduction**

The exploitation of environmental resources, particularly trees have contributed to poverty alleviation in many regards. Despite this, the livelihood activities of the poor have adverse effects on the environment. Most researches have focused on the positive contribution of these environmental resources to poverty alleviation relegating the impacts of these livelihood activities on the environment to the background. As a result, the study aimed to examine the effects of poverty on environmental sustainability in the Kasena-Nankana West District of the Upper East Region.

The study was guided by three objectives. It sought to examine the levels of poverty in the Kassena-Nankana West District. Secondly, the study examined the livelihood activities of the people in the Kasena-Nankana West District. Finally, it assessed the effects of the livelihood activities of the people on the environment in the Kassena-Nankana West District.

A total of 370 households were selected randomly. The PPA through focus group discussion, and questionnaires were the main method and tool respectively used for data collection. In analysing the quantitative data, both descriptive and inferential statistical tools were used while data from the focus group discussion was analysed using the content analysis approach, which included drawing valid conclusions from qualitative data.

### **5.2 Summary of Main Findings**

The prevalence of poverty in the study area was high and the situation becomes severe during periods where they experience poor harvest from farming. This increases their dependence on the savannah forest for their livelihood as a coping strategy. The effect of this on the savannah forest is devastating on the already sparsely populated vegetation. Detailed discussions of the findings have been outlined below.

### **5.2.1 The levels of household poverty**

The incidence of poverty was found to be very prevalent in the Kassena-Nankana West District. According to the qualitative data, central to the perception of poverty is the lack of a sustainable source of income. This influenced the other perceptions of poverty such as inability to pay children's school fees, purchase farm input and afford three square meals a day. Farming, which is a major occupation does not bring all year round income due to its seasonality. In this connection, poverty has been associated with farming in the study communities. This is also evident when; fluctuating seasons, erratic rainfall pattern, infertile land and lack of irrigation are the major causes of poverty in the District. Results from the survey indicated that, about 74% of the households earn far below the Monthly Minimum Wage, and are considered very poor (see Table 4.5). Moreover, as a result of the deplorable conditions offered by farming, the heads tend to depend directly on the environment for their livelihoods.

### **5.2.2 Environmentally based livelihood activities of households**

The major livelihood activities of the heads of households are farming, with over 90% of them engaged in it. However, farming does not offer them the best socio-economic conditions. As a result, they have also resorted to deriving other livelihoods directly from the environment. This includes the production of charcoal and fuel wood. It is key to note that some of the heads are engaged in the commercial production of charcoal and fuel wood to supplement their income from farming which is considered woefully inadequate. Estimates suggest that, 72% of the heads depend on the environment directly. In fact, it could be mentioned that most of these heads are those classified as the very poor according to the study. Thus, the felling of trees for charcoal and fuel wood production are the major environmentally based livelihood activities in the communities.

### **5.2.3 Effects of the environmentally based livelihood activities**

All environmentally based livelihood activities such as fuel wood and charcoal production, legal and illicit logging as well as clearing of trees to increase arable land have adverse effects on the environment such as deforestation (Boafo, 2013). This situation is not different in the Kassena-Nankana West District, where the environmentally based livelihood activities of respondents is detrimental to the environment. The major impact of charcoal and fuel wood production in the study area is deforestation; forest degradation and fragmentation. In addition to the disastrous effect of felling down of trees for fuel wood and charcoal production, bush fires do occur in the process of producing charcoal. This has had a significant impact on forest reserves in the District. The long-term impact of this includes loss of soil fertility, loss of biodiversity, soil erosion and loss of the aesthetic value of the forest that poses a great risk to environmental sustainability in the District.

### **5.2 Conclusion**

From the study, it can be concluded that there is a relatively high incidence of poverty in the district. This is due to the fact that majority of respondents engage in subsistent farming. Farming is done once in a year and farming according them does not give them reliable and sufficient income because farmers are faced with the problem of erratic rainfall pattern coupled with the lack of farm inputs. The poverty situation in the district becomes severe if there is poor harvest from farming and the consequence of this is increase in the felling of trees for fuel wood and charcoal production for sale.

Apart from resident government workers such as teachers and nurses, almost all the respondents of the study were engaged in farming as their main livelihood activity with just a few of them who are engaged in hunting. It was also revealed that even though a few of them were in charcoal production as their main livelihood activity, majority of respondents engaged in commercial production of fuel wood and charcoal as a secondary livelihood activity.

Livelihood activities such as fuel wood and charcoal production was widely and largely conducted in the off-farm season as a secondary livelihood activity. This category of people explained that, they only engaged in fuel wood and charcoal production because of poverty and they emphasized that those who are non-poor do not engage in fuel wood and charcoal production.

The impact of the livelihood activities of the people on the forest is devastating considering the fact that the regions vegetation is the Guinea Savannah vegetation which had scattered trees and tall grasses. The clearing of virgin lands for farming activities, the cutting down of trees for fuel wood and charcoal production and the burning of bushes for hunting negatively impact the forests and the environment as a whole. Observation of the savannah forest revealed that the forest is being depleted at a faster rate. Furthermore, the Chi-square statistical analysis (refer to Table 4.8 and 4.9) indicates that there is a strong relationship between levels of income and education, and dependence on forest. The findings indicated that, the very poor depend mostly on the environment by felling trees for charcoal and fuel wood production (see Table 4.8 and 4.9) Thus, the very poor earn far below the Monthly Minimum Wage (see Table 4.6) and therefore resort to the commercial production of charcoal and fuel wood, which degrades the environment through deforestation, forest degradation and fragmentation.

In summary, it can therefore be concluded that, there was a high incidence of poverty in the Kasena-Nankana West District. This incidence resulted in a high dependence of the community members on the forest reserves as a coping strategy. Subsequently the over dependence of the community members on the forest reserves negatively affected the forest and the environment as a whole.

In practical terms, the study has made a significant contribution on providing relevant data on the levels of household poverty, the livelihood activities of households and the effects of the

environmentally based livelihood activities of the poor in the Chiana, Katiu, Nakong and Kayoro communities in the Kassena-Nankana West District. The study has also sensitized community members on the devastating effect of livelihood activities such as the felling of trees for fuel wood and charcoal production on the environment and has therefore engaged stakeholders at the community level on the need to adopt sustainable methods of charcoal and fuel wood production. This will provide an alternative source of income to households and at the same time ensure environmental sustainability.

