

# Perceptions of Causes of Deforestation in the Sissala West District

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**Abstract:** Deforestation is experienced all over the world and every country has had fair problems associated to it. The issue of global warming, climate change, poor soil fertility and wildlife extinction are some of the problems experienced in all parts of the world as a result of deforestation.

Perceptions of causes of deforestation vary depending on the causative agents. While people perceive population growth, hunger and poverty to be the root causes of deforestation, others also believe deforestation is caused by lack of alternative economic livelihood in the forest communities where the forest serves as a sole source of food, income and employment.

The study was conducted in Sissala West District of Ghana, to find out the perceptions of causes of deforestation in the district. The methods used for data collection were interviews, focus group discussion and key informant Interview. The findings of the research revealed that, population growth, high illiteracy rate, poverty, hunger and lack of alternative economic livelihoods were perceived as the underlying causes of deforestation in the district. It was also realised that the main economic activities of the indigenes were farming, hunting, charcoal burning, which result in destroying large areas of land because they do not take any measures to conserve the forest in search of their daily bread.

Among the recommendations suggested were enforcement of bye-laws, education on effects of deforestation, afforestation projects and agroforestry practice. Provision of vocational/technical training centres, access to credit facilities and provision of irrigation facilities for dry season gardening were seen as good interventions that could reduce the pressure on the forest land.

**Keywords:** Deforestation, Farmers, Charcoal burners, Hunters, Perceived causes, Alternative livelihood.

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## 1. INTRODUCTION

### Background to the study:

Forests are valuable assets which the world cannot do without. Not only do they provide renewable resources such as timber, food, medicine but they also play a key role in the fight against global warming, climate change and loss of biodiversity. Even the old adage, "When the last tree dies, the last man dies" is very true because man takes in oxygen and releases carbon dioxide as by-product whilst plants takes in carbon dioxide and produce oxygen as by-product. This show how important plants for that matter forest plays significant role in human survival. Therefore there is the need for effective policy and management tools, bringing together practitioners interested in climate protection, biodiversity conservation, effective natural resources exploitation and rural livelihood to protect forest.

Deforestation is perceived by different people in many ways. Poor peasant and forest communities perceive illiteracy, hunger, poverty, and low income level among others as the causes of deforestation. Perception of causes of deforestation to a business oriented person could be lack of alternative livelihood, market forces or high demand for forest product.

In the olden days forest were perceived to be sacred and most forest communities had their shrine there. This prevented people from entering the forest for any degradable activity. Some Christian religions also organised prayer meeting there due to its serene nature.

Forests hold a significant standing of global carbon with 283 Gt of carbon stored in forest vegetation, 38Gt in dead wood and 317Gt in soils and litter. Overall total carbon content of the forests – estimated at 638Gt as of 2005 is more than the quantity of carbon in the entire atmosphere. This shows that life on earth will be virtually impossible without existence of forests. Accordingly the Rio Conventions: the UN Framework Convention on Climate Change (UNFCCC), the UN Convention on Biological Diversity (CBD) and the UN Convention to Combat Desertification (UNCCD) all acknowledge the invaluable “contribution of forests to the achievement of their respective goals and objectives and are working together to enhance synergies in this area” (Tamakloe, 2005). Experts estimate that global deforestation contributed about 20% of annual greenhouse gas emissions in the 1990s (Dotse, 2009).

Perception of causes of deforestation varies depending on one's perspective. While people perceive poverty, population growth, hunger and high illiteracy as the root cause of deforestation, to others, deforestation is caused by lack of alternative livelihood in forest communities where the forest serves as sole source of income generation and food. Taking lack of alternative livelihood as contributor to deforestation could be true to some extent because apart from farming, hunting, illegal wood logging and charcoal burns, most rural dwellers have no any effective income generation activities to augment pressure on forest resources. This has compelled them (rural communities) to rely on forest land for farming and other activities that could degrade the forest.

According to Abban (2009), Ghana's land area comprises 34.05% forest and 65.05% savanna. Currently 20% of the country – about 17, 871.70 km sq is reserved as permanent forest while 396km sq is off-reserves. Permanent forest estate in the savanna zone covers about 8, 806 km sq or 5.63% of the total area while unreserved savanna woodland constitutes about 75, 467 km sq or 48.29%.

Abban (2009), revealed that Ghana is said to have lost over 80% of its forest cover in a century. An original forest cover of 8.2 million hectares has been reduced drastically to about 1.7 million hectares with average destruction rate of 75000 hectares per annum. The rate of degradation points to a gloomy future for the country's forest. Every part of the country has got its fair share of the impact of the environmental destruction through the loss of scenery, fauna and flora, wildlife habitation, ecosystem and water resources.

Deforestation occurs in many ways. Most of the clearing is done for agricultural purposes and also provision of fuel wood for domestic use. Angelsen and Kaimowitz (2001), indicated that farmers generally prefer technologies that save labour and capital rather than land to expand agriculture. This means that the type of technology farmers are readily to adopt is the one most likely to increase forest clearing. Deforestation by a peasant farmer is often done to raise crops for self-sustenance and is driven by the basic human need for food. Peasant farmers who chop down small area (typically a few acres) and burn the tree trunks to prepare their land for farming perceive modern agriculture which involves use of heavy machines such as tractors and bulldozers to clear large areas promote deforestation. Commercial logging which involves cutting trees for sale as timber or pulp is also one of the main causes of deforestation in Ghana. The perceptions of causes of deforestation are very complex and can be tackled from different angles depending on how one perceives the causes to be.

The most abundant greenhouse gas produced and emitted in Ghana is Carbon Dioxide (CO<sub>2</sub>). There are CO<sub>2</sub> sinks in the forest and the reforested removals, however, shows a significant decline of about 49 percent from 1990 to 1996. There is a fear that the rate of deforestation will offset net CO<sub>2</sub> removal as forests which serve as sink for excess CO<sub>2</sub> are being depleted (Tamakloe, 2005).

Ghana's economy is expanding at a commendable growth rate—its annual average GDP growth is about 6 percent. As a result, the country has made considerable progress in laying the foundations for sustainable growth and poverty reduction. The Government of Ghana is further committed to achieving faster poverty reduction hence accelerated growth is set to play a key role. Ghana's Growth and Poverty Reduction Strategies (GPRS II), driven by agriculture and private sector development is part of the framework within which the Government want to use to achieve its development agenda.

However, Ghana's natural resources, upon which so much of the country's economic activity and population's livelihood depend on, are being depleted at alarming rate. More than 50 percent of the original forest area has been converted to agricultural land by clearance for perennial or annual cropping and slash-and-burn cultivation practices. Crop yields have stagnated, and productivity has declined because of rampant soil erosion. Wildlife populations and biodiversity are in serious decline. All of these factors threaten to reduce Ghana's GDP growth in the near future.

It is estimated that the country incurs an economic loss of about US\$54bn through biodiversity loss due to environmental degradation, i.e., deforestation and land degradation. This amount is equivalent to 4% of the national GDP, and is comparable to the country's annual economic growth (Ministry of Science and Environment, 2002).

Agricultural production in Ghana experienced a steady decline until the early 1980s when it came to a virtual standstill. Although this trend has since reversed and food production is growing at 2.8% annually, it still falls behind Ghana's population growth rate of almost 3% (Assenso-Okyere, 2001). Nonetheless, it is estimated that only 20% of agricultural land is under cultivation. This has provided policy makers the luxury to formulate agricultural growth strategies that combines extensification and intensification (Seini, 2002). However, due to the high cost and unavailability of inputs, farmers have not been able to embrace intensification to increase agricultural growth.

As a result of all the negative impacts being inflicted on the environment, for example depletion of the ozone layer, deforestation, air and water pollution, soil erosion, desertification etc., there has been the emergency of various environmental concern organization such as Friends of the Earth, Forestry Commission, Environmental Protection Agency (EPA) and other international organisations such as Water Resource Institute (WRI), World Bank, Food and Agriculture Organizations (FAO), United Nations Development Programme (UNDP), Care International which act as a kind of advocacy and pressure groups on environmental related issues (Abdullai, 2007).

