

Poverty, Livelihoods and Environmental Degradation in the Sissala East District of the Upper West Region: A Case Study

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Abstract: *The study sought to examine the link between poverty, livelihoods, and environmental degradation in the Sissala East District of the Upper West Region of Ghana. The design adopted was both explorative and descriptive. Five out of the 65 communities in the District were sampled. A combination of simple random sampling, systematic sampling, and purposive sampling were used to sample 90 respondents for the study. The sample was based on the clustering of the 65 communities into five zones. Key findings from the study showed that poverty was pervasive in the District since about 88.9 percent of the people earned less than US\$1 per day, which is below the poverty line. It was revealed that environmental degradation was caused by livelihood activities such as agriculture, charcoal burning, lumbering, hunting etc. It is there recommended that Sissala East District Assembly, EPA and NGOs should promote sustainable environmental management by increasing awareness among the people of the environmental degradation resulting from their livelihood activities through community discussions and radio talks. Again, the District Assembly should implement poverty reduction strategies that would improve labour productivity and increase incomes of farmers.*

Keywords: livelihood, poverty, environmental degradation, empowerment, poverty line

1. Introduction

1.1 Background to the Study

The relationship between growing poverty, the struggle by the poor to earn their livelihoods and environmental degradation remains a problem in the world. This issue has been given international recognition, especially from the United Nations (UN). The poor degrade the environment in several ways to earn their livelihoods even though the rich also degrade the environment.

With the publication of the Brundtland Commission report in 1987, governments formally

recognized the important link between poverty, livelihoods, and environmental degradation. The report stated that those who are poor and hungry would often destroy their immediate environment in order to survive. The cumulative effects of these changes are far-reaching as to make poverty a major global scourge [1]. Environmental degradation is also caused by the affluence because it is the rich who consume the bulk of the world's resources and who are the main polluters of the environment, with the wastes generated by their consumptive lifestyles. Nevertheless, UNDP [2] report, posit that environmental challenges do not only arise from growing affluence but from growing poverty. The increasing number of poor and landless people is puts unprecedented pressure on the natural resource base as they struggle to survive.

According to [3], the link between poverty and environmental degradation is explained based on vicious cycle dynamics, which is Malthusian inspiration where farmers pushed by population increase extend cropping to marginal lands, thereby degrading them. The latter reduces yields, which further impoverishes the farmers. In contrast, one school of thought (the distributive school) argues that population growth per-se does not contribute to a problem. The problem is due to the underdevelopment in the Third World countries and over- consumption of the global resources by developed countries and the uneven distribution of population across space [4]. The distributive school observed that where current strategies are pursued which lead to higher living standards, greater esteem, and freedom; population growth would take care of itself.

In developing countries, majority of the poor people live in rural areas and their livelihoods are critically dependants on the exploitation of natural resources such as water, arable land, and forest resources. It is estimated that 13 million people live below the poverty line, out of this 72 percent live in rural areas [5].

In Ghana, the misuse, overuse, and pollution of the environment in addition to that of over exploitation are challenges facing the country. This was one of the policy issues raised by stakeholders according to [6]. The policy also noted that the continued degradation of soil, water, forest, and ecosystem generally, is constantly undermining the nation's ability to sustain food production and to ensure adequate health standards and sustainable development. Poverty in Ghana is highest among those whose principal livelihoods are food crop farming. About 28.5 percent of Ghanaians live in poverty with slightly more than 18 percent classified as extremely poor. In terms of regional distribution however a higher percentage (79%) of the extremely poor were found in the Upper West Region and this include the Sissala East District [7]. Rural poverty resulting from low agriculture productivity has forced rural people to adopt coping strategies, which degrade the environment.

1.2 Statement of the Problem

The increasing rate of environmental degradation in Ghana including the Upper West Region has been a matter of national concern. Depletion of the forest and mangroves, soil erosion, drying rivers and land degradation has become common features of the environment in which the poor eke out their living [8].