The study which was conducted in the Kassena-Nankana West District examined the effects of the livelihood activities of the poor on the savannah forest. The study has therefore contributed to the myriad of literature on the meaning and concept of poverty by capturing the perceptions of the rural poor on the meaning and concept of poverty as well as its causes and manifestations in the KNWD. The study has also contributed to the existing intellectual debate on the poverty-environment nexus. It has brought to bear the interactions and interconnection that exist between the poor and their environment in the KNWD and the rural poor as a whole. Thus in order to promote environmental sustainability in the Kassena Nankana West District, the following recommendations have been proposed.

### **5.3 Recommendations**

#### **5.3.1 Introduction of alternative livelihoods**

The level of poverty in the Kassena-Nankana West District is high and calls for immediate actions from concerned institutions. Therefore, the District Assembly and NGOs in collaboration with government should introduce some poverty reduction programmes such as the Rural Enterprises Programme, Local Entrepreneurial Skills Development Program (LESDEP) and Ghana Youth Employment and Entrepreneurship Development Agency (GYEEDA) to build the capacity of the communities to engage in alternative livelihood activities. These activities should include commercial rearing of goats, cattle, sheep, and guinea

fowls. This will improve the economic conditions of the households and reduce their direct dependence on the environment. In a similar way, the DFID (1999) emphasises the processes as a function of the structures of the sustainable livelihoods framework (see Figure 2.1). In this case, the District Assembly, which is the structure, can make the processes (Rural Enterprises Programme, LESDEP and GYEEDA) work to benefit households in the KasenaNankana West District of the Upper East Region.

### **5.3.2 Construction of irrigation facilities**

The major livelihood activity in the study communities is farming and related activities. However, farming does not provide all year round income due to its seasonality and the high cost of farm inputs currently. Therefore, the Ministry of Food and Agriculture and other development organizations such as NGOs should promote and develop irrigational technologies to tap water from the White Volta for farming in the communities. The construction of dams for extending irrigation water in the various communities by the district assembly will promote dry season gardening in the district. This will enable the inhabitants in the District to farm throughout the year to earn regular income that will support their households.

### **5.3.3 Provision of subsidy and credit facilities**

The government, through the Ministry of Agriculture, should increase its subsidy on farm inputs to rural subsistent farmers. This will enable farmers in the district to be able to purchase enough farm inputs to increase their farm produce. In addition to the subsidy, the government should encourage the Rural Enterprises Project and the District Assembly through the Poverty Alleviation Fund to give credit to farmers in the district. When this is ensured, it will increase the productivity of farmers, hence the living conditions of the households will improve considerably. As a consequence, it will also reduce their direct dependence on the environment to restore the richness and quality of the environment in the District.

#### **5.3.4 Adoption of Sustainable Methods of Charcoal and Fuel wood Production**

The Ministry of Trade and Industry through its agencies at the local government units should consider commercializing the production of charcoal and fuel wood in Ghana. Through this the government can regulate the production activities to ensure that it is done sustainably. This will also call for the adoption of sustainable methods of production that will have minimal impacts on the ecological environment.

#### **5.3.5 Introduction of re-afforestation and afforestation programs**

The Forestry Commission through the Forest Services Division should collaborate with local NGOs such as GNADO as well as the community members to embark on massive re-afforestation and afforestation to restore the degraded forest reserve in the District and to provide alternative sources of wood for charcoal and fuel wood production. Besides, the Forest Service Division should enforce the forest bye-laws on illegal logging and indiscriminate felling down of trees in the forest reserve (see Figure 2.2). This will strengthen efforts aimed at curbing deforestation and restoring ecological dignity in the District.

#### **5.3.6 Recommendation for further research**

This study also examined the effects of the livelihood activities of the poor on the savannah forest in the Kassena-Nankana West District. However the forest is just an aspect or component of the environment. In order to have a holistic perspective on the impact of poverty on the environment, the researcher recommends that further research should be conducted on the effects of poverty on the other aspects of the environment.

### **REFERENCES**

- Adjei, P. O.W. (2008). The impact of poverty on the health of rural communities in Ghana: a case study of the Amansie West District, Ashanti Region. Unpublished PhD thesis
- Aggarwal, R. (2006). *Exploring the link between environmental degradation, poverty and fertility among rural households: some conceptual issues*, available at

<http://www.populationenvironmentresearch.org/seminars.jsp> (accessed 20 September, 2011).

Aggrey, N. S., Wambugu, S., Karugia, J., and Wang, E. (2010), "An investigation of the poverty-environmental degradation nexus: a case study of the Katonga Basin in Uganda", *Research Journal of Environmental and Earth Sciences* 2(2): pp 82-88.

Agyeman, K. O., Amponsah, O., Braimah, I., and Lurumuah, S. (2012). "Commercial Charcoal Production and Sustainable Community Development of the Upper West Region, Ghana." *Journal of Sustainable Development, Vol. 5 (4)*.

Agyemang I, McDonald A, Carver S (2007). Application of the DPSIR Framework to Environmental Degradation Assessment in northern Ghana. *Nat. Resour. Forum*, 31: 212-225.

Agyemang, I. (2011), "Analysis of the socio-economic and cultural implication of environmental degradation in Northern Ghana using qualitative approach". *African Journal of History and Culture*. Vol. 3(7), pp113-122.

Ahmed, F. (2004), "Practices of Poverty Measurement and Poverty Profile of Bangladesh", ERD Working Paper No. 54, Asian Development Bank, Manila Philippines, August 2004.

Aigbokham, B. E. (2008), "Growth, Inequality and Poverty in Nigeria", ACGS/MPAMS Discussion Paper No. 3, Economic Commission for Africa, Addis Ababa, Ethiopia, February, 2008.

Al-Hassan and Poulton, (Jan. 2009), *Agriculture and Social Protection in Ghana*. Growth and Social Protection working paper 04. Centre for Social Protection.

Ambler, J. (1999), Attacking poverty while improving the environment: toward win-win options. Paper prepared for September 1999 Forum of Ministers meeting under the UNDP-EC Poverty and Environment Initiative.

Amikuzuno, J. and Hathie, I. (2013). *Climate change implication for smallholder agriculture and adaptation in the White Volta Basin of the Upper East Region of Ghana*. Impacts World 2013, International Conference on Climate Change Effects, Potsdam, May 27-30.

Anang, B. T., Akuriba, M. A. and Adongo A. A. (2011). Charcoal production in Gushegu District, Northern Region, Ghana: Lessons for sustainable forest management.