The perception of causes of deforestation may differ depending on factors such as one's geographical location, religion, traditional beliefs, market demand, hunger, poverty, government policies etc. This has therefore necessitated the study of the perception of causes of deforestation in the Sissala West District to assess what they perceive to be the causes of deforestation and to also suggest possible remedies that could help address the situation.

#### **Statement of the problem:**

Sissala West District is in the Upper West Region with the district capital situated at Gwollu and has a total land area of 411,289 sq km which is about 25% of the total landmass of the Upper West Region. The main natural resources of the district include vast fertile arable land, guinea savannah vegetation for livestock rearing and a very high population of economic drought resistant trees such as dawadawa, shea, neem, baobab and few mahogany trees. There are also few cashew and organic mango plantations.

Deforestation is a major problem bedeviling the nation's environment. This is as a result of increase in timber demand, mining, infrastructural development, fuel wood and farming activities. All over the world, deforestation rates are increasing as the years goes by. Kniver (2009), indicated that about six million hectares of primary forests are lost each year; annual net loss of forest cover is about 7.3 million hectares. This is not only a general picture of the world but is very present in Africa where there is rapid development. Ghana is amongst one of the African countries that are really looking forward to attain rapid economic development and this has necessitated the nation to rely heavily on the environment for resources to promote growth and development.

Whilst people perceives market failures, mistaken policy interventions, governance weaknesses and socio economic and political problems as the main causes of deforestation, others also perceive agricultural expansion, poverty, population growth, logging, mining, natural disasters, among others as the main causes of deforestation. This implies that in one way or the other depending on one's level of understanding forest issues or geographical location, perceptions of causes of deforestation is complex and differs from individual to individual.

Deforestation has serious implications for climate change because it "results in immediate release of carbon stored in trees as CO<sub>2</sub> emissions". Experts estimated that global deforestation contributed about 20% of annual greenhouse gas emissions in the 1990s. Globally, deforestation is occurring at a rate of 13 million hectares a year whereas in Ghana, 25% of the country's forest cover disappeared between 1990 and 2005. About 70% of forest degradation in Ghana is caused by unsustainable farming practices while logging is responsible for 20% of the loss (Dotse, 2009).

The expansion of farms as a result of introduction of tractors, increase in charcoal burning, illegal logging and annual bush fires which are rampant in Sissala West have necessitated the study of the perceptions of the causes of deforestation in the district. Although a lot of similar research has been done in this regard, there is the need to study the perception of causes of deforestation in the Sissala West District so as to make appropriate recommendation which could help curb this menace in the district.

### **Objectives of the study:**

The main objective of the study is to determine perception of causes of deforestation in Sissala West District.

Specifically, the objectives are to;

1. Determine the main causes of deforestation in the district.
2. Determine the solution to address deforestation in the district.
3. Determine local participation in environmentally responsible management programmes.
4. Find out whether the indigenes are aware that their activities contribute to deforestation.
5. Assess whether the indigenes are environmentally conscious in their economic activities.

### **Research questions:**

1. What are the main causes of deforestation in the district?
2. What are perceptions of causes of deforestation?
3. What is the level of local participation in environmentally responsible management programmes?
4. What is the level of knowledge on effects of deforestation?
5. Are the indigenes environmentally conscious in their environmentally degradable activities?

### **Relevance of the study:**

The main economic activities of the indigenes are farming and charcoal burning. The district is endowed with good fertile soil which supports agriculture. Introduction of tractors and other farm inputs such as weedicides, fertilizers, improve seeds etc. by MOFA, NGOs, Co-operate Groups and individuals for large scale farming due to vast fertile lands have encouraged most farmers to practice large scale mono culture. By so doing, virgin forests are destroyed to pave way for farming activities.

High demand for charcoal in the country and neighboring Burkina Faso which share border with the district contributes to felling of trees including economic trees such as dawadawa and shea trees in the district. The District Assembly in collaboration with the Forestry Commission have organize workshops for charcoal burners to create awareness on the rate of deforestation in the district and the country at large but the high demand for charcoal pose a serious threat. The district assembly has tasked the police and the district environmental officers to arrest charcoal burners but they have also device ways of producing charcoals without failure in other to meet high market demand. The Assembly by-laws protecting the environment are not well enforced and this has led to more degradable activities without recourse.

Rampant bush fire is one of the main deforestation agents devastating the vegetation of the district and it has been perceived as annual rituals. Every year during the dry season around late October, organized youth groups and hunters in search of game especially rabbits burn the bush indiscriminately resulting in destruction of large vegetation including farms. Fulani herds also burn dry grasses for fresh foliage and as a result, large areas including economic trees and shrubs are destroyed.

Forest are therefore constantly being put under threat from the behaviour of individual members of society, which although logical under disaggregated (individual) levels but have disastrous consequences for society at large which the case of Sissala West District is no exception. This has necessitated the study of the perceptions of the causes of deforestation in the district.

## **2. REVIEW OF RELATED LITERATURE**

Deforestation is an issue of global concern and every country is making conscious effort locally or internationally to help reduce or control it effectively. There had been many international conferences on how to tackle forest degradation which emanate mostly as a result of exploiting natural resources to meet livelihood demand. Perceptions of causes or rate of deforestation differ from country to country. These are due to factors such as technology, demand for forest products, population growth rate, climatic conditions, etc.

**Theoretical and conceptual issues:**

The root cause of forest depletion can be linked to many factors, some of which are poverty, population pressure, high illiteracy among rural dwellers and socio economic development. The perceptions to which these factors cause deforestation vary from individual to individual.

Since 1948, forest resource policies in Ghana have provided for the creation of permanent forest reserves, protection of water supplies, the provision of favourable conditions for cultivation of agricultural crops, and the promotion of public education and research (Ghana Forestry Commission, 1994).

In spite of these policies and interventions, the destruction of the natural forests continues at an alarming rate of 2% per annum. The factors responsible for this state of affairs include the over-exploitation of timber species, improper forest management systems, poor farming practices, population pressure, the complex nature of Ghana's land tenure system, lack of community involvement, an unequal benefits-sharing system, weak institutions, inefficiency of the timber industry, flouting of laid down regulations and lack of political will and commitment (Tropenbos, 2007).

**Poverty, land tenure system and lack of community involvement as a root cause of deforestation:**

In this understanding, blame for deforestation is ultimately attached to poverty, land tenure and its supposed breeding of ignorance, which is purportedly demonstrated in the destructive daily practices of poor people. Most rural dwellers who are the first immediate beneficiaries of the forest and its resources are poor and have no alternative livelihood apart from depending on the forest for food, shelter, income, medicine etc. Tens of thousands of people and many rural households depend on forest resources for their livelihoods, whether it is timber from forested areas for domestic or commercial use, hunting of bush meat, illegal chain saw operations, fuel wood collection, or the gathering and commercialization of diverse non-timber forest products (NTFPs).

Around 11 million of Ghana's populations live in forest areas; about two thirds of livelihoods are supported by forest activities (Birikorang et al., 2005). The linkage between poverty and forest degradation can be explained in terms of two main processes. First, environmental degradation is said to cause poverty because, by definition, degradation involves the erosion of the resource base upon which the poor often depend for their livelihood, while the adverse impacts of forest decline on people's health further limits their productive potential. Secondly, poverty is said to cause forest degradation because the poor are forced into marginal resource areas: they are driven out of the best agricultural lands, for instance, and into fragile and unproductive ecosystems.

In addition, the poor do not have sufficient security to invest in the maintenance activities necessary for long-term environmental health: their need for sufficient agricultural yields in the current season, for instance, means that they cannot afford to undertake soil conservation works, which are labour intensive and reduce short-term land productivity. According to Kniver (2009), forest conservation is a matter of great concern to the global world but the poor and most rural dwellers cannot afford because their livelihood or survival would be at stake and to prevent the two (poverty and forest degradation) processes creating a vicious cycle, they must be attacked simultaneously.

