ASHESI UNIVERSITY COLLEGE

AN ASSESSMENT OF GHANA'S PREPAREDNESS TO MEET THE DEFORESTATION TARGET UNDER THE MILLENNIUM DEVELOPMENT GOAL 7

By

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DECLARATION

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

Candidate's Signature:……..

Candidate's Name:……

Date:…….

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by Ashesi University College.

Supervisor's Signature:……..

Supervisor's Name:…….

Date:……..

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ABSTRACT

Due to the quest to attain economic development, Ghana is rapidly developing but this has come at the expense of natural resources in the country. Ghana has lost majority of its forests due to agricultural activities, mining and lumbering. There is a school of thought that are of the opinion that forests are essential for the mitigation of climate change. Due to the severity of the negative effects of climate change such as change in rainfall patterns and increase droughts, there has been rallying calls to reduce deforestation all over the world; as a result reducing deforestation is one of the targets under the goal on environmental sustainability for the Millennium Development Goals. This study assesses Ghana's readiness to meet the deforestation goal under the MDG on environmental sustainability, MDG 7.

The study analyzed data on the Ghana's deforestation rates from 1990 to 2007 alongside information from government agencies and programmes or interventions are taking place to reduce deforestation in the country. The forest transition theory influenced the method for study; the study states that development has an effect on deforestation and therefore the need to manage forests sustainably. The study concluded that Ghana cannot meet the deforestation target by 2015 but can meet the target of at least 35% of land covered by forests on a later date. It also recommended a study that would develop a formula to predict the rate of deforestation in the future.

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CHAPTER ONE: INTRODUCTION

Forests are very important in the development of many African countries as they play a key role in most aspects of the socio-economic lives of the people. Also, considering the significant role forests play in mitigating climate change, it is essential to conserve forests by reducing deforestation and increasing forest cover. The United Nations' Millennium Development Goals (Henceforth referred to as MDG) encourages developing countries to meet certain targets aimed at helping them achieve a higher status of development.

1.1 Background to the Research

1.1.1 Overview of Forestation in Africa

Forest resources are essential to social and economic activities in Africa; as a result, they are important elements in both poverty reduction and sustainable development strategies for many Sub-Saharan African countries (Tutu, 2009). There is therefore the need to protect forests and implement policies and programs that ensure that these forests are sustained for future generations. Also, considering the rise in development activities such as the discovery of oil, increasing activities in mining and the ever growing telecommunications industry on the continent, it is necessary to evaluate or assess policies aimed at sustaining forests so this essential resource is not lost in the future.

The United Nations' Food and Agricultural Organization (Henceforth referred to as FAO) defines forests as "land with a tree canopy cover of more than 10% and an area of more than half a hectare." This includes natural and plantation forests, but excludes stands of trees established primarily for agricultural plantations such as fruit tree and oil palm plantations and trees planted in agro forestry systems (FAO, 2006). Forests are estimated to cover an area of 635 million square miles representing 16% of the global forest area and 21% of Africa's land area. The vast majority of African forests are found in West and Central Africa (Ibid).

Some essential benefits of forests are: they provide multiple goods and services that are vital for poverty reduction and sustainable development in Africa and at the global level. Over two-thirds of Sub-Saharan Africa's 600 million people rely directly or indirectly on forests for their livelihoods as well as for food security (CIFOR, 2005 p. 3). It is estimated that forests account for an average of 6% of Gross Domestic Product in Africa, which is the highest in the world (NEPAD, 2003). About 80% of the energy used in Africa is wood biomass based. Fuel wood or fire wood is predominantly used in the rural areas, while in urban areas, charcoal is used. Forests are also important in the recharging of water bodies as well as controlling water flow. They are therefore vital in the health of communities, agricultural production and electricity power generation, which depends on this water. Forests also serve as habitats for numerous species in the world. They help in combating land

degradation and desertification and mitigating climate change, which pose serious threats to agricultural production among other economic sectors (Tutu 2009).

1.1.2 Overview of the Millennium Development Goals

In September 2000, representatives of UN member nations signed a resolution on eight development goals, which they pledged to fulfil, in order to achieve a better world by 2015. The aim of these goals is to alleviate people from extreme poverty, hunger, illiteracy and disease; achieving gender equality and the empowerment of women, environmental sustainability and a global partnership for development (UN[c], 2000).