The Sissala East District in the Upper West Region is one of the Districts that are currently experiencing rapid environmental degradation. The District is predominantly rural and most of the people are poor. For example, nine out of every ten are poor in the Upper West Region [6] and Sissala East District is not an exception. Agriculture is the main livelihood of the people in the District. Poverty coupled with poor farming methods has lead to the clearing of vast tracts of land for cultivation of food crops. Much of such lands have been abandoned and exposed to erosion. Low productivity from agriculture has forced the poor to adopt livelihood strategies including felling of trees for charcoal and fuel wood, and bush burning for hunting to earn a living. Most of the rivers are dried up due to human activities and pressure from cattle overgrazing and consumption. Fuel wood, which contributes to the depletion of the forest cover, is used by at least 95 percent of households in each District in the Upper West Region including the Sissala East District [7]. Ironically, no research has been done in the study area about the link between poverty, livelihoods, and environmental degradation. And this study attempts to do that.

1.3 Research Questions

The research questions that served as a guide for the study were:

- i. What are the livelihoods of the people in the District?
- ii. What is the level of poverty in the District?
- iii. What is the linkage among poverty, livelihood strategies and environmental degradation?

2. Review of Related Literature

2.1 Environmental Degradation

Environment refers to the surrounding in which we live. It is made up of land and its vegetation cover and animals, water bodies and the atmosphere (air). Increasingly people modify their environmental conditions to the extent that the environment in turn moulds human activity [9]. Production and household units use the service of environment as they engage in various kinds of livelihood activities. Environmental degradation refers to a reduction in the capacity of our surroundings to satisfy human needs as a result of air or land pollution, soil erosion, salinity and alkalinity, deforestation and water pollution [10]. [11] regard land degradation as the loss of resilience in dry lands or the ability of land under a particular lands use system to recover from shock. In the 1960s, many people around the world began to experience vital environmental problems in their communities. Forest were being destroyed by acid rain, rivers poisoned beyond use by industrial waste, cities choked by pollution from automobiles and industry, rural farmers hit by famine and once rich resource reserves wearing thin. Global interconnectedness of these problems was given attention by scientists and they warned that humans were quickly becoming victims of their own success to an extent that we now have the ability to entirely despoil the earth that sustain us [12].

In Ghana, surface mining, which causes physical degradation, remains a major source of concern. The spate of degradation is underpinned by the constant extension of the frontiers of surface mining as the quest for short term financial gain appears to be exchanged for environmental integrity and sustainable development [13]. Ghana's environment is suffering the effects of dramatic changes, its forest have been degraded into savannah and the savannah areas are fast turning into deserts [14].

[15] observes that rivers and lagoons serve as dumping grounds for both solid and liquid wastes. The major causes of coastal wetland degradation or physical loss include rapid population growth, inadequate sanitary facilities, harmful effects of some economic activities, low environmental concern, and ineffective wetland ownership and management. The view that wetlands are wastelands has influenced many people to carry out activities that lead to wetland degradation, which conflicts with sustainable use.

2.2 Poverty

Poverty is pronounced deprivation that involves a wide range of issues including hunger, lack of shelter and clothing, and inadequate access to health care, education and policy-making [2]. Poverty not only deprives people of basic needs but also proscribes them from participation in the Political, social and economic spheres, limits their opportunities and choices, and prevents them from achieving their fullest potentials. Poverty is a multi dimensional concept, which encompasses levels of income, health, literacy and insecurity [5].

[16] notes that poverty manifest itself in different forms such as low earnings, low level of skills, lack of assets, absence of access to training, poor health, malnutrition, absent of shelter and food security. He further explains that lack of economic security often mean high rate of migration or vulnerability to displacement. [17] summarized the multi-dimensionality of poverty as income and non-income deprivation. The income dimension implies low levels of income consumption that are socially unacceptable, while the non-income dimension can be categorized into three main facets social, participatory and vulnerability. The social facets refer to lack of health care, good drinking water and decent housing and healthy sanitation. The participatory facet includes lack of voice and political rights. [18] reveals that the objective school argues that poverty consists of an irreducible core of deprivation that provides a universal definition applicable to all societies even though a different bundle of commodities may fulfil the same general needs. Conversely, the subjective school argues that the notion of poverty is rooted in the cultural and moral values of specific societies at specific point in time. The poor are essentially those persons and groups of people who perceive they are poor.