About 400 million people live in or at the edge of the tropical forests and are some of the least privileged groups in our global society (UNFF, 2005). According to John et al. (2006), included in this population of forest-dependent peoples are the world's 60 million native or indigenous peoples who rely on the forests for their way of life. They not only meet their economic needs for food and shelter but also form an integral part of their culture and spiritual traditions. It is estimated that there are 1.2 billion people in farming communities that rely on trees and forests as integral components of their farming systems (Adams, 2004).

Poverty marked as linkage to deforestation among rural households may differ from others perceptions. Some researchers do not see poverty as main root of deforestation, because most forest communities considered as less privilege peasant farmers have no heavy and sophisticated machines to bulldoze large hectares of land for farming activities but their farming practices coupled with indiscriminate burning of lands during land preparation are considered threat to vegetation cover. Others rather perceive land tenure and lack of community involvement in sustainable forest resource management as the root cause of deforestation. Chiefs, opinion leaders, family heads, individuals and government usually give out virgin forest for concessions or lease for large scale farming, timber exploitation, mining and other projects without necessarily finding out the aftermath consequences due to their personal interest. This mostly happens when forest communities are not involved in forest and forest resource management.

Current conservation debates place high emphasis on the need to integrate the views and needs of local communities in conservation processes. Understanding local community perceptions of deforestation and the factors that influence these perceptions is important for designing management policies that are sensitive to their needs. However, more often than not local communities' perceptions do not receive as much attention as they deserve.

Many approaches have been taken to preserve forest resources. However, there is now a growing need to include the public in the government's decision-making processes, particularly in the protection of forest resources. The incorporation of the perspectives of the communities on forest resources management is important as this enables the public to have a sense of ownership and responsibility on the resources involved so that in the long run they would immensely be involved in the management of the resources.

Apart from poverty often tagged as the root cause of deforestation, population growth has also been seen by many critics and researchers as the main contributor of deforestation. Population growth and associated demographic changes are believed to be primary causative factors in deforestation and degradation of forest resources. The world has a finite amount of land, and a growing population. This, coupled with the necessity for people to fulfill their own needs, has resulted in more land being used more intensively; and has contributed substantially to loss of tree and forest resources. In many cases, population pressure has been a crucial component of this transition.

Research conducted by UNRISD (2005), showed that forest has been, almost everywhere, considerably changed by human activity. Therefore, forest degradation can only be understood within the context of the society that the forest supports. Changing patterns of social integration affect the ways in which natural resources are utilized by society, the value ascribed to nature and the importance attached to forest conservation and rehabilitation.

The increased needs of a growing population have meant that traditional resource management practices, where they have been maintained, now yield a declining level of resources per capita. However, population growth is only one of the elements putting pressure on the ability of traditional resource management. The growth and spread of national and global markets and the resulting increasing demand for traded commodities mean that traditional mechanisms discouraging over exploitation and accumulation are losing their force.

Changes in tenure systems, and land concentration in particular, have similarly disrupted previously sustainable local management practices. In addition, migration and cultural homogenization mean that traditional management systems, and the social norms necessary to sustain them, are being forgotten. In other words, the processes described as globalization have had important environmental consequences at the local level.

In 2005, there were approximately 4 billion hectares of forests in the world, representing 30 per cent of land use (FAO, 2005). According to John et al (2006), 1,819 million hectares of tropical and sub-tropical forests are found in developing countries. Although the original forest area is not known precisely, it is estimated that the world has lost approximately 40 per cent of the original forest area of 6,000 million hectares over the last 8,000 years. Most of the loss in forest area is a direct consequence of population growth in the 20<sup>th</sup> century.

According to Global Forest Coalition (2010), forests are not considered in a reductive, mechanical way by indigenous peoples. Rather they are an integral part of peoples' and communities' existence and identity, intrinsic to life itself, both spiritually and practically: the forests are central to many Indigenous Peoples' traditions and culture, and the source of food, medicines and building materials. For some the forest is also home to their gods, and of great spiritual importance.

Governments, many of which are committed in principle to conservation and wise resource use, are aggravating the loss of the forests through mistaken policies. Such policies, by and large, were adopted for worthy objectives: industrial or agricultural growth, regional development, job creation, or poverty alleviation as a result of population pressure. But such objectives typically have not been realised or have been attained only at excessive cost.

Current conservation debates place high emphasis on the need to integrate the views and needs of local communities in conservation processes. Understanding local community perceptions of deforestation and the factors that influence these perceptions is important for designing management policies that are sensitive to their needs. However, more often than not local communities' perceptions do not receive as much attention as they deserve.

#### **Rate of deforestation from the world perspective:**

All over the world, forest is degraded by natural disaster such tsunamis or hurricanes, landslide or activities of mankind such as, farming, timber production, burning, over-grazing, infrastructural development and mining. There have been

international conferences and seminars to address the rate at which the forest is being degraded but yet forest degradation seems to be rather on ascendancy.

There are approximately 2,047 million hectares of tropical and subtropical forests in the 133 developing countries. They represent an enormously valuable resource in terms of the diverse economic products and environmental services they provide (John et al, 2006). Since 1990, 12.3 million hectares of natural tropical and subtropical forests are being converted each year to other land uses, mostly agricultural (FAO, 2005). The principal agents of deforestation include slash-and-burn farmers, commercial farmers, ranchers, loggers, firewood collectors, infrastructure developers and others.

The pre disposing conditions that favour deforestation include poverty, greed, and quest for power, population growth, and illiteracy. The indirect causes of deforestation include inappropriate government policies, land hunger, national and global market forces, the undervaluation of natural forests, weak government institutions, and social factors. The more visible direct causes of deforestation include the land uses that compete with the natural forests (e.g. agriculture, ranching, infrastructure development, and mining and petroleum exploration). Logging, fuel wood collection, and tree plantations also have a role in the deforestation phenomena. The economic and environmental consequences of deforestation are profound, making it one of the most critical issues facing our global society.

While it is impossible to stop deforestation in the foreseeable future, there are many opportunities for bringing it under control and minimizing its negative impacts. Alternatives include the protection and management of remaining forests, socioeconomic development in rural areas, and policy and institutional reforms. According to FAO (2005), net deforestation rate have fallen since 1990 - 2005 period, but some 13 million hectares of the world forest are still lost each year including 6 million hectares of primary forest (forest with no visible signs of past or present human activities and considered the most biologically diverse ecosystems on the planet).

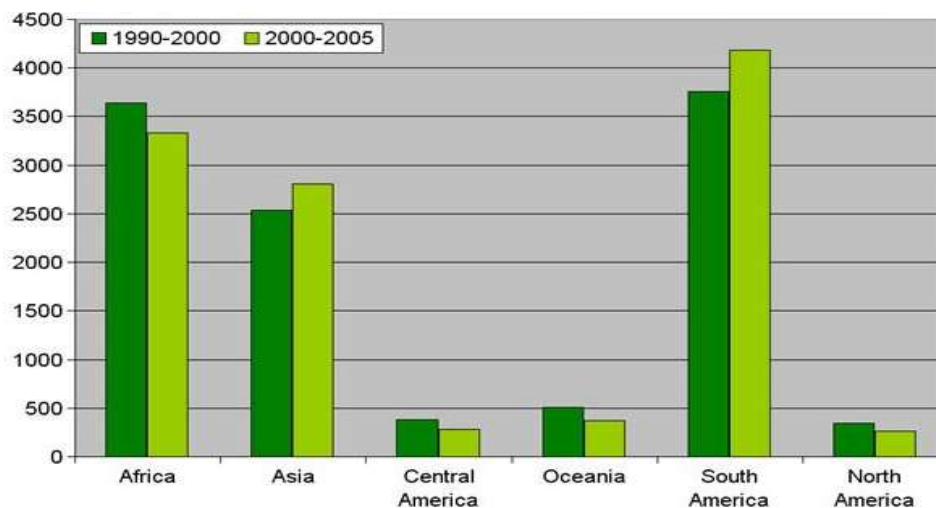
UNECA (2005), report showed that China, as the fastest growing economy in the world, is poised to make significant impact on the global market and the global environment, especially with its expanding involvement with nations rich in natural resources but deficient in economic and political stability. Nowhere is this small apparent than in Africa where China has rapidly bolstered its ties in recent years with the majority of the continent's 54 nations.