Millennium Development Goal 7: Environmental Sustainability, has four major targets, which are: to integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources; to reduce biodiversity loss by 2010 and achieving a significant reduction in the rate of loss; to by 2015 halve the proportion of the population without sustainable access to safe drinking water and basic sanitation; and to have achieved a significant improvement in the lives of at least 100 million slum dwellers (UN[c], 2000 p. 5).

The importance of the second target cannot be over emphasized, as the reduction of deforestation could play a key role in lowering greenhouse emissions, considering the increase in industrialization and the continuous discoveries of oil. Deforestation continues at an alarming rate of about 13 million hectares per year in Africa. This is counterbalanced by forest planting, landscape restoration and the natural expansion of forests, which have significantly reduced the net loss of forest area. Deforestation and forest degradation help mitigate climate change. Trees and plants absorb and store carbon, thus contributing to lower levels of carbon dioxide in the atmosphere. However when trees are felled or burned, carbon dioxide is released into the air. The forestry sector of the economy accounted for 17.4 per cent of total anthropogenic greenhouse gas emissions in 2004, primarily due to high levels of deforestation and forest degradation in developing countries (UNDP, 2009, p. 24). The specific deforestation target for Ghana, as described under the Millennium Development Goals, is forest cover representing 35% of land area which amounts to at least 7,448,000 hectares of forest cover in the country by the year 2015.

1.2 Problem Statement

Considering the social and economic benefits of forests to Ghana, as highlighted above, it is essential to combat the threat of deforestation. Deforestation, as defined by the FAO, is the conversion of forest to another

land use (such as agriculture, pasture, water reservoirs and urban areas) or the long-term reduction of the tree canopy cover below the minimum 10% threshold (FAO, 2006). Ghana's rapid development, without taking into account the importance of forests (Adams, 2009) is a gigantic threat to the future of socioeconomic development on the country. This makes the Millennium Development Goal on Environmental Sustainability important for the sustainable development of Ghana. One of the targets of this goal is to reduce biodiversity loss, by 2010 and to achieve a significant reduction in the rate of loss. This paper assesses Ghana's preparedness towards meeting this target by 2010 and how successful it is in reducing the rate of biodiversity loss. Can Ghana reduce deforestation and the rate of loss by 2015? This is significant as knowing the state of Ghana's progress should inform policy makers of the dangers of deforestation and change their attitudes towards meeting the target set under environmental sustainability, MDG 7. This paper analyzes data on deforestation in Ghana over the years, 1990 to 2007; and assesses Ghana's preparedness to meet the target of reducing deforestation as well as the net loss of forests in Ghana. Deforestation is measured by the proportion of forest cover to land in Ghana at a particular time.

1.3 Research Objectives

The objectives of this research are to assess Ghana's preparedness towards sustaining the environment, specifically looking at the area of forestation. The research therefore seeks to:

- Analyze deforestation patterns in Ghana since the year 2000.
- Find out what is being done to reduce deforestation.
- Find out Ghana's current
- status with respect to meeting MDG 7

1.4 Research Questions

The research will tackle certain issues to help assess Ghana's preparedness towards achieving the target of reducing the rate of deforestation. The research would seek to answer the following questions.

- Can Ghana meet the target for reducing deforestation in 2015?
- What are the policies that will help check deforestation whilst improving forestation?

Ghana is only left with six years to meet the Millennium Development Goal on Environmental Sustainability however considering the rate at which the country is developing, it is highly unlikely the Ghana would meet the 2015 target agreed by world leaders at the summit in 2000. Evident to this fact is the increasing rate at which mining activities (Akabzaa and Darimani 2001) and logging in forest areas, the major catalysts for deforestation.

1.5 Data Collection

The data for this study was both quantitative and qualitative. The research used qualitative figures, which were mainly data on proportion of forests covers in Ghana from 1990 to 2007, having intervals of five year periods until 2005 where there are annual figures (See table 4.1, below). It also got data on forest reserves in the country from the Forestry Commission of Ghana, these figures give a pictorial view of forest cover in Ghana over the years and helps with making meaningful assessments on Ghana's preparedness to deal with deforestation by increasing the proportion of land covered by forests.

The second type of data for this research is qualitative; this mainly interviews granted by officials at the Forestry Commission, the Environmental Protection Agency and the Unite Nations Development Programme (Ghana Office) (Henceforth referred to as the UNDP). Interviews from the Forestry Commission and Environmental Protection Agency (Henceforth referred to as the EPA) reveal the State's policy and interventions aimed at reducing deforestation in Ghana; whilst interviews with the UNDP help to access how feasible Government's policies and interventions are in line with meeting the deforestation target under MDG 7.