- Atkinson, A. (1983). *Social Justice and Public Policy*, MIT Press, Cambridge, MA, USA.
- Atkinson, A. (1989). *Poverty and Social Security*, Harvester Wheatsheaf, Hemel Hempstead, UK.
- Baker, J. and Schuler, N. (2004), ``*Analyzing Urban Poverty. A Summary of Methods and Approaches*'' working paper 3399, World Bank, Washington, D.C. September, 2004.
- Baland, J. M. and Platteau, J. P (1996) *Halting degradation of natural resources: is there a role for rural communities?*, Oxford: Clarendon press for FAO
- Bauer, A., Hasan, R., Magsombol, R. and Wan, G. (2008), *The World Bank's New Poverty Data; Implications for the Asian Development Bank*. ADB Sustainable Development Working Paper Series.
- Bellu, L. G. and Liberati, P. (2005), ``*Impacts of policies on poverty. Relative poverty lines*'' , Module 006, Food and Agricultural Organization of the United Nations, November 2005.
- Berry, S. (1989) "Social institutions and access to resources", *Africa* 59:1 41-55
- Blanden J. and Gregg, P. (2004). *Family Income and Educational Attainment: A Review of Approaches and Evidence for Britain*. CMPO Working Paper Series No. 04/101.
- Blay, D., Dwomoh, F. K., Damnyag, L. (2009). *Assessment of Forest Degradation by Local Communities: The Case Study of Ghana*. Food and Agriculture Organization of the United Nations. Forestry Department
- Boafo, J. (2013). *The Impact of Deforestation on Forest Livelihoods in Ghana*. Africa initiative Background paper No. 49.
- Boccanfusco, D. (2004), *A Conceptual Framework for Approaches to Poverty, an Overview Paper*. Int Development Research Centre (IDRC) Workshop. February 18-20, 2004. Dakar- Senegal.
- Bourne, C. (2005), ``*Poverty and its alleviation in the Caribbean*'' Alfred O. health distinguished speakers" forum, March 14, 2005, University of the Virgin Lands, pp. 5-6.
- Boyce, J. K. (1994). "Inequality as a Cause of Environmental Degradation". *Ecological Economics* 11(3).

- Bradshaw, T.K. (2006), Theories of Poverty and Anti-Poverty Programs in Community Development. RPRC Working Paper No. 06-05. February, 2006.
- Broad, R. (1994) "The poor and the environment: friend or foes?", *World Development* 22:6 811-822
- Brown, L.; Flavin, C. and French, H. (1998) *State of the World: 1998*, The Worldwatch Institute, London and New York: W.W. Norton
- Canagarajah, S and Pörtner, C.C (2003). *Evolution of Poverty and Welfare in Ghana in the 1990s: Achievements and Challenges*. Africa Region Working Paper Series No. 61
- Chambers, R. (1992). Rural appraisal: Rapid, relaxed, and participatory. Institute of Development Studies Discussion Paper 311. Sussex:HELP
- Chambers, R. (1997), *Whose Reality Counts? Putting the First Last*. London, Intermediate Technology Publications.
- Chambers R (1994) The origins and practice of participatory rural appraisal, *World Dev.*, 22(7): 953-969
- Chao (2012). Forest people: Numbers across the world. Forest Peoples Programme.[http://www.forestpeoples.org/sites/fpp/files/publication/2012/05/forestpeoples-numbers-across-world-final\\_0.pdf](http://www.forestpeoples.org/sites/fpp/files/publication/2012/05/forestpeoples-numbers-across-world-final_0.pdf)
- C.I.H.I., (2003): *Poverty and Health: Links to Action Proceeding Report* (Canada: CPHISPS)
- DFID (1999) *Sustainable Livelihood Guidance Sheets*. London: Department for International Development.
- Donkor, K., (1997): *Structural Adjustment and Mass Poverty in Ghana*. England: Ashgate Publishing Ltd pp.206-213.
- Durning, A. (1989) "Poverty and the environment: reversing the downward spiral, Worldwatch paper 92, Washington D.C.: Worldwatch Institute
- Duraiappah, A. (1996), ``*Poverty and Environmental Degradation: A Literature Review and Analysis*"" CREED Working Paper Series No 8, Collaborative Research in the Economics of Environment and Development, London, October 1996, pp1-7.

- Duraiappah, A. (1996). *Poverty and Environmental Degradation: a Literature Review and Analysis*. CREED Working Paper Series No 8
- Eckholm, E. (1976) *Losing ground: Environmental stress and food problems*, W.W. Norton, New York
- Edward, P. (2009). *The Ethical Poverty Line: a moral quantification of absolute poverty*. Third World Quarterly, Vol. 27, No. 2.
- Essam, E. L., and Manzur, H. H. (1987). *The state of the environment*, UNEP, Nairobi, Kenya.
- Esty, D. C., Levy, M., Srebotnjak, T., and Sherinin de A. (2005), ``2005 Environmental Sustainability Index: Benchmarking National Environmental Stewardship'', New Haven, Yale Center for Environmental Law and Policy, pp.11-12
- Eurostat, (2000), *The measurement of absolute poverty*. Final report for Eurostat, Social Policy Research Unit, University of York, York (E2/SEP/14/2000).
- Fahey, T. (2010), ``Poverty and the two concepts of relative deprivation'' working paper 10/1, University College Dublin, Belfield Dublin 4, July 2010.
- Food and Agricultural Organization of the United Nations (2005), *Impacts of Policies on Poverty, The Definitions of Poverty*.
- Forssyth, T., Leach, M. and Scoones, I. (1998), ``Poverty and environment: priorities for research and policy. An overview study'', Institute of Development Studies, Falmer, Sussex BN1 9RE, UK, September, 1998, pp 10-25.
- Fusco, A. (2003), ``on the definition and measurement of poverty: The contributions of multidimensional analysis'', 3<sup>rd</sup> Conference on the Capability Approach: From Sustainable Development to Sustainable Freedom, University of Pavia, 7-9 September, 2003.
- Ghana Living Standards Survey (2000), Report of the Fourth Round, Ghana Statistical Service.
- Ghana Statistical Service (2000): Poverty trends in Ghana in the 1990's (Ghana: GSS, 2000) pp.1-9.
- Ghana Statistical Service (2006), ``Pattern and Trends of Poverty in Ghana (1991- 2006)'', GSS, Accra, Ghana
- Ghana Statistical Service (2007), *Patterns and Trends of Poverty in Ghana, 1991-2006*. Ghana Statistical Service, Accra.

GNADO (2004) GIA/NABIO Agro-forestry Development Organization (GNADO) [online], GNADO.ORG. Available from: < [http://www.gnado.org/tvee\\_nrsry.htm](http://www.gnado.org/tvee_nrsry.htm)> [2005-04-29].