**Table1: Highest world average annual deforestation of primary forests, 2000 – 2005, by area**

Country	Annual deforestation rate
Brazil	3,466,00 ha
Indonesia	1,447,800 ha
Russia	532,200 ha
Mexico	395,000 ha
Papua New Guinea	250,200 ha
Peru	224,600 ha
United States of America	215, 200 ha
Bolivia	135,200 ha
Sudan	117,807 ha
Nigeria	82,000 ha

*Source: FAO report (2005)*

According to FAO (2005), Nigeria has the world highest deforestation rate, Brazil loses the largest area of forest annually and Dr. Congo consumes more bush than any other tropical country. The report revealed that, South America loose large tract of Amazon rain forest to cattle ranches and soya bean plantation as a result suffered the largest net loss of forest between 2000 and 2005 of around 4.3 million hectares per year. Scientists are concerned that, forest lost could escalate in the Amazon forest due to increasingly dry conditions.



**Figure 1: World deforestations by regions**

Source: FAO report (2005)

### Rate of deforestation in Africa:

Africa is the second largest net loss in forest with 4.0 million hectares cleared annually. Nigeria and Sudan are the largest losers of natural forest during 2000 – 2005 periods due to subsistence activities. Nigeria annual deforestation rate is 11.1% which is the highest in the world and it is predicted that it will virtually lose all of its primary forest within few years. Malawi, currently in the midst of severe drought and famine is the world's fourth highest deforestation rate (FAO, 2005).

It must be noted that, the problem of deforestation is quite different from one country to another on the continent; with some averaging a constant rate of one percent loss over the decade, others are losing as much as 33%. Due to over reliance on forests to meet the energy needs, with little access to alternative and affordable energy sources, the rate of loss of forests is increasing at an alarming rate. Sixty percent of Africans energy demand is met by forests (UNECA, 2005). The United Nations Millennium Development Goal on Environmental Sustainability seeks to address the problem, by setting a target to check deforestation as well as reduce biodiversity loss.

Gibbs et al. (2007), showed that Africa deforestation rate may be underestimated by satellite imagery because approximately Africa is losing about 0.4 to 0.7 percent of its forest each year. According to him, if you have rain over an open woodland forest, common to parts of Africa, it will 'green up' or sprout flowers. If the satellite takes its image at that time it can have the impression that there is more forest as a result. Gibbs further explained that, the use of estimates for deforestation can also mislead policy makers on the true rate of forest loss by masking the disappearance of ecologically important primary forest with the growth of secondary forest and commercial plantation.

According to FAO (2005), Africa lost the highest percentage of tropical forest during the 1980s to 1990s and early 2005 than any continent. In total, some 23 million hectares of forest disappeared in the 1980s while another 20 million fell in the 1990s. Most clearing results from subsistence agriculture and logging but infrastructure development has also contributed to forest loss. According to Birikorang et al. (2005), the vast majority of Africa's tropical rainforest exist in west and central Africa but these forests are rapidly vanishing. This is due to agricultural activities and excessive demand for forest products for infrastructure development.

### Rate of deforestation in West Africa:

According to Gibbs et al. (2007), West Africa's once verdant and extensive rainforest are now a historical footnote. Gone to build ships and furniture, feed hungry mouths, and supply minerals and gems to the west, the band of tropical rainforest that once extended from Guinea to Cameroon are virtually gone. The loss of West Africa's rainforests have triggered a number of environmental problems that have contributed to social unrest and exacerbated poverty across the region.

Nigeria has the worst highest deforestation rate of primary forest in the world. Between 2000 and 2005 the country lost 55.7% of its primary forest. Logging, subsistence agriculture, and the collection of fuel wood are cited as leading causes of forest clearing in the West Africa country (FAO, 2005).



### **Deforestation rate in Ghana:**

Ghana has a long history of attempting to safeguard the environment from being abused by enacting and including environmental protection in appropriate legislation. The best result from all of these attempts is the establishment of an organisation solely responsible for the environment. Perceptions of deforestation are serious issue which seems to be a threat to deforestation. As the country has divers cultural-believes, socio-economic activities, different rainfall pattern, differences in population density and land size so does perceptions of causes of deforestation varies from person to person.

In Ghana, forest lands are categorised into reserve (protected) and off reserve (unprotected) (Prah, 1997). It is estimated that 50-70 % of the total area of protected forest lands in parts of the Western Region, where Ghana has its last remaining tropical high forest zone, have been illegally encroached by human disturbances like agriculture expansion, mining, and timber extraction (ITTO, 1993; Ministry of Science and Environment, 2002). Furthermore, it is estimated that the country has incurred an economic loss of approximately US\$54bn through the loss of biodiversity due to deforestation and land degradation. This amount is equivalent to 4% of national GDP, and is comparable to the country's annual economic growth (Ministry of Science and Environment, 2002).

In Ghana, forest tenure systems and sustainable forest management showed that farmers still perceive forests as land banks for increasing agricultural productivity to support subsistence living. The Ministry of Agriculture (MOFA, 1991) indicates that out of the 13.6 million hectares, representing 57% of the land area classified as arable land, about one-third has been cultivated since 1990. The government projects that expansion of agricultural land will precede at a rate of 2.5% annually for the production of tree and food crops like cocoa and maize (MOFA, 1991). However, productivity of land and labour is low due to the use of extensive traditional farming methods such as slash and burn (Quansah et al., 2000), which sometimes result in widespread forest fire (Benhin & Barbier, 2004).

Given that agricultural activities diminish biodiversity by displacing or replacing natural environments, the major challenge for conservationists and agriculturists in biodiversity hotspots is how to balance the economically driven agricultural expansion with strategies necessary for conserving natural resources, and maintaining ecosystem integrity and species viability . In light of these issues, some scientists (Greenberg & Bichier, 2000) have embraced agroforestry as an integrated approach for biodiversity conservation on farm. Huang et al. (2002), recommends the use of agroforestry amongst others as a conservation tool to buffer biodiversity loss.

### **Economic growth and environmental degradation:**

With high economic growth rates and macroeconomic stability, Ghana is currently one of the few countries in sub-Saharan Africa that has a chance of halving extreme poverty by 2015. GDP growth increased from 4.5 percent in 2002 to 5.2 percent in 2003 and to a current rate of 6.2 percent (Government of Ghana, 2007). The sustainability of the growth is based primarily on natural resources, which at the current rate of environmental degradation, are threatened. Ghana environmental assessment showed that Ghana's natural resources, on which so much of the country's economic activity and the population's livelihood depend, are being depleted at an alarming rate (World Bank, 2006).

More than 50 percent of the original forest area has been converted to agricultural land by slash-and-burn clearing practices. Despite cocoa land expansion, productivity has declined because of rampant soil erosion. Wildlife populations and biodiversity are in serious decline, and many species face extinction. The degradation of only five types of natural assets (agricultural soils, forests and savannah Woodlands, coastal fisheries, wildlife resources, and Lake Volta's environment) costs at least \$520 million annually (6.0 percent of Ghana's annual GDP). If depletion is reversed and productivity restored, a minute portion of this cost might actually contribute new productivity to the economy each year; however, the vast majority of this cost results from the unsustainable overexploitation of natural resources. The forestry sector in particular has contributed the most to this degradation cost, and this trend is highly unsustainable (Danso & Siv, 2007).

### **Government and sectoral policies:**

Forest resources are of great importance to millions of people, especially those whose livelihoods largely depend on them. These resources play a key role in protecting the environment and are of tremendous importance to the sustainable development of every country. Forest resources policies and institutions are critical to achieving sustainable forest management. Recognizing the importance of forest resources and the need for appropriate measures to optimize their

management and utilisation in Ghana, various past governments formulated policies for developing a national forest estate and a timber industry that guarantee a full range of sustainable benefits for the population. However, most of the forest policies have failed to address the fundamental challenges of forest management in the country (Boon & Ahenkan, 2007).