1.5.1 Profile of Major Sources for Data Collection

1.5.1.1 The Forestry Commission

The Forestry Commission of Ghana is tasked with the management of biodiversity in Forest areas in the country. The Forestry Commission is made up of two major divisions, the Wildlife Division and the Forest Services Division. The Forest Services Division of the Forestry Commission is aimed at ensuring the conservation and sustainable management of Ghana's Forest Resources for the maintenance of environmental quality and for the benefit of all segment of society. Its main functions are:

- To protect, manage and develop forest services in the national interest and for the benefit of owners
- It establishes planning systems for protection, harvesting and developing of the forest reserves in a sustainable manner.
- It provides management and technical services with regards to matters of protection, management and development of forest reserves.
- It promotes public awareness, understanding and support for forest resources conservation.
- It regulates the harvesting of forest resources.
- It facilitates the development of forest plantations.

The different roles of the forest services division are essential to the management and protection of forests in Ghana. Effective management of Forests by this governmental agency is essential in helping Ghana attain the deforestation target under MDG 7.

1.5.2.1 The Environmental Protection Agency

The Environmental Protection Agency is the leading public body for protecting and improving the environment in Ghana. Its main objective is to make sure that air, land and water are looked after by everyone in today's society, so tomorrow's generations inherit a cleaner, healthier world.

- The EPA seeks to create awareness to mainstream environment into the development process at the national, regional, district and community levels;
- Ensure that the implementation of environmental policy and planning are integrated and consistent with the county's desire for effective, long-term maintenance of environmental quality;
- Guide development to prevent, reduce, and as far as possible, eliminate pollution and actions that lower the quality of life;
- To apply the legal processes in a fair, equitable manner to ensure responsible environmental behaviour in the country;

- Continuously improve EPA's performance to meet changing environmental trends and community aspirations;
- Encourage and reward a commitment by all EPA staff to a culture based on continuous improvement and on working in partnership with all members of the Ghanaian community.

This study looks at the role the EPA plays, as a government institution mandated to protect the environment, in helping Ghana meet the deforestation target.

1.5.1.2 The United Nations Development Programme (UNDP)

The UNDP is the UN's global development network, advocating for change and connecting countries to knowledge, experience and resources to build a better life. Its current priority is to help all countries achieve the Millennium Development Goals (MDGs) by 2015. With respect to the MDGs, the UNDP's network links and coordinates global and national efforts to reach these Goals. Their main focus is helping countries build and share solutions to the challenges of:

- Democratic Governance
- Poverty Reduction
- Crisis Prevention and Recovery
- Environment and Energy

- HIV/AIDS

The UNDP is a good source on Ghana for this study as their Human Development Report, and Millennium Development Goal Reports give an overview of the progress Ghana is making towards achieving the various goals, particularly Goal 7 which is core to this study. These reports provide data that helps in the monitoring of deforestation in Ghana.

1.5.2 Data Period and Interval

The data used for this research is collected from 1990 till 2007. This period is chosen because the core data for this research is data from the UNDP which monitors the progress countries have made since the inception of the MDGs. Despite starting from 2000, most of the data for monitoring MDGs start way before the year 2000. In the case of monitoring deforestation in Ghana, the data measures the proportion of forest cover to land since 1990. The data is collected within intervals of five years from 1990 till 2005; however since 2005, there have been annual figures till 2007. The advantage of using data from before the inception of the MDGs is that, it gives a much broader view of the situation before the start of millennium development programmes and the situation on the ground after these programmes.

1.6 Significance of study

All over the world, deforestation rates are increasing as the years go by. Some facts on forestry released by the FAO in 2005 reveal that, six million hectares of primary forests are lost each year; annual net loss of forest cover is about 7.3 Million hectares (Kniver, 2009). 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. This has led to the felling of timber in forest areas to meet demands for increasing timber exports. Cocoa plantation is also another threat to forests in Ghana, as some forest areas are destroyed to increase cocoa plantation. The final major threat is the mining sector where unfortunately for Ghana, most of the area were precious minerals are located happened to be forest areas. Thus larger chunks of forests are destroyed to get to these precious minerals.