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

[20] noted that three alternative conceptions of poverty have evolved since the 1880s namely subsistence, basic needs, and relative deprivation. The subsistence concept relates to anyone whose income is insufficient to obtain the minimum necessities such as food, clothing, and fuel for the maintenance of merely physical efficiency, with food accounting for the greatest share. This conception was criticized because of its emphasis on physical

needs as the predominant human need, and the neglect of social needs. This led to the basic needs concept. This concept included the minimum requirements of a family for private consumption and essential services such as safe drinking water, public transport, health care, education, agriculture tools, and access to farmlands in rural areas and cultural facilities, provided for and by community at large.

Poverty can be classified into absolute and relative poverty. Absolute poverty refers to the situation where the poor are so materially deprived that their survival is at stake. It can be defined socially as those who live below a minimum acceptable standard of US\$1 per day at a given place and time. Such households find themselves in situations where they cannot meet basic needs for survival. They are chronically hungry, unable to access health care, lack of amenities of safe drinking water and sanitation, cannot afford education for some or all of the children, and lack rudimentary shelter [17]. The National Development Planning Commission [21] which defines poverty as income less than two – thirds of average GDP per head revealed that 36 percent of the country's population lives in poverty with the rural areas holding 80 percent of them. .

The Ghana Statistical Service [22] used the minimum wage offered by the government as a benchmark for poverty, even though it recognized the inadequacy of the minimum wage, which was challenged by the Trade Union Congress. It categorised Ghanaian society into extremely poor, moderately poor and non-poor. The proportion of household whose per capita expenditure are less than half of the minimum wage level are extremely poor while those whose per capita expenditure lies between half and full minimum wage level are moderately poor. The non-poor are those with per capita expenditure that lies between the full and three times the minimum wage

2.3 Livelihoods

A livelihood comprises the capabilities, assets (including both material and social resources), and activities required for a means of living [23]. A livelihood is sustainable when it can cope with and recover from stress and shocks, as well as have the capacity to maintain and enhance its capabilities and assets without undermining the natural resource base [1; 24]. Sustainability of livelihood strategies of individuals or households depends on access to use and development of different types of assets in ways that assure benefits for current and future generations [25]. Rural households may drive a part livelihood from farming, part livelihood from migrant labour undertaken by absent household members in urban areas or other rural areas; and a part livelihood from

a variety of other activities, more or less informal, such as petty trade or beer brewing [26].

Closely linked to the observation of diversity of modes of livelihood at any one time is the idea of diversification of livelihoods over time. For example, a broad comparative review of a process described as de-agrarianisation in Sub-Saharan Africa concluded that 60 – 80 percent of rural household income in the late 1990s was derived from non-farming sources, by comparison with an approximate 40 percent in the 1980s [27]. The reasons for such changes are: structural adjustment programmes, sharply worsening terms of agricultural trade, the collapse of meso-level infrastructure of support for small-scale farmers, devalued currencies, new opportunities, and necessities of cross-border smuggling, and trade [26]. It is also important to note that migration for work elsewhere is one typical mode of diversification in the livelihoods of the rural poor that has arguable been inhibited by politicians and undervalued by policy makers [28]. [25] Identified five basic types of assets for livelihoods to include natural, physical, financial, human and social.

2.4 Relationship between Poverty, Livelihoods and Environmental Degradation

Awareness of the relationship between poverty, livelihoods, and environmental degradation, in many developing countries has increased in recent times. It is now widely recognized that the issue of poverty, environment and development are intrinsically linked, forming a vicious cycle. Poor people sometimes have no choice but to degrade their environment in order to survive. They may over-exploit their natural resource base and, in doing so, deny future generations a productive environment. The cycle is complete, as a degraded environment prevents the poor from making a living from it [29]

Poor people increase their use of natural resources in order to live. The livelihood outcomes that people strive to achieve include more employment and increase wellbeing including good health, reduce vulnerability, increase access to goods and services that improve food security [25]. [30] argues that environmental degradation is very often caused by poverty because the poor have no option but to exploit resources for short-term survival. The modification of the ecosystem by humans to obtain their livelihoods has negative effects on other components of ecosystems and results in trade off. For instance, increased food production lead to reduction in biodiversity as human demand for space, material and food increases, so are population and species of plants being extinguished rapidly [31].