#### **National environmental policy:**

After the Rio Earth Summit in 1992, Ghana developed its National Environmental Action Plan on which the National Environmental Policy was based. The policy seeks to ensure reconciliation between economic development and natural resource conservation and make high environmental quality a key element supporting the country's economic and social development.

The specific objectives of the policy include maintaining ecosystems and ecological processes essential for the functioning of the biosphere, ensuring sound management of natural resources and the environment, and adequately protecting humans, animals, plants, and biological communities and habitats against harmful impacts and destructive practices, thereby preserving biodiversity. The policy is fashioned to provide a framework for the Environmental Protection Agency to enable it to coordinate the activities of all other institutions and organizations involved in the formulation and implementation of environmental policy and programs in Ghana.

### **3. METHODOLOGY**

#### **Study area:**

The total population of Sissala West District as at 2010 stood at 44,440 made up of 23,320 females and 21,120 males giving a population density of 12 persons/sqkm. It covers a total land area of about 41,289 km<sup>2</sup> which is about 25% of the total landmass of the Upper West Region.

The district has four main area council, namely Gwollu, Fiemual, Zini and Pulima. It has average growth rate of 1.7% as against 2.7% for the national. Agricultural population estimated as 40,648 made up of 19,592 males and 21,056 females. The average household size is 10 persons. By the national standard for the definition of an urban settlement, none of the settlements in the Sissala West District is urban.

The population is dominated by the labour force (15 to 64 years) and small proportion of the elderly persons (above 64). The proportion of population below age 15 is about 44.7% while that of the elderly represents about 6.3%. On the other hand, the proportion of the labour force (between 15 and 64 years) stands at 49% of the total population. The sex composition of the population indicates that there are 49.2 % males and 50.8% females in the district.

The natural environment of the district is made up of mainly the Guinea Savanna vegetation which has evolved from climatic factors and modified substantially by human activities. Human activities, notably, annual routine bush burning, inappropriate farming practices and indiscriminate felling of trees for fuel wood and charcoal as well as poor animal husbandry practices have led to loss of the vegetative cover in the district. This has resulted in loss of soil fertility and its adverse effects on crop cultivation. Again, the location of the district serves as an entry point to the Fulani herdsmen. Their activities have adversely affected the vegetation as they come with large numbers of cattle during the dry season for pasture and water. Realising the effects that degrading the natural environment have on crop production, the quest for protecting the natural environment is gradually gaining ground in the district.

There are various kinds of soils in the district that support plant growth. The main types of soils in the district include the savanna ochrosols, the tropical brown earth and the terrace soils. The savanna ochrosols are generally poor in organic matter and nutrient. This is as a result of the absence of dense vegetation caused by bush burning, over grazing and poor farming practices in the district. This means that good farm yield can be obtained with the application of chemical fertilizers and farm yard manure. The tropical brown earth is suitable for mechanized farming whilst the terrace soils occur along rivers and suitable for grain crops and tobacco.

The land forms of the District is low lying but gently undulating at altitudes ranging between 150m and 300m above sea level. However, some parts average 600m above sea level. The main river that passes through the district is the Kulpawn and its tributaries. The relatively low lying nature of the district couple with a number of streams have led to construction of eight dams by Plan Ghana (NGO) along these streams to supplement the water requirement of farmers for their dry season garden. However, influx of Fulani's from neighbouring Burkina Faso in the dry season with their large number of

cattle in search of water and pasture coupled with cutting down trees along the banks of these streams and dams which serve as water shed also contributes to drying up of these water bodies.

The district has forest reserves at Pulima, Kwaala and the large portion of Gbelle game reserve extend to the district at eastern corridor of the Gbelle community. As a result of rampant bush fire and cutting of trees for charcoal and domestic use, the forest reserves at Kwaala, Pulima and the Gbelle game reserves have suffered serious depletion for long period. Presence of the Gbelle community in the Gbelle game reserve has been a threat to the ecological integrity of the reserve. This can be seen through increasing population of the indigenes and their socio economic activities such as agriculture, poaching and charcoal burning which degrade the environment and the game reserve as well.

On 24th August 2010, the Game and Wildlife Division of the Forestry Commission wrote to the Sissala West District Assembly about its intentions to resettle the Gbelle community to enable it manage and reduce the degradable activities affecting the game reserve but due to political interference the Wildlife Division could not take the necessary action.

Introduction of tractors and other farm inputs such as weedicides, pesticides, improve seeds and fertilizers by MOFA, NGOs, Co-operate Groups and individuals for large scale farming due to vast fertile lands have encouraged most farmers to practice large scale mono culture. By so doing, virgin forests are destroyed to pave way for large scale farming.

High demand for charcoal in the country and neighbouring Burkina Faso which share border with the district contributes to felling of trees including economic trees such as dawadawa, baobab and shea trees in the district. The District Assembly in collaboration with the Forestry Commission have organized workshops for charcoal burners to create awareness on the impact of deforestation in the district and the country at large but the high demand for charcoal pose a serious threat to reducing the rate of deforestation in the district .

Further attempt by MOFA, Forestry Commission and other concerned NGOs such as Plan Ghana, Action Aid, Techno Serve, OLAM Ghana and Care International to educate the indigenes on effects of deforestation on the environment and their livelihood have yielded little impact.

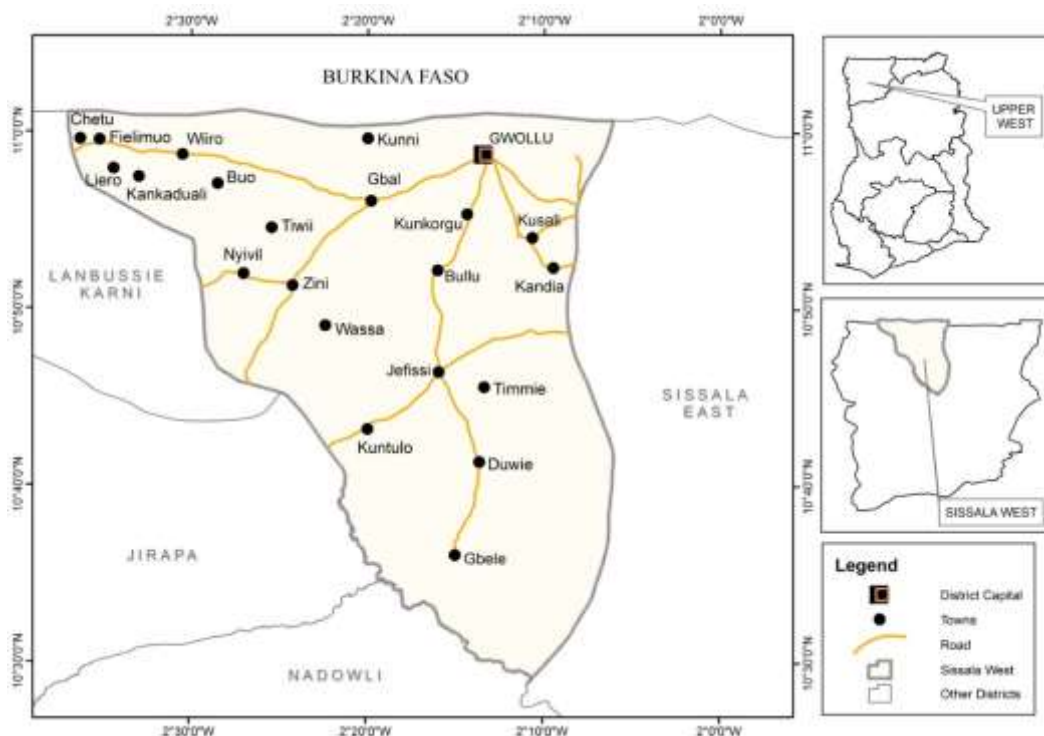


Figure: 2 Map of Sissala West District

Source: Sissala West District Assembly

### Study design:

The study design adopted was descriptive and analytical sample survey. This design was chosen in view of the fact that the study involves a systemic collection and presentation of data to give a picture of real situation. The descriptive sample

survey was used to give clear understanding of what is happening in Sissala West and the methods used to gather concrete information for analyses and recommendation. It aims at getting information on perceptions of causes of deforestation in the Sissala West District. Key departments, agencies and individuals who matter in the environment and forest related issues were contacted for information. The Environmental Protection Agency (EPA), Environmental Officers from Sissala West District Assembly, Forestry Commission, Ministry of Food and Agriculture (MOFA) as well as NGOs and key informants such as assembly men, chiefs, opinion leaders and focused groups were interviewed. Other elements of the sample were farmers, charcoal burners, cattle herds, hunters, and illegal chain saw operators.