The economic value of these commodities is very significant for the attainment of development in Ghana. Cocoa, which is Ghana's highest foreign exchanger earner, draws about US$500 Million into the country whilst Timber the third highest draws about US$300 Million (Safo, 2002); meaning that stopping the exploitation of these natural resources for the sake of forests would be a major setback to development in the country. With the discovery of oil, there is the potential of an increase in development activities

in Ghana as well a the significance of forests in the socio economic life of Ghanaians, it is necessary to develop sustainably so that much forests are not lost leading to negative effects of deforestation such as global warming, change in weather patterns, and increasing draught to name a few that may engulf Ghana in the future.

There is therefore the need to monitor the rate of deforestation in order to adopt measures that would prevent Ghana from experiencing the negative effects of deforestation. The MDG target on deforestation is a very good measurement of assessing progress made by Ghana in reducing deforestation. The target has a target that serves a guide for the country to have enough plant cover that would mitigate the effects of deforestation in Ghana. This study can also be used for assessing progress towards meeting the MDG deforestation target, or modified to assess progress made towards meeting other MDG targets.

1.7 Organization of Thesis

This dissertation has been organized into five chapters which are as follows:

1.7.1 Chapter 1

Chapter 1 introduces the topic of deforestation and gives some background to deforestation in Ghana. It also highlights the importance of forests and their significance in an African setting. It then talks about the objectives of the study bringing out some queries the research hopes to address; and then

talks about the significance of the study. There is a summary on data collection and a profile of the major sources of information for the study.

1.7.1 Chapter 2

The literature review section looks at what other authors have said on the issue of deforestation in Ghana over the years. It also talks about evaluations of MDGs and how the progress of other countries is monitored. There is a discussion of literature on evaluating deforestation under the MDGs. It also proposes a theory that the research adopts to assess Ghana's preparedness to meet the MDG's deforestation target.

1.7.3 Chapter 3

The main data for analysis is the World Bank/IMF figures on progress made by countries in attaining the MDG targets. The research specifically used data showing the proportion of land area covered by forests over certain period between 1990 and 2007. To effectively assess Ghana's preparedness, the research also analysed information from EPA and the Forestry Commission as they have the implement forestry and environmental policy in Ghana; and the UNDP since they monitor the progress made to meet the target.

1.7.3 Chapter 4

This section outlined and gave details where necessary on the data and information gathered. There is an analysis of how the different roles the Forestry Commission and the EPA play have affected the data on tree cover in the country. It also highlights what interventions or policies are necessary

to meet the deforestation target. There is an analysis of the UNDP's assessment of Ghana's preparedness to meet the MDG deforestation target.

1.7.4 Chapter 5

This chapter contains a summary of findings, which give responses to the queries derived at the beginning of the study; this leads to a conclusion on how prepared Ghana is to meet the MDG target on deforestation. There are recommendations for future studies, on improving upon the methodology of this kind of research.

CHAPTER 2: LITERATURE REVIEW

Forests are very essential to development in Ghana. However if they are not managed sustainably, it can lead to dire consequences such as increased global warming and climate change. A change in the weather as a result of clime change would have huge negative impacts on agriculture in Ghana which is a major sector for the economy of Ghana, as it employs more than half of the population and contributes significantly to the gross domestic product of the country. There is therefore the need to check the rate at which deforestation is increasing over the years in the country. The MDG on deforestation helps to correct this problem; by setting a target, there is a focus of a goal for policy makers to attain to help check deforestation. There is some literature on deforestation in Ghana and the significance of the MDG for development in a country. This section highlights the different views looks at the significance of assessing Ghana's preparedness towards reducing deforestation; and why evaluating World Bank/IMF data and government intervention programmes is the best approach to assessing Ghana's preparedness towards meeting this target.

2.1 Deforestation and Climate Change

Between the years 2000 to 2009, there have been increasing interests in the topic of climate change due to its effects to society which include: change in

rainfall patterns which affects agriculture, and other activities that depend heavily on climate; and rising sea levels, which is a major destruction threat to many coastal cities and towns. Examples of such towns or cities in Ghana are Accra, Tema, Cape Coast and Sekondi-Takoradi. Due to these negative effects of climate change, there have been many attempts by governments and international aid organizations to reduce the effects of climate change (IPPC, 2009). One answer to solving this problem is to grow more forests and reduce the rate of loss. Forests protect the planet from climate change by absorbing and sequestering carbon dioxide, a major greenhouse gas (Panda 2007). Andrew Mitchell of the Oxford-based Global Canopy Program (GCP) states that the acceleration in the destruction of forests is now being recognized as one of the main causes of deforestation. "Carbon emissions from deforestation far outstrip damage caused by planes, automobiles and factories" (Howden, 2007). The GCP report submitted to the United Nations states that deforestation contributes up to twenty five percent of heat-trapping gases whilst transport and industry account for fourteen percent each (Ibid). Thus, in a country where forests are essential for many economic and social activities, it is interesting to find out how Ghana hopes to contribute to mitigating global climate change by reducing the rate of loss.