2.5 Conceptual Framework

The model of this study is adapted from [30] as shown in Figure 1. The model explains the relationship between poverty, livelihoods and environmental degradation. The figure explains how livelihoods strategies of households can lead to environmental degradation and poverty. It shows that the livelihoods strategies of the poor involve the use of poor production methods and over exploitation of natural resources, which leads to environmental degradation. It further explains how the degraded environment leads to resource loss, which in turn fuels poverty. This model would help the study investigate the link between poverty, livelihoods, and environmental degradation

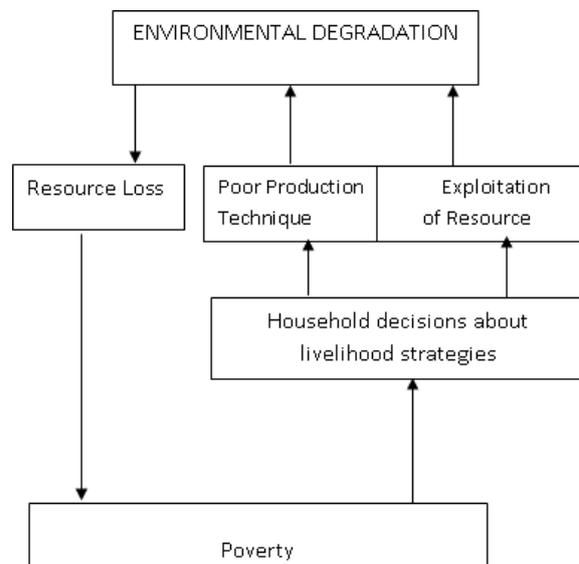


Fig. 1: A Conceptual framework for Linking poverty, Livelihoods and Environmental Degradation (Source: Adapted from [30])

3. METHODOLOGY

3.1 Study Design

The study design adopted was both explorative and descriptive. The survey method was used to collect quantitative data. Qualitative methods used comprised participatory research tools such as focus group discussions, observations and transect walks. The design was used to help in the understanding of questions like, what is the nature of environmental degradation, and what is the relationship between poverty, livelihoods, and environmental degradation.

3.2 Study Population

The study population covers all households in the Sissala East District. This was estimated at 7,652 [7]. Tumu, the District capital had 1,587 households. All other communities in the District had household numbers that fell below 1,000.

Household heads or adult members of the household were considered as the unit of

investigation in the study. The composition of a household was defined in terms of relationship between members of the household to the person they accept to the management of and up keep of the house and the household members.

3.3 Sampling Technique

For the purpose of this study, a combination of cluster sampling, simple random sampling, systematic sampling, and purposive sampling were used to sample respondents. As a first step, cluster sampling was applied and this was done by clustering the 65 communities in the District into five zones based on spatial location.

A community each was selected from each of the five zones using the lottery method. This was also done by first constructing a sampling frame for each of the five zones. The communities sampled were Tumu (zone 1), Kong (zone 2), Bugabelle (zone 3), Kunchohu (zone 4), and Santigan (zone 5).

Using house numbers as guide and as basis for sampling frame, systematic random sampling technique was applied in selecting specific households for the study. Based on the number of households of each community quotas were applied to determine the number of households per community to be investigated. In addition, ten people per each zone comprising five males and five females were purposively selected for two separate sessions.

3.4 Research Instruments

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

Interview schedule was used as the main data collection instrument to find answers to as many questions as possible leading to the achievement of the objectives. In each community, two focus group discussion sessions were conducted.

3.1. Data Analysis Method

Data collected was summarized and put in a form of tables and figures. This made discussion of the data more understandable. The tables and figures showed means, frequencies and percentages. To facilitate data analysis, the Statistical Product and Service Solutions (SPSS) version 16.0 was used.

4. Results and Discussion

4.1 Background of Respondents

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

4.2 Educational Background of Respondents

Educational background of respondents was taken into consideration because it could influence the type of livelihoods strategies, poverty levels of respondents as well as their perception of environmental degradation. Table 1 reveals that 43.33 percent of the respondents did not have any formal education, 28.89 percent had only primary education, 10 percent had Middle School or Junior High School education, 8.82 percent Senior High School, and 6.67 percent had Post Secondary / Technical education while 2.22 percent had Tertiary Education. A higher percentage of the respondents did not have formal education. [32] estimated that 48.9 percent of the people in Upper West, including the Sissala East District, did not have formal education and that explained why many people in the region were found in either agriculture or menial and other low paid jobs.