To further achieve the objectives of the study, 25 communities were clustered under the four main area councils in the district. The area councils were name zone 1, zone 2, zone 3 and zone 4. Gwollu, Fielmua, Jeffisi and Zini which are the main Area councils were respectively put under zone 1, zone 2, zone 3 and 4 zone. Simple random and purposive sampling technique was used to sample the respondents for the study.

Simple random sampling is a sampling techniques in which each member of the sample population has equal chances of been selected. Justification for using simple random sampling is it ease of assembling the sample. It is also considered as a fair way of selecting a sample from a given population since every member is given equal opportunities of being selected. Another key feature of simple random sampling is its representativeness of the population. Theoretically, the only thing that can compromise its representativeness is luck. This is because the chance of any sample member picked is not influence by any decision from the researcher but a just chance of been picked.

An unbiased random selection and a representative sample are important in drawing conclusions from the results of a study as the goals of research is to be able to make conclusions pertaining to the population from the results obtained from a sample. Due to the representativeness of a sample obtained by simple random sampling, it is reasonable to make generalizations from the results of the sample back to the population.

A total of one hundred respondents were sampled and in-depth interview, focus group discussions and key informant interview were the method used to obtain the data from them. Four field assistants were employed to help in the data collection under supervision to avoid biasness and gross errors. The data was analysed using Statistical Product and Service Solution (SPSS) version 19.

#### **Methods of data collection:**

The methods used for collection were interview, focus group discussion and key informant Interview. One hundred (100) people whose activities degraded the forest were randomly selected for interview. Due to the large number interviewed and sparse settlement, the study employed four field assistants to help administer the questionnaires under strict supervision. Sampled communities were selected randomly as well as the respondents from these communities. The justification for the interview was to find answers to as many questions as possible leading to the achievement of the study objectives.

The focus group discussion was organized at each of the four zones as already mentioned. Discussions were organized separately for groups each consisting 10 members, the composition of which ensured representation of the categories chosen as sample elements, that is farmers, charcoal burners, hunters, cattle herds and chain saw operators. Respondents were sampled using the purposive sampling method. A discussion guide was designed; it considered research questions and objectives of the study. Justification for the focus group discussions was to ensure that vital information from different sources or group of peoples which will help achieve the objectives of the studies were invited.

Key informant interview was also used to obtain information from opinion leaders, officials from the district assembly, EPA, Forestry Commission, MOFA and NGOs in the district. Majority of the key informants have attained tertiary level education. This implies that almost all the informants have some experience when it comes to deforestation. The key informant interview was to get reliable and relevant information that would help achieve objective of the study.

#### **Types of sources of data:**

Primary and secondary sources of data were used. The bulk of the data collected were from primary source and personal observation of the activities of charcoal burners, cattle herds, farmers and hunters. Secondary source of data were obtained from the Sissala West District Assembly, Forestry Commission, Ministry of Food and Agriculture (MOFA), EPA, Plan Ghana, Action Aid, Techno Serve and other organisation operating within the district.

Questionnaires were administered to collect primary information from people (respondents) whose activities degrade the forest. A total of 100 respondents were selected randomly to answer questions designed to achieve study objectives. Different questionnaires were designed and used to obtain information from focus groups and key informants with reliable information.

**Data analysis:**

After collecting the data by both qualitative and quantitative techniques, editing and coding was done before presentation. In the presentation of the data, descriptive statistics such as frequencies, percent and cross tabulation were used. Data was analysed using Statistical Product and Service Solution (SPSS), version 19 (2010 edition).

**4. RESULTS AND DISCUSSION**

**Socio-demographic characteristics of respondents:**

This section presents the characteristics of the respondents sampled. This is done by analyzing the sex, age, occupation and educational background. This is to give clear picture about the respondents demographic information and how their educational level, sex and occupation influence deforestation in the district.

**Sex of respondents:**

The sex of respondents was necessary in the study because both sex (male and female) in one way or the other engage in activities that degrades the forest. Since sex also have some influence in the kind of socio economic activity carried out which may adversely have impact on the environment, it is crucial in the study to give both sex equal chances to respond to the interview schedules. The issue of deforestation and the perceptions of it causes affect both sex in the district.

Analyses of the survey conducted revealed that out of the 100 sampled respondents, 69 and 31 percent were males and females respectively as shown in Table 4. Male respondents were more than the female respondents because of the unwillingness of the females in the district to be interviewed when their husbands are around this could be explained by cultural setting of the study area where men are more involved in decision-making than women. The men feel they are in better position to answer the questions very well. However the few women who were interviewed gave clear answers which showed that they also have idea about the perceptions of causes of deforestation. The focused group discussions also gave the women groups good platform to express their views about the perceptions of causes of deforestation.

**Table 1 : Sex of respondents**

Sex	Frequency	Percent
Male	69	69
Female	31	31
Total	100	100.0

*Source: Field Survey, 2014*

**Age of respondents:**

The age of respondents was important in this study because it was to determine economic active group whose activities have serious repercussion on the environment for that matter the forest. Since age goes with man power, the more active age group engage in any degradable activity the higher the exploitation hence the greater the environmental impact.

The survey conducted revealed that 18 percent of the respondents were below 30 years whilst 41%, 29% and 8% represent 31-40, 41-50 and 51-60 years respectively. Only 4% was above 60 years. This implies that the active age group ranges from below 30 to 50 years. Due to the huge burden of responsibilities on them, they do everything to survive by carrying out economic activities including tilling the land and felling of trees for charcoal and firewood. They also engage in bush burning to hunt for rabbits mostly available during the dry season. This result in devastating large hectares of forest land in the district.

**Table 2: Age of respondents**

Age (years)	Frequency	Percent
30 and below	18	18
31 - 40	41	41
41 - 50	29	29
51 - 60	8	8
Over 60	4	4
Total	100	100.0

*Source: Field Survey, 2014*

**Educational background of respondents:**

The educational background of the respondents was also taken into consideration during the study. This is because it could be a factor influencing respondent’s perception of causes of deforestation. According to Global Forest Coalition (2010), lack of education is relevant to underlying causes of deforestation. It further emphasised that without education, people cannot find or create alternative livelihoods or reduce their dependence on forest resources. Education could also influence knowledge levels, skills and attitudes. The study as shown in Table 3 revealed that out of 100 respondents interviewed 48 percent had no formal education whilst only 4 percent had tertiary education.

**Table 3: Educational level of respondents**

Educational level	Frequency	Percent
primary	16	16.0
Junior High	22	22.0
Sec/Voc/Tech	10	10.0
Tertiary	4	4.0
Non formal	48	48.0
Total	100	100.0

*Source: Field Survey, 2014*

Those who had some form of education either primary, junior high school and secondary/technical education represent 52 percent in total out of the 100 respondents. This implies that most of the respondents have had some form of formal education and for that matter have some knowledge on effects of deforestation on the environment. According to Marshall (2008), education is the predictor of one’s environmental knowledge. That is to say education contributes to an explanation of environmental knowledge, which in turn predicts a perception of environmental threats.