2.2 Deforestation in Africa

The significance of deforestation to Africa has led to a number of recommendations on how to reduce the rate of deforestation on the continent. Poverty on the African Continent has led to continued loss of tree cover. According to the United Nations Economic Commission for Africa (Henceforth referred to as UNECA), the proportion of land covered by forests in Sub-Saharan Africa is estimated to have decreased by 2.2 % between 1990 and 2000 (Ibid). 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 Africa's energy demand is met by forests (UNECA, 2005). The United Nation's Millennium Development Goal on Environmental Sustainability seeks to address the problem, by setting a target to check deforestation as well as reduce biodiversity loss.

2.3 Deforestation in Ghana

2.3.1 Measuring Forest cover in Ghana

Ghana is missing amongst countries listed by the UNECA as those most likely to carryout sustainable development in forest areas. UNECA used data from the World Bank that measured the rate of loss of forests within a specific period of time. According to the World Bank report, the proportion of land area covered by forests has been falling at a constant rate of 3% from 1990 to 2007 where it reduced from 33% to 24%. The report does not explain how it measured plant cover or forestation – raising issues such as what it defined as a "forest." It also did not go into detail on the kind of loss; for instance this may have been a net loss meaning that though more deforestation did occur, there was some forestation making it easier for policy makers to focus on the major causes of deforestation or forestation and in what specific areas in order to check deforestation or encourage forestation.

2.3.2 Effects of Economic Development on Deforestation in Ghana

Benhin and Barbier's article, *Structural Adjustment, Deforestation and Biodiversity Loss in Ghana* brings to light the possibility of other MDG goals being impediments to Ghana being able to reduce deforestation. The study indicates that, "cocoa land expansion and timber production... are the significant causes of forest loss in Ghana (Benhin, 2001)." However, the study also found that 'the impact on forest loss in the post-adjustment period

was reduced' (Ibid) signifying that, though polices that came with the Structural Adjustment Program resulted in the loss of forests; they eventually reduced the rate of loss of forests in the long run. This therefore has an advantage as well as a disadvantage with regards to deforestation and forestation. It is possible that in a bid to achieve other MDG targets, the government unconsciously making it impractical to attain the target under Environmental Sustainability.

In *An econometric analysis of the causes of tropical deforestation: Ghana,* Yiridoe and Nanang highlight the increasing rate of deforestation in Ghana as compared to other tropical developing countries. The paper brings to the fore the essence of having integrated solutions towards minimizing deforestation in Ghana. In their words: "policies aimed at minimizing deforestation must be based on a sound understanding of the complex and dynamic interrelationships between the various levels of causal factors." (Yiridoe, 2001). The paper also considers forests to be economic resources as they help produce goods and services that are consumed; and therefore believe that they should be managed and utilized based on economic considerations. It proposes that economic decisions should undergird national policy choices and decisions in sustainable forestry management. Yiridoe's research method is to a large extent unique in studying deforestation in Ghana. This paper analyzes data provided by the World Bank/IMF as well as the Forestry Commission of Ghana in their raw state. In contrast this paper devotes more

attention to evaluating Ghana's interventions and policies to help assess Ghana's preparedness, it also identifies some flaws in the current policies and offers recommendations that would help Ghana meet the deforestation target.

2.4 Evaluating the MDGs

In the United Nations report on how Africa can strive towards achieving Millennium Development Goals, as part of a series of evaluations, there was a general conclusion that African countries are not doing enough to attain Environmental Sustainability. The Committee in the report emphasized the need for more interventions especially in terms of investments in environmental rehabilitation. It further proposes that interventions should be divided into urban and rural categories (UN[b], 2008). This is because the problem found in the rural areas for biodiversity loss would be different from the issues identified in urban areas. The report mentioned the need to strengthen institutions, environmental management and monitoring systems. Specific to Ghana, the paper highlights the need to enforce regulations on natural resource utilization. The report also noted the importance of efficient management of forest resources and a reduction on the dependence on wood-fuel by the poor. Weak enforcement of the environmental and mining laws has led to environmental resource degradation as there are more mining and manufacturing activities in the economy. The report further

emphasizes the need for taking deforestation seriously in Ghana as it has lost 79% of forest cover since the beginning of the 20th century.