Government of Ghana and UNDP (2010), 2008 Millennium Development Goals Report, April 2010

Gomez, B. and Jones, J. P. (2010), *Research Methods in Geography. A Critical Introduction*. John Wiley and Sons Ltd, Wiley Blackwell, ISBN 978-4051-0710-5. West Sussex, P01985Q, UK

Gordon, D. (2000) *Income and Social Deprivation*

Gordon, D. (2000) *Poverty and Health/Disablement*

Gordon, D. (2000), *Poverty and Social Exclusion in Britain*, York: Joseph Rowntree Foundation.

Gordon, D. (2005), "*Indicators of Poverty and Hunger*" Expert group meeting on youth development indicators, United Nations Headquarters, New York, 12-14 December, 2005.

Gordon, D. (2005), *Indicators of poverty and Hunger. Expert Group Meeting on Youth Development Indicators*. United Nations Headquarters, New York. 12<sup>th</sup>-14<sup>th</sup> December, 2005.

Gordon, D. and Townsend P. (2000). *BreadlineEurope: The Measurement of Poverty*. Bristol Policy Press.

Gordon, D., Levitas, R., Pantazis, C., Patsios, D., Payne, S., Townsend, P., Adelman, L., Ashworth, K., Middleton, S., Bradshaw, J., & Williams, J. (2000). *Poverty and social exclusion in Britain*. Joseph Rowntree Foundation: York, UK.

Hardoy, J.; Mitlin, D. and Satterthwaite, D. (1992) *Environmental problems in Third World cities*, London: Earthscan

Hashim, S. M (1998) *Income Inequality and Poverty in Malaysia*. Boston: Rowman & Littlefield Publishers, Inc.

- Hulme D, Moore k and Shepherd A. (2001), ``*Chronic poverty: meaning and analytical frameworks*`` CPRC working paper 2, Chronic Poverty Research Centre, Birmingham, July 2001.
- Hulme, D. et al (2001), ``*Chronic poverty: meanings and analytical frameworks*`` , CPRC working paper 2, Chronic Poverty Research Centre, United Kingdom, July 2001.
- Hulme, D., Moore, K., and Shepherd, A. (2001), *Chronic Poverty; Meaning and Analytical Frameworks*. CRPC working Paper 2 ISBN Number: -904049-01-X
- IMF (2007) *The Gambia: Poverty Reduction Strategy Paper*. New York: International Monetary Fund
- IMF (2010) *Pakistan: Poverty Reduction Strategy Paper*. Washington DC: International Monetary Fund
- Jalal, K.F. (1993), *Sustainable Development, Environment and Poverty Nexus*. Occasional Papers No.7. Asian Development Bank.
- Kanbur,S. R. (2001),*Economic Policy, Distribution and Poverty: the Nature of Disagreemnets*, Ithaca, Cornell University, January.
- Kanbur, R. (2002), *Conceptual Challenges in Poverty and Inequality: One Development Economists Perspective*. Department of Applied Economics and Management: Cornell University.
- Kamanou, G. Morduch, J., Isidoro, P.D., Gibson, J., Havinga, I., Ward, M., Kakwani, N., Hyun, H.S., Glewwe, P., Bamberger, M., Grootaert, C. and Reddy, S. (2005), ``*Hand Book on Poverty Statistics: Concepts, Methods and Policy Use*`` , Special Project on Poverty Statistics, United Nations Statistics Division.
- Kasperson, J.; Kasperson, R. and B.L. Turner II (1996) ``Regions at risk: exploring environmental criticality,`` *Environment* 38:10 6-27
- Kendie, S.B. and Martens (editors) (2008). *Governance and Sustainable Development*. CapeCoast: Marcel Hughes.
- Kollmair, M & Gamper, S (2002), *Input Paper for the Integrated Training Course of NCCR North South Aeschried*, Switzerland Compiled by Development Study Group, University of Zurich (IP6).
- Kyei, P.O. (2005): *Crawling Out of Poverty: Nadowli Women and Poverty Alleviation Under the Decentralized System in Ghana* (Lecture Series on Poverty at the Department of

Geography and Rural Development, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana)

- Laderchi, R. C., Saith, R. and Stewart, F. (2003), ``*Everyone agrees we need poverty reduction, but not what this mean: does this matter?*''", paper for WIDER conference on inequality, poverty and human well-being, Helsinki, 30-31 May 2003 pp 25.
- Leach, M. and Mearns, R. (1991) Poverty and environment in developing countries: an overview study, report to the Economic and Social Research Council Society and Politics Group and the Global Environmental Change Initiative Programme, and the Overseas Development Administration (DFID), Brighton: IDS
- Lister, R. (2004) Poverty. Cambridge: Cambridge University Press.
- Lurimuah, S. (2011).*The economic and environmental effects of commercial charcoal production in the Upper West Region of Ghana*. Unpublished Master Thesis, KNUST.
- Marchetta, F. (2011). *Livelihood Strategies in Northern Ghana*. CERDI, Etudes et Documents, E 2011.13. Available at. <http://www.cerdi.org/uploads/ed/2011/2011.13.pdf>
- Masika, R. and Joekes, S. (1997), ``*Environmentally sustainable development and poverty: a gender analysis*''", BRIDGE report No. 52, Institute of Development Studies, University of Sussex, Brighton BN 1 9RE, UK, October 1997, pp. 1-4.
- Masika, R. and Joekes, S. (1997), ``*Environmentally sustainable development and poverty: a gender analysis*''", BRIDGE report No. 52, Institute of Development Studies, University of
- Middleton, S (2006). Poverty policy in the UK. Notes prepared for a meeting with the Chair of the All Party Parliamentary Group on Poverty, Centre for Research in Social Policy, UK.
- Miller, G. T., Spoolman, S.E (2008) *Sustaining The Earth: An Integrated Approach*. Belmont: Cengage Learning Publishers, Inc.
- Nanan, F., Grant, U., Bahiigwa, G., Muramira, T., Bajracharya, P., Pritchard, D. and Vargas, M. J. (2002), ``*Poverty and the environment: measuring the links. A study of povertyenvironment indicators with case studies from Nepal, Nicaragua and Uganda*''", Issue paper No.2, Environment Policy Department, DFID February, 2002.
- Narain, U., Gupta, S.andVeld, K. (2005). *Poverty and the Environment: Exploring the*

*Relationship between Household Incomes, Private Assets, and Natural Assets May.*  
2005 Discussion Paper 05-18

Narayan, D. et al (2000) *Voices of the Poor: Can Anyone Hear Us?* Washington DC: World Bank.