**Economic activities of respondents:**

The district is endowed with good fertile soil and vegetation. Good fertile soil coupled with readily available inputs from organizations such as OLAM Ghana, Plan Ghana, MarasaAr’ziki (Wienco Fertilizer subsidiary), SADA and MOFA has promoted the cultivation of cereals and legumes especially maize, beans and groundnut. Introduction of tractors have paved way for farm expansion and this has led to clearing large areas which result in indiscriminate felling of economic trees such as dawadawa, shea and mahogany trees.

The study revealed that 76 percent of the respondents are farmers whilst 40 percent are charcoal burners. Wood logging, hunting and cattle herding represented 26, 14 and 2 percent respectively. This implies that farming and charcoal burning

are the main economic activities that the respondents engaged in to earn their living. Hunting which is mostly done latter part of the year when harvesting is over is mostly done by the youth to search for rabbits. Most of the cattle herding are done by Fulani settlers who take charge of the indigenes cattle. These cattle herds burn the dry grass during the dry season to enable new ones to grow so as to get fresh pastures for their animals. This result in burning large area including farms during the dry season.

**Table 4: Economic activities of respondents**

Economic activity	Frequency	Percent
Charcoal burning	40	25.3
Farming	76	48.1
Wood logging	26	16.4
Hunting	14	8.9
Cattle herding	2	1.3
Total	158	100.0

*\*The total number of responses exceeded the number of respondents (100) due to multiple responses.  
 Source: Field Survey, 2014*

**Awareness of deforestation:**

Deforestation is suffered in all parts of the country which Sissala West District is no exception. Since the main economic activities in the district include, farming, hunting, charcoal burning, wood logging and cattle rearing which have direct impact on the environment, respondents were aware of deforestation. The survey conducted showed that 89 percent of the respondents were aware of deforestation whilst 11 percent unaware.

This implies that due to the nature of their activities and the impact it has on their immediate environment, they have realised change in vegetation cover. However the 11 percent who were unaware justified their unawareness by saying their activities have no impact on the environment. Further confirmation from focus group discussions as shown in Table 6 and 7 respectively showed that average distance covered by majority of respondents representing 43 percent to fetch fuel wood covered average distance of 3km whilst in the past (10-20 years back) covered average distance of 1km. This was done to affirm respondents awareness of deforestation and to find out whether indeed they have realised change in their vegetation cover.

**Table 5: Awareness of deforestation**

Response	Frequency	Percent
Yes	89	89
No	11	11
Total	100	100

*Source: Field Survey, 2014*

**Table 6: Distance covered by respondent to fetch fuel wood today**

Distance covered (km)	Frequency	Percent
1	1	1.0
2	20	20.0
3	43	43.0
4	24	24.0
5	11	11.0
6	1	1.0
Total	100	100.0

*Source: Field Survey, 2014*

**Table 7: Average distance covered by respondents to fetch fuel wood (10-20 years back)**

Average distance (km)	Frequency	Percent
1	52	52.0
2	41	41.0
3	5	5.0
4	2	2.0
Total	100	100.0

*Source: Field Survey, 2014*

### Main agents of deforestation:

Deforestation is caused by numerous factors which serve as agents that trigger it. In the case of Sissala West District, farming, hunting charcoal burning and wood logging are perceived to be the main agents of deforestation. From Table 8, it was realized that 32.44 percent of the respondent claim charcoal burning is the main agent of deforestation in the district. Hunting, which also results in bush fire especially during the dry season, is considered the next agent representing 29.33 percent.

According to Peter (2012), demand for bush meat in rural areas is increasing due to rapid human population growth, which is occurring quicker in Africa than elsewhere, and is occurring quicker than average on the borders of protected areas. Ecological consequences of hunting include overall wildlife population declines, reductions in biodiversity, local disappearances of many species from both within and outside protected areas and associated loss of ecosystem functionality, reductions in the effective sizes of protected areas due to edge-effects and, in some cases, complete collapse and disappearance of wildlife populations. Personal observation at the time of the study revealed that large areas were burnt as a result of hunting during the dry season.

Research by Atongi (2000), showed that the problem of degradation is accentuated by annual ritual of bush fire caused by hunting as well as the cutting down of few trees for fuel wood. Wood logging, which represent 18.7 percent of the respondents considered as one of the main agent of deforestation is also rampant in the district. The forest reserves at Gbelle, Kwaala and pulima have suffered some depletion from chain saw operators. Trees such as mahogany, nim, dawadawa and shea trees are cut into logs for shelter and shed around their houses. The survey also showed that 18.2 percent of the respondents believe farming is also a key agent of deforestation as a result of expansion of farms with the aid of tractors resulting in pulling down economic trees. However most of the respondents believe farming is less environmentally destructive compared to the others as shown in Table 8.

**Table 8: Main agents of deforestation**

Main Agent	Frequency	Percent
Farming	41	18.2
Hunting	66	29.33
Charcoal burning	73	32.44
Wood logging	42	18.7
Others	3	1.33
Total	225	100.0

*\*The total number of responses exceeded the number of respondents (100) due to multiple responses*

*Source: Field Survey, 2014*



**Perception of causes of deforestation:**

Perceptions of causes of deforestation vary depending on the agents contributing to deforestation. Many people perceived that economic activities such as farming, hunting, charcoal burning and wood loggings are the causes of deforestation but critical look at circumstances that compel people to engage in these activities may lead to disagreement of these facts.

From Table 9 it was observed that 38.5 perceived population growth to be one of the causes of deforestation. This is because majority of the indigenes are farmers who farm on family land, therefore population growth would lead to clearing of large areas for farm expansion to feed the growing population. Also, lack of formal employment against growing population enhances the indigenes to engage in farming, hunting, charcoal burning and wood logging which leads to deforestation.

**Table 9: Perceived causes of deforestation**

Perceived cause	Frequency	Percent
Population growth	77	38.5
High illiteracy rate	58	29.0
Poverty	64	32.0
Hunger	1	0.5
Total	200	100.0

*\*The total number of responses exceeded the number of respondents (100) due to multiple responses*

*Source: Field Survey, 2014*

Table 9 also showed that 32.0 percent of the respondents perceived poverty as the root cause of deforestation. Since most of the indigenes are poor and rely solely on the environment for survival, they resort to any degradable activities just to get their daily bread. Research conducted by United Nations Research Institute for Social Development (UNRISD, 2005), indicated that environmental degradation is said to cause poverty because degradation involves the erosion of the resources base upon which the poor often depend for their livelihood, while the adverse impacts of environmental decline on people's health further limits their productive potential.

According to Abdulai (2007), subsistence agriculture, as widely practised in the country especially in the three northern regions, is unable to provide for people's needs. Very little is left after consumption to sell and provide other pressing needs. Besides, agriculture products do not earn as much income as industrial products or even processed crops. According to him, there is the tendency of farmers to dominate the poor segment of the country's population. Abject poverty which is an issue due to lack of alternative economic livelihood to survive on compels most indigenes to engage in activities such as farming, charcoal burning and wood logging just to generate some income to earn a living. Some of the women also travel long distance, cut down and gather fire wood for sale in other to make money which eventually degrades the forest.

High illiteracy rate which represent 29.0 percent was also considered as one of the underlying causes of deforestation. Further interaction showed high illiteracy rate among the rural dwellers was perceived to be main cause of deforestation. This is because most of them lack knowledge on sustainable agriculture and forest management and this result in destroying large areas of forest in their daily engagement with the environment for survival. As some have long experience in forest management due to long interaction with the forest, others also think the forest is able to withstand pressure and rejuvenate to supply them with their needs.

From the survey conducted, hunger was perceived as the least cause of deforestation because since the communities have fertile lands for farming, they are able to grow food to feed their household. Therefore hunger was not an issue though most of the indigenes experience abject poverty.

**Alternative livelihood solution to deforestation:**

This was realised as one of the solution to curb the menace of deforestation. The survey conduct showed that most of the indigenes think introduction of alternative livelihood projects such as skill trainings, credit facilities for trading etc. could help reduce pressure on the environment hence the forest. The survey revealed that 95 percent of the respondents think provision of alternative livelihood projects could help address deforestation challenges in the district. Meanwhile, 5 percent of the respondents think provision of alternative livelihood would not help address deforestation activity but sustainable forest management and education could help reduce the problem.