An assessment by the United Nations' Non-Governmental Liaison Services (UN NGLS, 2003) indicates that the declaration and the goals set by the UN General Assembly provide an organizing framework for a significant number of initiatives, and that there is to a large extent evidence of some aid agencies reviewing and adjusting their plans in light of the goals. However, it has taken time for these agencies to 'internalize these goals in their programmes.' According to the UN NGLS assessment, some governments have not been clear as to what policies to follow in order to attain the goals. It is very important to note that, governments cannot help maintain these goals on their own, and major contributions would have to come from non-governmental organizations. It also suggests ways by which the Ghana government can involve these organizations in helping attain this target.

2.5 Theoretical Frame work

There is a notion that an increase in development has adverse effects on deforestation in a country. This notion is best explained under the forest transition theory. The forest transition theory is a theory that has to do with the changing nature of forests as an area develops. Most of the time, these changes are caused by a combination of economical, technological and

cultural factors (Rude, 2005). What normally happens is, the increasing rate of economic development is normally a threat to forests, as most trees are felled to make way for infrastructural projects. Patrick Meyfroidt, in *Forest transition in Vietnam*, highlights that the forest transition theory does not only have to do with losing forests but it also talks about the shift from deforestation to reforestation. The forest transition theory was developed to understand the shift from deforestation to reforestation that occurred in several countries (Mather, 1998). Meyfroidt observed that Vietnam actually attained forest transition in the form of increased forest cover and this was due to regenerations and plantations of natural forests. It can be drawn that this was as a result of the rate of reforestation outweighing the rate of deforestation over the period of increasing forest cover.

Yaoqi Zhang in a *Deforestation and Forest Transition: Theory and Evidence in China* speaks of relative scarcities of food, timber and environmental goods being as a result of a growing population and economic growth are the most fundamental causes of forest change or transition. The study found that, there is a need for adequate forest management to attain forest transition from deforestation to reforestation.

The main cause of deforestation in Ghana is the economic benefit derived from forests is largely timber. The increase in agricultural plantations also

comes as a threat to forests in the country. Another threat is in the area of mining where there is a need to destroy forests to access precious minerals in the earth as unfortunately most of these minerals are located in forest areas. In Ghana forests also have very important social benefits an example is the use of forest woods for charcoal and fuel wood which is a major source of energy for the local people. The rate of development in Ghana is expected to significantly increase due to the recent discovery of oil in the country; the increase of oil revenue in a country normally increases the rate of development (Abdel-Aal, 1973) which could be a major threat to forests or the effort to reduce deforestation in the long run.

The benefits derived from forests over the years have led to the high rates of deforestation in Ghana. There is the need to economically develop, but there is also the need to preserve forests for the future, thus the efficient management of forests is a necessary requirement in Ghana's quest for development. With reference to the forest transition theory, as developed in Zhang's study, some development would have an effect to deforestation but when reforestation rates outweigh that of the rates of deforestation, there would ne a net increase in forest cover. This signifies that, in the process of measuring deforestation, it is important to note the land area or the proportion of land area covered by forests; it is also important to find out policies or interventions in place to identify the quest to achieve sustainable forest management. In accessing Ghana preparedness for meeting the MDG

7’s deforestation target, this study evaluates the different proportions of forest cover in relation to government policies or intervention programmes in Ghana’s quest to meet the deforestation target.

CHAPTER 3: METHODOLOGY

In assessing Ghana's preparedness there is the need to measure the net loss of forest cover in Ghana over years, before 10 years before and after the inception of the MDGs. The forest transition theory influenced the choosing of this method for the study. As Ghana develops and the oil find has also increased the likelihood of development, it is expected, according to the forests transition theory, to affect the rates of deforestation which is measured by finding out the amount of land covered by forests. The UN's FAO provides data on forest cover in a bid to monitor countries' progress with respect to the deforestation target. Satellite pictures measure the proportion of land covered by forests to come up with this data. This study uses this data in together with interviews from government agencies and the monitoring agency, the UNDP Ghana Office to assess Ghana's preparedness towards meeting the Goal. This section delves into the details of the method used to assess Ghana's progress towards meeting the MDG 7 deforestation target.