National Development Planning Commission (NDPC) and United Nations Development Programme (UNDP) Ghana, (2010), *2008 Ghana Millennium Development Goals Report*, April 2010, pp 11.

National Development Planning Commission (NDPC) and United Nations Development Programme (UNDP) Ghana, (2010), *2008 Ghana Millennium Development Goals Report*, April 2010, pp 11.

National Development Planning Commission (NDPC), (2010), *The implementation of the Growth and Poverty Reduction Strategy (GPRS 11) 2006-2009*, 2009 Annual Progress Report, September, 2010 pp. 20.

Nunan, F., Grant, U., Bahiigwa, G., Muramira, T., Bajracharya, P., Pritchard, D., and Vargas, J.m. (2002), *Poverty and the Environment: Measuring the Links. A study of PovertyEnvironment Indicators with case studies from Nepal, Nicaragua and Uganda.* Environment Policy Department, Issue Paper No.2 February, 2002.

Nunes, C. (2008), *“Poverty measurement: the development of different approaches and its techniques”* ECINEQ 2008-93, Society for the Study of Economic Inequality, Madeira University, Portugal, August 2008.

Nussbaum, M. (1999) *Sex and Social Justice*, Oxford: Oxford University Press.

Nyasulu, G. (2010), *“Revisiting the definition of poverty”*, Journal of Sustainable Development in Africa, Vol.12 No. 7 pp 148-149.

OECD (2001), *“Poverty-Environment-Gender Linkages”*, Off-Print of the DAC Journal 2001, Volume 2, No.4, pp. IV-3 – IV-8.

Okidi, A. and Mugambe, K. (2002), *“An overview of chronic poverty and development policy in Uganda”*, CPRC working paper 11, Economic Policy Research Centre, Kampala, January 2002.

Oluoch-Kosura, W., Marenja, P., Place, F. and Barret, C. B. (2004), *Indices and Manifestations of Poverty: Informing anti-poverty Policy Choices. Paper for Building Qualitative and Quantitative Methods of Poverty Analysis.* KIPPRA, Nairobi, Kenya. 11 March, 2004. USAID SAGA Project-Cornell.

- Philip, D. and Rayan, I. (2004), Vulnerability and poverty: What are the causes and how are they related? Term paper for Interdisciplinary Course, International Doctoral Studies Program at ZEF, Bonn, November 2004.
- Phipps, S. (2003), The Impact of Poverty on Health. A scan of Research Literature. Canadian Institute of Health Information (CIHI). 377 Dalhousie Street, Suite 200 Ottawa, ON K1N9N8
- Ravallion, M. (1998), Poverty Lines in theory and practice. Living Standards Measurement Study. Working Paper No.133, Washington, DC. World Bank.
- Ravallion, M. (2008), Bailing Out the World's Poorest. Policy Research Working Paper 4763. The World Bank. Development Research Group. P1-25. 1818 H street Washington Dc 20433, USA.
- Ravnborg, H. M. (2003). *Poverty and Environmental Degradation in the Nicaraguan Hillsides*. World Development Vol. 31, No. 11, pp. 1933–1946,
- Robb, C. (1999), *Can the poor influence poverty? Participatory Poverty Assessment in the developing countries* "", Washington D.C. World Bank.
- Roe, D. and Elliot, J. (2005), Poverty-Conservation Linkages: A Conceptual Framework. Poverty and Conservation learning Group. International Institute for Environment and Development (IIED). 3 English Street, London WC1H0DD, UK.
- Rynell, A. (2008), *Causes of poverty: findings from recent research* "", The Heartland Alliance, Mid-America Institute on Poverty, October 2008.
- Sarlo, C. (2001). *Measuring Poverty in Canada*. The Fraser Institute.
- Schelzig, K. (2005) *Poverty in the Philippines: Income, Assets, and Access*. Mandaluyong: Asian Development Bank
- Seitz JL (1995). *Global issues. An Introduction*, Blackwell Publishers
- Sen, A. (1981) *Poverty and Famine* (USA: Clarendon Press)
- Sen, A. (1983), Poor, relatively speaking. Oxford Economic Paper 35, 153-69
- Sen, A. (1987a) *Hunger and Entitlements*. Amsterdam: North Holland Press

- Sen, A. (1999) *Development as Freedom*, Oxford: Oxford University Press.
- Sharpe, A. (2001), ``*Estimates of Relative Absolute Poverty Rates for the Working Population in Developing Countries*''', Centre for the Study of Living Standards, June 1-3, 2001, Montreal, Quebec, pp 5-10.
- Shekhar, S., Quentin, W., and Martin, R. (1999) *Bangladesh: From Counting the Poor to Making the Poor Count*. World Bank Publications.
- Scherr, S. J. (1999) Poverty-environment interactions in agriculture: key factors and policy implications. Paper prepared for September 1999 Forum of Ministers meeting under the UNDP-EC Poverty and Environment Initiative.
- Sida. (1995), *Promoting Sustainable Livelihoods: a Report from the Task Force on Poverty*, Stockholm: Sida
- Sida. (1996), *Promoting Sustainable Livelihoods: A Report from the Task Force on Poverty Reduction*, Stockholm: Sida
- Somanathan, E. (1991). Deforestation, Property Rights and Incentives in Central Himalayas. *Economic and Political Weekly* January 26th
- Sutton, P. (2004), ``*Living well within our environment. A perspective on environmental sustainability?*''', A paper for the Victorian Commissioner for environmental sustainability, parliament of Victoria, 12 April, 2004, pp1-11.
- Townsend, I. and Kennedy, S. (2004), ``*Poverty: Measures and Targets*'' research paper 04/23, House of Commissions Library, Derby Gate, London, 4 March.
- Townsend, P. (1979), *Poverty in the United Kingdom: A Survey of Household Resources and Standards of Living*, Berkeley: University of California Press.
- Townsend, P. (2006). *What is poverty? Concepts and measures: An historical perspective*. International Poverty Centre. Poverty in Focus
- UN (2001) *Poverty and the International Covenant on Economic, Social and Cultural Rights*, UN Committee on Economic, Social and Cultural Rights, E/C.12/2001/10, New York: United Nations.
- UNEP (1995), *Poverty and the Environment: Reconciling Short-term Needs with Long-term Sustainability Goals*, Nairobi: UNEP