**Table 10: Alternative livelihood as solution to deforestation**

Response	Frequency	Percent
Yes	95	95.0
No	5	5.0
Total	100	100.0

*Source: Field Survey, 2014*

**Alternative livelihood project to reduce deforestation:**

Faced with growing land scarcity, diminishing agricultural productivity and traditional products from forests and other natural resources, local people may turn to other activities. These often involve engaging in petty trade, providing services to neighbours with more animals or crops, or finding employment in mining, road construction or urban development. Only occasionally, however, has generation of alternative sources of income locally offered a solution for those whose livelihoods are threatened by environmental degradation (UNRISD, 2008). These opportunities generally depend on an expanding local economy, which is likely to be curtailed by the environmental degradation itself.

As the main occupation of the indigenes are farming, charcoal burning, wood logging and hunting, provision of alternative livelihood could serve as source of income generation and employment so as to reduce pressure on the land as well as the forest. Key informants interview and focussed group discussions revealed that alternative livelihood as source of deforestation could be a good intervention to help address deforestation challenges in the district. The interview showed that almost all the informants have some alternative livelihood projects that they think when implemented effectively, could create jobs and improve the well-being of the indigenes.

The survey conducted revealed that most of the rural dwellers wish they could find other sources of generating income and food apart from their main economic activities. Table 11 showed that 27.9 percent of the respondents prefer Rural Enterprise Development projects as their alternative livelihood. According to the respondents implementation of these projects could help them access credit facilities to enable them venture into small scale business or trade.

From the survey, it was realised 25.6 and 25.2 were in support of dry season gardening and skill/vocational trainings respectively as the best alternative livelihood to help address deforestation challenges in the districts. Discussions with the respondents showed that since most of them are farmers, if the government or other NGOs could provide them with irrigation facilities to produce fresh vegetables in the dry season, it could enable them gain self-employment as well as income. Some of the respondents were of the view that skill/vocational trainings such as baking, sewing, weaving, carpentry and welding by government agencies such as Rural Enterprise Development and the District Assembly could assist the youth acquire some skills to enable them gain some income without necessarily degrading the forest to earn a living. Afforestation projects which represent 14.0 was seen as one of the best alternative livelihood to reduce deforestation since the main economics activities are farming, charcoal burning and hunting which leads to loss of large track of forest.

Since the district is close to the Burkina Faso border it creates business opportunities which enhance trading. The survey showed that 7.4 percent of the respondents suggested that access to credit facilities to boost trading would help the rural dwellers especially the women and the youth to engage in trade to avoid over reliance on the forest for survival.

**Table 11: Alternative livelihood projects**

Alternative livelihood project	Frequency	Percent
Afforestation	36	14.0
Dry season gardening	66	25.6
Rural Enterprise Development projects	72	27.9
Skill/vocational trainings	65	25.2
Trading	19	7.3
Total	258	100.0

*\*The total number of responses exceeded the number of respondents (100) due to multiple responses.*

*Source: Field Survey 2014*

## 5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

### Summary:

The study was set out to examine the perceptions of causes of deforestation in the Sissala West District of the Upper West Region of Ghana. Twenty communities out of 56 communities were sampled. The communities were randomly selected under the four main area council. Simple random sampling and purposive sampling techniques was used to sample 100 respondents for the study. Focus group discussions and key Informant interview was also used to obtain vital information in the study area. SPSS (version 19) was used to analyse the data and was translated into frequency tables for discussions.

Perceptions of causes of deforestation vary from place to place and individual to individual depending on once level of environmental knowledge and what is been perceived as underlying causes of the deforestation. The survey conducted showed that there are many factors that influence once perception of causes of deforestation.

The research conducted revealed that deforestation is on ascendency and cannot be done without in the Sissala West District due to their socio economic livelihood activities for survival. The research showed that the main economic activities in the district were farming, charcoal burning, hunting, wood logging and cattle heading but majority of the indigenes are farmers and charcoal burners.

The research revealed that most of the farmers clear new areas for farming when their old farms becomes infertile and this result in destroying large quantities of trees including economic ones such as shea, dawadawa, nim and mahogany trees with the aid of tractors.

Charcoal business which is one of the main traditional occupation leads to cutting down of large number of trees to produce charcoal to meet highly market demand both locally in Ghana and Burkina Faso which shares border with the district. Hunting which was also seen as cause of deforestation mostly done in latter part of the year around late October leads to wide range of bush fire which destroy large hectares of forest including farms.

Wood logging was also seen as one of the agents of deforestation. It was realised that most of the indigenes cut down trees into logs when putting up new structures and shed to store their farm produce. Some of them engage the services of chain saw operators for wood supply. This also ends up destroying large number of trees including economic trees.

The research conducted showed that farming, charcoal burning, hunting and wood loggings were only agents of deforestation but what was perceived as the underlying causes of deforestation were poverty, illiteracy and population growth. It was revealed that majority of the respondents perceived poverty is the root cause of the deforestation since most of the indigenes are poor and have no other source of livelihood; they resort to degradable activities such as farming, wood logging and charcoal burning to earn a living.

Others also perceived illiteracy as what triggers deforestation in the district. According to the respondents most of the indigenes have no formal education and do not take any precautionary measures to conserve the forest. They fell trees indiscriminately with the believe that the forest is capable to rejuvenate.

Population growth was also a key factor perceived as causes of deforestation. Increase in population would increase the pressure on the environment as well as the forest since that is their sole source of livelihood. The indigenes believe that increase in population have created competition on farm size and have also increase the activities of charcoal burners, hunters and chain saw operators.

The research conducted revealed that the rural dwellers were aware of deforestation but have no option since they cannot do without the forest. The survey showed that 89 percent of the respondents were aware of deforestation. This implies that the indigenes have realised change in their vegetation cover but do nothing to mitigate it.

### Conclusions:

In view of the above findings it could be concluded that the main agents of deforestation were farming, hunting, charcoal burning and wood logging but what was perceived to be root causes of these deforestation were population growth, poverty, hunting, high illiteracy rate among rural dwellers and lack of alternative source of livelihood.

It was noticed that there is massive pressure on both the land and the forest due to lack of alternative source of economic livelihood. Furthermore, poor of education among the rural dwellers is said to also have impact on their lives since they

do not take any measure(s) when engaging in their daily activities. Most of them are not environmentally conscious though some receive trainings from EPA, MOFA or Forestry Commission.

Poor enforcement of by-laws has also contributed to rampant forest degradation since those who engage in environmental degradation go unpunished. Most of the rural dwellers do not even know there are bye laws that protect the forest against deforestation.

### **Recommendations:**

There are many ways to tackle perceptions of deforestation depending on what the underlying causes could be but that of Sissala West could be address effectively if the following recommendations are given attention by stakeholders.

1. The various organisations such as EPA, Forestry Commission, MOFA, Plan Ghana who advocates for environmental protection and forest conservation in the district should embark on massive campaign against deforestation. They should intensify their education on effect of deforestation on the environment as well as their lives.
2. By-laws should be made and rigorously enforced: by-laws to protect the forest should be formulated and implemented effectively. Offenders should be punished to deter others from engaging in any environmental degradable activities such as charcoal burning.
3. Afforestation projects should be embarked on to replace the lost forest: The Forestry Commission should embark on afforestation exercise at the various communities, including schools. People should be motivated to take care of the seedlings.
4. MOFA should train farmers on importance of agroforestry and should encourage farmers to inter crop trees with plants.
5. Alternative livelihood should be promoted: Since almost all the indigenes depend on the land and forest for survival, provision of source of alternative economic livelihood such as credit facilities to enhance trade, technical/vocational skill training to enhance self-employment, irrigation facilities to promote dry season gardening would help the rural dwellers to have other source of reliable income so as to reduce pressure on the forest as well as the environment.

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