Table 1: Educational Background of Respondents

Education level	Frequency	Percent
Tertiary	2	2.22
Post Sec./Tech	6	6.67
Senior High	8	8.89
Junior High/MSLC	9	10.00
Primary	26	28.89
No formal education	39	43.33
Total	90	100

4.3 Poverty Profile

Poverty manifests itself in different forms such as low earnings, low level of skills, lack of assets, and absence of shelter and food security [16]. Household income analyses, perceptions of poverty, indicators of poverty together with the causes of poverty were used to determine profile of poverty in the District.

Household income analysis was undertaken to determine the evidence of poverty in the study area. The annual income of each household was computed by adding together the money value of all crops (cereals, legumes, roots, tubers, fruits and nuts) cultivated, all livestock, and all other sources of income from trading, professions and teaching. Table 2 shows the nominal household incomes of the respondents in the study area. Given that the poverty line is US\$1 per day, the annual expected income per annum was GH¢ 468 (US\$ 360).

About 88.9 percent earned up to GH¢ 400 (US\$ 286) per annum which is less than US\$1 per day, while only 11.1 percent of the respondents earned up to and above GH¢ 500 which was up to or above the poverty line, of US\$1 per day. This suggests that the

majority of the people in the study area earned below the official poverty line defined as earning less than \$1 per day [33]. This finding was in agreement with

that of [34], that in 2006, 87.9 percent of the people in Upper West Region live in poverty.

Table 2: Household Income Distribution among Respondents

Income GH¢	No. of Household	Percent	Cumulative Percent	Average Income	Total Income
1-100	20	22.22	22.22	80	1600
101-200	23	25.56	47.78	175	4,025
201-300	21	23.33	71.11	232	4872
301-400	16	17.79	88.90	345	5,520
401-500	3	3.33	92.23	467	1,401
501-600	2	2.22	94.45	560	1,120
601-700	0	0.00	94.45	0	0.0
701-800	2	2.22	96.70	763	15.26
801-900	1	1.11	97.78	850	850
901-1000	1	1.11	98.89	983	983
Over 1000	1	1.11	100.00	563	1,563
Total	90	100		16,018	23,460

4.4 Indicators of Poverty in the Sissala East District

In the survey, respondents were further requested to indicate the major indicators of poverty. The indicators of poverty in the Sissala East District identified were in the area of food and nutrition, health, education, economic and housing as shown in Table 3. Borrowing of food accounted for 8.89 percent of the responses, inability to provide three square meals a day 6.89 percent and days without food 4.22 percent. The results that some respondents borrowed food to survive is consistent with the finding of [35] that a substantial proportion of households in the Upper East, Upper West and Northern regions had on many occasions borrowed or credited food at least three days in a week simply to supplement stock for feeding.

In the case of health indicators of poverty, long distance to nearest hospital and lack of medical officers each accounted for 8.89 percent while high mortality was 2.2 percent. During the focus group discussion in Tumu, the District capital, it was revealed that there was no medical doctor in the District hospital. The implication is that, spending long hours to reach health care facilities and meeting no medical officials could explain why death of children is wide spread in all Districts in the Upper West Region including Sissala East District since every five children born alive 22.5 percent die [7].

About 8.89 percent of the responses identified low educational attainment as the indicator of poverty, 7.78 percent indicated high school dropout rate while 3.35 percent indicated inadequate educational facilities. [36] revealed that poverty and inequality are explained by personal circumstances such as the amount of education, skill, experience, and intelligence.

In terms of economic indicators of poverty, 6.67 percent of the responses cited high rate of unemployment, the same percentage (6.67 %) indicated low agriculture productivity, 4.44 percent high out migration and 2.22 percent lack of infrastructure. In a focus group discussion at Kunchogu, the male discussants disclosed that more than 60 percent of the residents had migrated to the South for employment due to lack of employment opportunities in the District coupled with hunger and low incomes resulting from low agriculture productivity.

In terms of housing indicators of poverty, 8.89 percent of the responses identified the use of grass for roofing, 6.67 percent cited “atakpame” walls, 0.44 percent mentioned landcrete walls, and 4 percent indicated sancrete walls. The result suggests that the use of grass roof is an evidence of poverty in the study area. In the focus group discussion sessions, it was revealed that most people used grass for roofing because they could not afford zinc roofing due to poverty.

Table 3: Indicators of Poverty in the Sissala East District.