- UNDP (2005), *“Sustaining the environment to fight poverty and achieve the MDGs: the economic case and priorities for action”*, One United Nations Plaza, New York, NY 10017, September, 2005.
- UNDP (2006), *“Making progress on environmental sustainability: lessons learnt from a review of over 150 MDG country experiences”*, Environment and Energy Group, Bureau for Development Policy, October 2006.
- UNEP. 1995. *Poverty and the Environment. Reconciling Short Term Needs with Long Term Sustainability Goals*. Kenya: UNEP
- UN General Assembly (2000), *United Nations Millennium Declaration (Resolution Adopted by the General Assembly 55/2, New York)*.
- UNIDO (2004), *Industrial Development Report 2004: Industrialization, Environment and the Millennium Development Goals in Sub-Saharan Africa: The New Frontier in the Fight against Poverty*, UNIDO, Vienna
- UN Millennium Project (2005), *Investing in Development: A Practical Plan to Achieve the Millennium Development Goals, Overview* (New York: United Nations, 2005)
- Vedeld, P., Angelsen, A., Sjaastad, E and Kobugabe, G. B. (2004). *Counting on the Environment Forest Incomes and the Rural Poor*. Environmental Economies Series. Paper No. 98
- Whitehead, A. (2004), *Persistent Poverty in Upper East Ghana*. Collaborative Research Support Program. BASIS BRIEF, November, 2004. P 1-4. University of Sussex, UK.
- Wooland, I. and Leibbrandt, M. (1999), *“Measuring Poverty in South Africa”*, working paper number 99/33, Development Policy Research Unit, University of Cape Town, Cape Town, October 1999.
- World Bank (1992), *World Development Report: Development and the Environment*, Oxford University Press, New York, 1992.
- World Bank (1999), *Ghana and the World Bank*, Washinton D. C.: The Woeld Bank Group.
- World Bank (2002). *A Sourcebook for poverty reduction strategies*. Volume 1: Core Techniques and Cross-Cutting Issues. The World Bank. Washington DC
- World Bank (2006), *The Republic of Ghana Joint IDA-IMF Staff Advisory Note of the Growth and Poverty Reduction Strategy and 2004 Annual Progress Report*, April 21, 2006.

World Bank (2007): Regional Facts Sheet from the World Development Indicators: Sub-Saharan Africa . www.scoop.co.nz

World Bank (2008), ``Environmental sustainability. An evaluation of the World Bank group support''', 1818 H Street NW, Washington, DC 20433.

World Bank (2008), *Poverty data, A supplement to World Development Indicators 2008*, Washington, D.C.

World Bank (2009), *Swimming against the tide: How developing countries are coping with the global crisis* , Washington, DC

World Bank (April, 1995), *Ghana Poverty Past, Present and Future*.

Yemiru, T., Roos, A., Campbell, B.M. and Bohlin, F. (2010). *Forest incomes and poverty alleviation under participatory forest management in the Bale Highlands, Southern Ethiopia*.

## APPENDICES APPENDIX A QUESTIONNAIRE

### ASSESSING THE IMPACT OF POVERTY ON ENVIRONMENTAL SUSTAINABILITY IN THE KASENA-NANKANA DISTRICT

The researcher is an MPhil Student from the Kwame Nkrumah University of Science and Technology. All information requested from participants is meant solely for research purposes and would be treated as confidential. In order to ensure the veracity of the research findings, please endeavour to furnish the researcher with accurate data.

#### PART I- DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLDS

Please tick (✓) the appropriate response of each question.

Q1. Respondent's relation with head of household? a. Head  b. Spouse  c. Daughter/Son  d. Parents  e. Other (Please Specify)  .....

Q2. Gender of Household Head a. Male  b. Female

Q3. Age of Household Head a. <18  b. 18-30  c. 31-50  d. 51-70  e. 70+

Q4. Marital Status of Household Head a. Married  b. Single  c. Widow/Widower  d.

Divorced

Q5. What is the educational level of Household Head? a. No formal education  b. Primary   
c. JHS/Middle School  d. SHS/Tech/Voc  e. Tertiary  f. other (Please Specify)

.....

Q6. Type of Household a. Single  b. multiple  c. couple only  d. couple with children   
e. Extended Family

Q7. Size of Household a. 1  b. 2  c. 3  d. 4  e. 5  f. 6 or more

Q8. Please Indicate the name of your community .....

## PART II-INCOME

Q9. What is the average monthly income of the household a. <GH¢100  b. GH¢101-200   
c. GH¢201-300  d. GH¢301-400  e. GH¢401-500  f. >GH¢ 500

Q10. How would you describe the adequacy of your monthly income a. adequate   
b. inadequate ?

Q11. Do you receive any remittance from relatives or non-relatives who are not part of your household? a. Yes  b. No

Q12. If yes, how often do you receive the remittance? a. Daily  b. Monthly  yearly  d.  
Other (Please Specify)  .....

Q13. How much on average do you spend on the following within a month? a.  
Food..... b. Water..... c. Rent..... d. Electricity and Water  
Bills..... e. Energy (Charcoal, firewood, LPG) ..... f. Health  
Care..... g. Other.....

Q14. Are you able to financially meet all your monthly expenditure a. Yes  b. No

Q15. If No, how do you meet them? a. Borrow  b. Beg  c. Credit Purchasing  d.  
Manage without them  e. Other (Please Specify)  .....

**PART III- The Incidence of Poverty in the Kasena-Nanakana West District**

Q16. Please tick (✓) the appropriate response for each question.

<b>Health and Nutrition</b>				
Have there been any shortages of food for more than 1 month during the past 12 months?	Yes	No		
Does your household have access to clean drinking water	Yes, but only sometimes	No	Yes, always	
In the event of sickness, do members of your household always receive modern medical treatment from a doctor, nurse, midwife, or traditional care	Never	Sometimes	Yes, always	Nobody has been sick during the last 12 months
(PLEASE ASSESS FOR YOURSELF, DO NOT	Below	Standard	Above	

ASK) What is the quality of the respondent's house like?	standard		standard	
Does the household own a satellite dish or a refrigerator?	Yes	No		
<b>Knowledge</b>				
What is the highest level of education among the adult members of your household (including the household head)?	Primary school or lower	Secondary school	High school	Tertiary or Higher
Are there any children aged between 7 and 16 years old in your household attending school (children funded by your household)?	None attend school	Not all attend school	All attend school	
Are there any household members with additional off-farm qualifications (e.g. making handicrafts, carpentry, driving)?	None	One person	More than one person	
Do you consider your household to be poor?	Yes, it is poor	Fairly	No	
<b>Economic Sphere</b>				
How many sources of income do you have?	One	More than one		
Are your Sources of Income Stable	No steady income source	Yes		