3.1 Research Objective

Due to its significance to climate change, deforestation is a topic of global importance, as it is identified as one of the ways by which the world can help

reduce the rate at which world temperatures are increasing. Forests and forest areas are essential for Ghana's development and because they are often located closer to various mineral deposits, they tend to be destroyed in order to expand farms. Forest loss in Ghana is caused mainly by mining, quarrying, plantation strategy, logging and farming (Benhin, 2001).It is therefore a challenge for the state to reduce the rate of deforestation as it will positively affect livelihoods of people as they attain their socio-economic development.

Considering the tough choices that Ghana would have to make to reduce the effects of deforestation, this chapter looks at the tools and methods of data analysis. Subsequent sections discuss the source of data and the type of data used; sampling method as well as the sample size; the process of collecting data; as well as other parameters considered for the study.

The main research questions for the study is to find out whether Ghana can meet the meet the deforestation target set under the UN's MDG 7, which is for Ghana to have a at 35% of forest cover of land area in the country by the 2015, deadline for the MDGs. For thorough assessment purposes, the study also seeks to find out what policies the Ghana government has put in place to meet this target.

3.2 Expected Findings

The MDGs are to last for fifteen years after its inception in 2000. It is expected that by the deadline in 2015, the targets met have positive implications to contribute towards reducing extreme poverty in the respective countries. The deforestation target for Ghana is to have at least 35% of land covered by forests by 2015. Considering the literature with regards to deforestation in Ghana and on how Ghana is tackling the problem; as well as the significance of forests to the socio economic development and the rapid rate of development in the country in anticipation of the recent oil find, it is highly unlikely for Ghana to meet the MDG 7 deforestation target by the year 2015.

3.3 Research Design

In assessing whether Ghana can meet this target, the study uses indicators from the World Bank/IMF which monitor how countries are faring towards meeting the Millennium Development Goals. In order to have a comprehensive picture on the state of deforestation, the study examines data on Ghana's forest patterns over the years. Officials at the UNDP office in Ghana were interviewed to share their expert knowledge on Ghana's progress and some evaluations and recommendations for the country. State agencies (The Environmental Protection Agency and the Forestry

Commission) that are responsible for the management of forests in Ghana and whose actions or policies are key to Ghana's progress towards meeting the deforestation target under the MDGs were also contacted for relevant information to the study.

In order to have a balanced view in the assessment of achieving the deforestation target, the study made an attempt to contact relevant independent international organizations, however this did not go ahead because of some inconveniences experienced. Also data from the UNDP was very independent and gave an authentic and critical view of the intervention programmes by the state to meet the deforestation target; there was therefore not much need to add that of other relevant independent organizations.

3.4 Sampling Technique

The selection of the relevant institutions to be interviewed is based on the following criteria:

- Ten years experience in forest management in Ghana
- Ten years knowledge of UN development programs for Ghana.
- Expert in environmental policy issues in Ghana.

The EPA, UNDP and the Forestry Commission are already experienced in the areas of deforestation and development; and the have also been in existence for more than twenty years in the country. These organizations have adequate experience knowledge in dealing with deforestation issues in Ghana. The organization is useful in helping us to evaluate the rates of deforestation or forest cover in Ghana in order to analyze the trends in deforestation in Ghana to help in assessing Ghana's progress towards meeting the MDG target and the way forward for sustaining and increasing forest cover whilst reducing deforestation in the country.

3.5 Sources and Types of Data

The study gathered data that monitors Ghana's progress towards meeting Millennium Development Goal Seven. The study utilized data from the Forestry Commission of Ghana which provides a detailed outlook and historical background of forest cover in the country and is very essential in verifying figures from other sources including the World Bank. Finally, there are independent studies by other groups such as the United Nation's FAO, amongst other credible and notable groups that may have essential data on the state of forests in Ghana. The reason for using different sources of data is to ensure accuracy of data analyzed.

The research also uses qualitative data in the form of interviews with individuals considered essential for evaluating Ghana's progress so far and the way forward in terms of policy direction for the future. These were gotten from the United Nations Development Programme (UNDP) Office in Ghana, Forestry Commission, and the Environmental Protection Agency (EPA) of Ghana.

3.5.1 Data Collection Process

3.5.1.1 Pilot Interviews

Interview questions were given to a few professionals to preview before being sent or used at their intended sources. The review of questions for mock interviews and questionnaires may raise relevant questions which would be included in the final draft of questionnaires. It helps to clarify questions set for the different sources of data.

The sample questions were not sent ahead of time but were used as a guide for the interviews. Most of the questions asked during the interviews resulted from answers that the sources gave. There was minimal reference to the sample questions.