Area	Indicators	Frequency	Percent
Food and Nutrition	*Days without food	40	8.89
	*Inability to provide three square meal a day	31	6.89
	*Borrowing of food	19	4.22
Health	*Lack of medical officers	40	8.89
	*Long distance to hospital	40	8.89
	*High mortality rate	10	2.22
	*High school drop outs	35	7.78
Education	*Inadequate educational facilities	15	3.33

Economic	*Low educational attainment	40	8.89
	*High rate of unemployment	30	6.67
	*Low productivity in agric.	20	4.44
	*Lack of infrastructure	10	2.22
	*High our migration	30	6.67
Housing	*Sancrete wall	18	4.00
	*Lancrete wall	2	0.44
	*Atakpame	30	6.67
	*Grass roof	60	13.33
Total		450*	100

*The total responses were more than the total respondents (90) due to multiple responses.

4.5 Causes of Poverty

The respondents were asked to mention the causes of poverty in the study area. They mentioned low income from agriculture (20.75%), low agriculture productivity, (19.51%), limited employment opportunities (17.07%), low educational attainment (15.85%), out migration (14.64%), and poor infrastructure (12.20%) as shown in Table 4.

During the focus group discussions, the consensus was that farm produce were being bought at very low prices. This factor and low agriculture productivity were mentioned as the major causes of poverty in the District. [37] noted that the people in the study area are mostly engaged in subsistence agriculture, which normally does not fetch much money.

Table 4: Causes of Poverty

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

The total responses exceeded the number of respondents (90) due to multiple responses

4.6 Sources of Livelihoods of Respondents

Poor people sometimes have no choice but to degrade the environment in order to survive. They may over-exploit their natural resource base and, in doing so; deny future generations a productive environment [29].

The respondents indicated their sources of livelihoods as shown in Table 5. About 73.28 percent of the responses indicated that the respondents depended on agriculture (i.e. crop farming, livestock and fishing) for their livelihoods, followed by charcoal burning (8.62 %), civil service (5.17%), trading (4.31%) and remittances (0.86 %). The absence of modern technology and low productivity from agriculture would lead to low income and poverty of the people. [32] revealed that over reliance of the people of Upper East, Upper West,

and Northern Regions on agriculture means they have no hope of breaking out of the poverty trap.

Table 5: Sources of Livelihoods of Respondents in the Sissala East District

Sources	Frequency	Percent
Agriculture	85	73.28
Charcoal burning	10	8.62
Civil Servant	6	5.17
Trading	5	4.31
Lumbering	4	3.45
Artisans	4	3.45
Small- scale sand and gold mining	1	0.86
Remittances	1	0.86
Total	116*	100.00

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

4.7 Livelihoods and Environmental Degradation

To investigate the link between livelihoods and environmental degradation, the respondents were first asked to indicate whether there is a link between livelihood activities and environmental degradation. About 98.9 percent of them indicated that there was a link between livelihood activities and environmental degradation while the remaining indicated otherwise.

Respondents were further asked to indicate the livelihood activities that degrade the environment. The result is presented in Table 6. About 46.6 percent of the respondents agreed that agriculture activities degrade the environment while 41.7 percent indicated charcoal burning. The other activities mentioned were lumbering (6.1%), small-scale sand and gold mining (3.1%) and hunting (2.5 %).

The focus group discussion sessions revealed that 20 years ago, the people had their farms near to their homes but now they travel several kilometres to establish farms. They also disclosed that, the environment was been degraded through shifting cultivation, which involved cutting of trees and burning to establish new farms. The environment was also being degraded by Fulani herdsmen and block farming system mostly practised by cotton farmers in the District. Farming constraints had forced farmers into charcoal burning for their livelihoods, thereby degrading the environment.

Table 6: Livelihood Activities that Degrade the Environment in the Sissala East District

Sources	Frequency	Percent
Agriculture	76	46.6
Charcoal burning	68	47.7
Lumbering	10	6.1
Small- scale sand and gold mining	5	3.1
Hunting	4	2.5
Total	116*	100.00

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

4.8 Poverty, Livelihoods, and Environmental Degradation

Those who are poor and hungry often destroy their environment to survive [1]. Poverty restricts the poor to act in ways that are damaging to the environment. The poor are unable to buy out of exposure to environmental risk and they are also unable to invest in alleviating the causes of environmental degradation [3]. This section therefore analyses the relationship between poverty, livelihoods, and environmental degradation.