How is food sufficiency in your household?	No provisions, sometimes we are unable to buy food	No provisions, but we can always buy food despite difficulties	We never have trouble buying food	We have sufficient provisions to last until the next harvest
How difficult is it to secure business loans from, a CU, microfinance institution or a bank?	Impossible or extremely difficult	Difficult but possible	Easy	Never tried to apply and not interested
<b>Infrastructure and Services</b>				
How difficult is it to get to the nearest secondary school?	Very difficult / impossible	Difficult, but usually possible	Easy	
How difficult is it to get to the nearest health facility (dispensary, community health Centre, village birthing clinic, hospital, village midwife, etc.)?	Very difficult / impossible	Difficult, but usually possible	Easy	
How good are the healthcare services where villagers in your community usually go for treatment?	Poor	Reasonable	Good	
Do you have a health insurance?	No	Yes		
How is your access to communications facilities: telephone, cellular phone?	Very difficult / impossible	Difficult, but usually possible	Easy	

**PART IV- Livelihood Activities of Inhabitants in Kassena-Nanakana West District Q17.**

Please tick your main or primary occupation? Please tick only one

Farming	Teaching
Fuel wood production	Charcoal production
Carpentry	Dressmaking
Herbal Medicine Production	Trading
Food Vending	Hunting
None	Other (Please Specify)

Q18. Please tick your secondary occupation, if any? Please tick only one

Farming	Teaching
Fuel wood production	Charcoal production
Carpentry	Dressmaking

Herbal Medicine Production	Trading
Food Vending	Hunting
None	Other (Please Specify)

Q19. Which of the following have been the most reliable and important sources of income for your household over the past 12 months? (CHOOSE NOT MORE THAN ONE)

Trading	
Civil service or private salary	
Support from family	
Timber or Other forest products	
Handicrafts Services (tradesman, workshop, etc.)	
Store/shop/kiosk	
Farming (vegetables, coffee, livestock,	
Other (please specify)	

Q20. How would you describe your dependence on the forest for your livelihood?

- a. Direct  b. indirect  c. both directly and indirectly  d. none

Q21. Explain your reason above

.....

.....

Q22. How long has your household been dependent on the forest for your livelihood?

- a. <1year  b. 1-5years  c. 6-10years  d. 11-15years  e. >16years

Q23. Do you own land? a. Yes  b.

Q24. Do you farm or is any member of your household part of a farming group? a. Yes  b.

Q25. Are any of your household members a hunter? a. Yes  b.

Q26. Please indicate among the options below the resource that you most likely use for your domestic activities such as cooking.

- a. Gas  b. Electricity  c. Fuel  d. Wood  e. Charcoal  f. other (Please Specify).....

Q27. Please explain the reason for your preference above

.....  
.....

Q28. If you indicated wood fuel in the option above, how do you obtain it for your domestic purposes?

- a. Direct from the forest  b. purchase from the market  c. both direct from the forest and purchase  d. other (please specify).....

Q29. To what extent would you describe your dependence on forest resources in your community?

- a. Very Weak  b. Weak  c. Undecided  d. Strong  f. Very Strong

#### **PART V- Impact of Livelihood Activities on Forest Reserves**

Q30. How much of the natural environment (e.g. forest, lake, river, etc.) around your village is damaged? a. Half or more  b. Less than half  c. None

Q31. During the past 12 months, have any non-timber forest products (e.g. fish, birds, wild animals) been extracted to the extent that they have virtually disappeared?

- a. Yes or there are almost no such products left in our area  b. No

Q32. Have there been any fires in the forest or on land near your village in the past 12 months? (NOT INCLUDING CONTROLLED BURNING OF AND PREPARATION OF FIELDS)

- a. Yes  b.

Q33. What is water quality like in the nearest river or lake? a. Poor  b. Reasonable  c. Good

**Please Indicate the Extent to Which You Agree or Disagree With the Statements Below**

Q34. The continual dependence on the forest for your livelihood has resulted in deforestation of the forest in the district. a. Strongly disagree  b. Disagree  c. Undecided  d. Agree  e. Strongly Agree

Q35. The continual dependence on the forest for your livelihood has resulted in loss of biodiversity from the forest in the district. a. Strongly disagree  b. Disagree  c. Undecided  d. Agree  e. Strongly Agree

Q36. The continual dependence on the forest for your livelihood has resulted in loss of the aesthetic value of the forest in the district. a. Strongly disagree  b. Disagree  c. Undecided  d. Agree  e. Strongly Agree

Q37. The continual dependence on the forest for your livelihood has resulted in loss of soil fertility of the soil within the forest. a. Strongly disagree  b. Disagree  c. Undecided  d. Agree  e. Strongly Agree

Q38. The continual dependence on the forest for your livelihood has resulted in soil erosion in some or most parts of the forest a. Strongly disagree  b. Disagree  c. Undecided  d. Agree  e. Strongly Agree

**PART VI - Sustainable Ways on Minimizing Poverty and ensuring environmental sustainability in the Kassena-Nanakana West District**

Q39. Community members often engage in tree planting activities to replenish lost resources from the forest. a. Strongly disagree  b. Disagree  c. Undecided  d. Agree  e. Strongly Agree

Q40. Community members are often educated on the need to conserve the forest? a. Strongly disagree  b. Disagree  c. Undecided  d. Agree  e. Strongly Agree

Q41. Community members are often engaged in training activities to enable them obtain secondary careers. a. Strongly disagree  b. Disagree  c. Undecided  d. Agree  e. Strongly Agree

Q42. Community members receive support from government and NGOs to help minimize poverty within the district. a. Strongly disagree  b. Disagree  c. Undecided  d. Agree  e. Strongly Agree

Q43. Please explain any efforts that you have observed in your community in the last 6-12 months geared towards minimizing poverty or conserving the environment

.....  
.....  
.....

Q44. Do relevant authorities provide public notice of proposed forest policies, programs, laws, and projects to community members? a. Yes  b. No

### **APPENDIX B INTERVIEW QUESTIONNAIRE**

#### **ASSESSING THE IMPACT OF POVERTY ON ENVIRONMENTAL SUSTAINABILITY IN THE KASENA-NANKANA DISTRICT**

The researcher is an MPhil Student from the Kwame Nkrumah University of Science and Technology. All information requested from participants is meant solely for research purposes and would be treated as confidential. In other to ensure the veracity of the research findings, please endeavour to furnish the researcher with accurate data.

#### **PERSONAL INFORMATION**

1. Position.....  
.....
2. Years in  
Position.....
3. Age.....  
.....
4. Gender.....  
.....
5. Marital  
Status.....

6. Educational Level.....
7. What do you understand by the statement “someone is living in poverty?”  
.....
8. What are some of the causes of poverty in your district?  
.....  
How much of the poverty that you see is situational and how much is generational (family history)? How has poverty changed with the recent economic downturn?  
.....
9. What type of resources do people in your district living in poverty have available to them?  
.....
10. What are the most common economic activities which people in your district are involved with?  
.....
11. Do people in your district rely on the forest as a source of an economic livelihood?  
.....
12. How would you describe the extent of damage to the natural environment (including forest) as a result of the reliance of people in your community for a source of living?  
.....
13. How does poverty affect the children in your district? How does it affect the elderly?  
.....
14. How are you as a district authority, contributing to alleviating poverty within your communities?  
.....
15. How do you government can assist eradicating poverty from our city?  
.....
16. What resources need to be in place for us to help those in poverty?  
.....
17. What barriers are there to helping people living in poverty in your community?  
.....

18. Do you think that all of the resources that are provided to those in poverty encourage people to stay in poverty? (Government housing, school lunch program, etc.)

.....

19. What one thing could you do in your to help eliminate poverty?

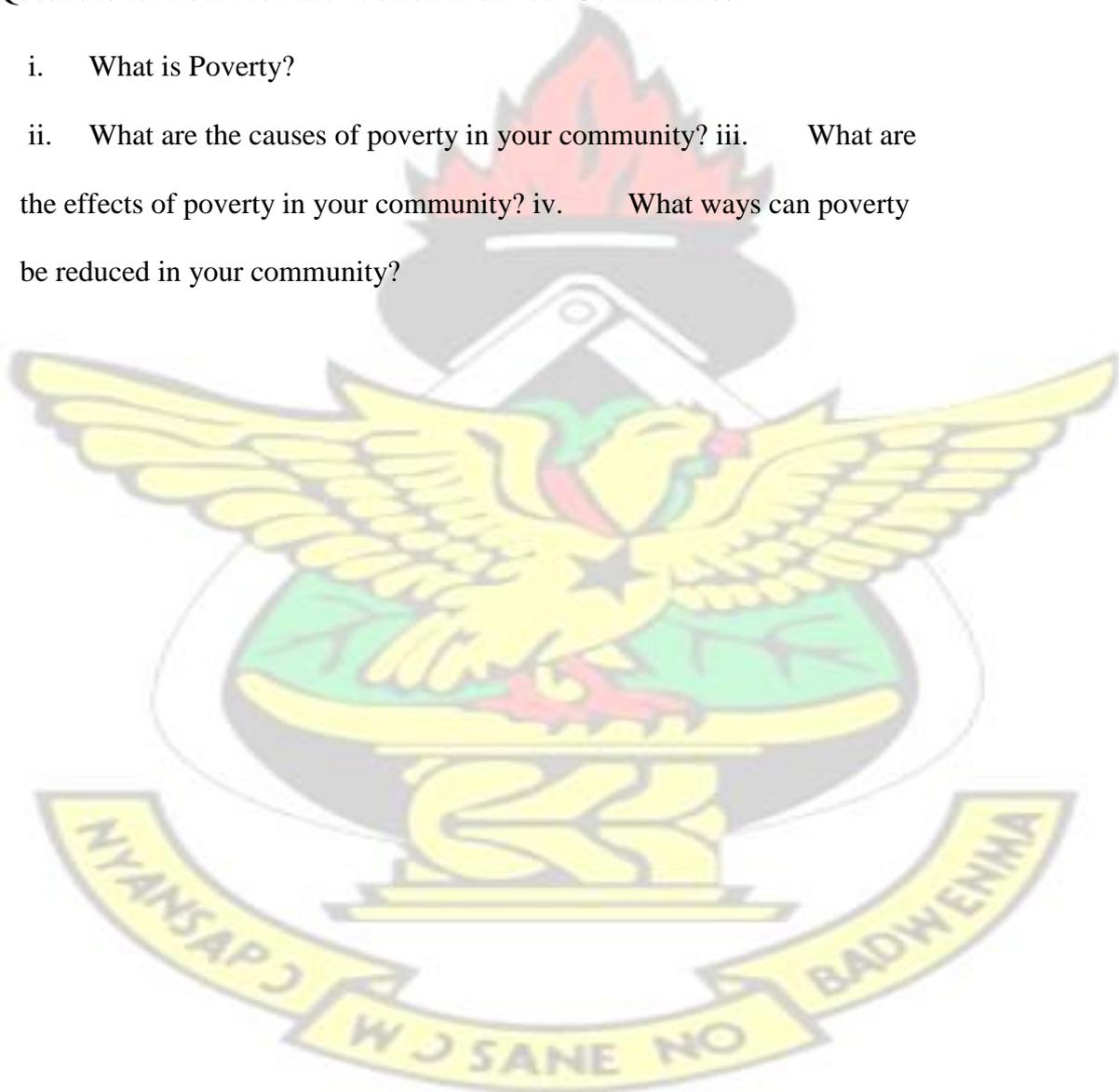
.....

**APPENDIX C**

**Focus Group Questions**

Questions for Both Men and Women in all four Communities:

- i. What is Poverty?
- ii. What are the causes of poverty in your community?
- iii. What are the effects of poverty in your community?
- iv. What ways can poverty be reduced in your community?



## APPENDICE D Index Calculation Procedure

Value range tables are used for simplifying calculation of indices. They are made based on range of response values in the questionnaires. Tables are made by adding together minimum and maximum values for all indicators.

### Sample Calculation

#### Health Sphere of Poverty Index

Health Sphere consists of three indicators: Var1, Var2, and Var3.

Indicator	Values	Minimum	Maximum
Lack of Food (Var1)	1,3	1	3
Drinking Water (Var2)	1,2,3	1	3
Access to Healthcare (Var3)	1,2,3	1	3

The same process is repeated for other poverty indices

Calculating the indices

Index Formula =  $\frac{\text{Sum of scores}}{\text{Sum of maximum scores}} * 100$

Using household data from one questionnaire:

The sum of scores obtained =  $1 + 3 + 3 = 7$

The sum of maximum scores =  $3 + 3 + 3 = 9$

The sum of minimum scores =  $1 + 1 + 1 = 3$

Health Index =  $66.67$

This calculation is for one household. This process is then executed using SPSS for all the 370 households. The same is done for other indices and the average is calculated to determine the poverty index rating.