For the study, the respondents were first asked to indicate whether there was a relationship between poverty, livelihoods, and environmental degradation. The majority, (98.9 %) of the respondents indicated that there was a relationship between poverty, livelihoods, and environmental degradation while the remaining noted otherwise.

Having established the perception of the respondents about the relationship between poverty, livelihoods and environmental degradation, the study set out to investigate the causes of environmental degradation that were related to poverty and livelihoods. The results showed that 31.2 percent of the respondents observed that low agricultural productivity was a major cause of poverty leading to environmental degradation in the District. The other causes of environmental degradation linked to poverty and livelihoods were identified as limited employment opportunities (24.9%), inability to afford other sources of domestic energy (16.6%), lack of sanitary facilities (14.4%) and ignorance (11, 1%).

Participants in the focus group discussions explained that they had experienced low agriculture productivity over the years because they could not afford chemical fertilizer and agro-pesticides. They further explained that the only way they could increase agriculture productivity was by cultivating more lands to establish new farms, which involved clear-cutting of trees and burning. [38] explained the vicious cycle of poverty, where poverty leads to extension of cropping to marginal lands degrading them and the resulting degradation in turn reduces yields, which further impoverishes farmers. Results

from the focus group discussion sessions revealed that in the face of poverty resulting from low agriculture productivity, farmers had no choice than to adopt coping strategies, including bush burning for game and burning and selling charcoal, which degrade the environment.

5. Summary, Conclusions and Recommendations

5.1 Summary

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

The sample was based on the clustering of the 65 communities into five zones. In each of the five zones, two focus group discussion sessions were organised. SPSS version 16.0 was used to facilitate the data analysis. Descriptive Statistics like frequencies, percentages and cross tabulations were used.

5.2 Key Findings

i. Poverty was pervasive in the Sissala East District. About 88.9 percent of the respondents earned less than US\$1 per day, which is defined as earnings below the poverty line. .

ii. The indicators of poverty identified by the respondents included inability to provide three square meals a day, long distance to the nearest hospital, low educational attainment, high out migration and poor housing.

iii. About 89.89 percent of the respondents agreed that environmental degradation was caused by livelihood activities in the study area such as agriculture, charcoal burning, small-scale sand and gold mining, lumbering and hunting. These activities engendered felling of trees, bush burning and overgrazing.

iv. The cause of environmental degradation linked to poverty and livelihoods identified were, intensive agriculture activities, limited employment opportunities, inability to afford other sources of domestic energy and lack of sanitary facilities.

5.3 Conclusions

The study provides evidence of the link between poverty, livelihood, and environmental degradation in the Sissala East District. Indeed, the link was complex and a major development challenge for the study area. For example, the high rate of

environmental degradation has contributed to the destruction of natural habitats, threatening the survival of animals and plant species. The need for poverty reduction and sustainable livelihood strategies in the study area is a matter of importance that cannot be overlooked since the environment is threatened by livelihood strategies of the people majority of who are poor.

5.4 Recommendations

Based on the major findings and the conclusions of the study, the following recommendations are made:

- i. The Sissala East District Assembly, EPA and NGOs should promote sustainable environmental management by increasing awareness among the people of the environmental degradation resulting from their livelihood activities through community discussions and radio talks on the indiscriminate felling of trees, waste disposal and control of bush fires.
- ii. The Assembly, NGOs and other stakeholders should form and promote green clubs in schools and the control and regulation of influx of large cattle herds from neighbouring countries.
- iii. The District Assembly should implement poverty reduction strategies that would improve labour productivity and increase incomes of farmers by linking up farmers with potential credit providers, buyers of products and providers of inputs, improve infrastructure particularly access roads to the District and educational facilities.
- iv. The Sissala East District Assembly, EPA and NGOs should promote sustainable environmental management by increasing awareness among the people of the environmental degradation resulting from their livelihood activities through community discussions and radio talks on the indiscriminate felling of trees, waste disposal and control of bush fires.
- v. The District Assembly should implement poverty reduction strategies that would improve labour productivity and increase incomes of farmers by linking up farmers with potential credit providers, buyers of products and providers of inputs, improve infrastructure particularly access roads to the District and educational facilities.

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