3.5.1.2 Data Period and Interval

The researcher hopes to collect data which is relevant over a twenty year period; as this is about the time Ghana became a republic and was managing most of its affairs. Considering the fact that the MDGs have to do with developmental issues it is a suitable period to assess the development history of Ghana, in relation to forests; in order to accurately project the future of forests and development in Ghana. This period highlights some of the challenges past governments have had and how future governments can avert these challenges. The period also encompasses different governments as well as government policies such as Structural Adjustments Programs that have had significant impacts on the forests.

3.6 Limitations

In accessing how Ghana's progress towards meeting the goal, the study uses secondary data from the World Bank/IMF, which are figures on the proportion of forest area to that of land area in Ghana at specific year intervals. The data gotten is not as current as it should be meaning not being up to date thus contributing to the delay in reporting of Ghana's progress towards meeting the deforestation target. For instance the 2008 MDG report for Ghana would be published in a few months time in 2010. This is a major setback for a better assessment of Ghana's progress towards meeting the MDG target. Thus most of the analysis on the data is not based on current issues with regards to deforestation. There is also the problem of incoherence

in the information given by the government agencies responsible for managing forests and the reports by the UNDP. This lack of coherence is a threat to the authenticity of the conclusions being drawn on Ghana's progress towards meeting the deforestation target.

CHAPTER 4: DATA COLLECTION AND ANALYSIS

The World Bank and IMF have a compilation of development and progress indicators that helps to monitor progresses, specific to every country, towards achieving the different Millennium Development Goals. The information spans from 10 years before the inception of the MDGs, 1990, to the latest collection year after the inception of the MDGs, which in the case of this paper is 2007. The paper conducted interviews with essential departments of government agencies, responsible for the managing of forests in Ghana, the EPA and the Forestry Commission. It also sought a view from an official at UNDP Ghana Office on Ghana's progress towards achieving the deforestation target under the MDG. This chapter reports all the data and information gotten and then analyzes figures as well as information gotten from the World Bank and IMF; government agencies responsible for deforestation and the UNDP to assess Ghana's progress towards meeting the deforestation target under the MDG 7.

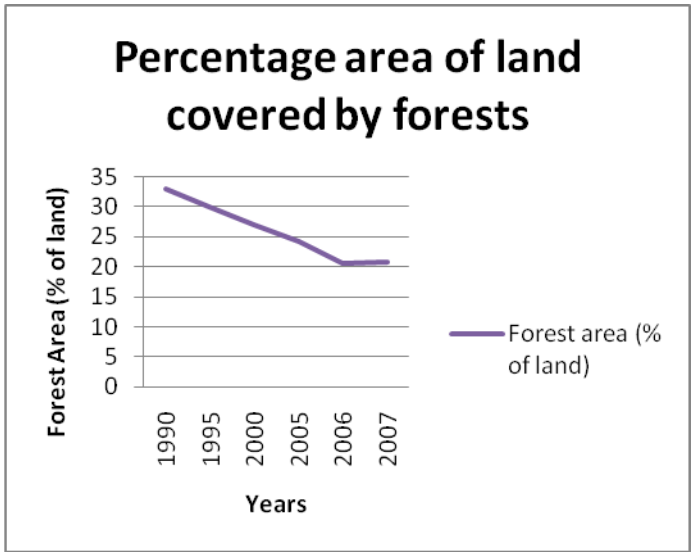
4.1 Data Collection

Tab 4.1: The proportion of land area covered by forests

Years	1990	1995	2000	2005	2006	2007
Forest area (% of land)	33	30	27	24.2	20.48	20.84

Source: World Bank/IMF (2009)

Fig 4.1 Proportion of land area covered by forests



Tab 4.2 Total area of forest cover (In Hectares)

	1990	2000	2005
Total Forest Cover	7,448,000	6,094,000	5,517,000
Primary Forest Cover	353,000	353,000	353,000
Plantations	50,000	60,000	160,000
Total Degradation/Conversion	7,398,000	6,034,000	5,357,000

Source: UNDP/GoG (2008)

According to the World Bank/IMF data above, from 1990 through to 2007, there has been a gradual decline in forest areas from forests areas being 33% of land area in 1990 to forests covering 24% of land area in 2007. This means that between 1990 and 2007 there has been a 9% decline in forest areas in Ghana.

4.1.2 Interviews

All lands in Ghana are owned by Traditional Chiefs and Stools. Ghana has or had a forest area of about 8.2 million hectares. However the Ghanaian government acquired about 1.6 million hectares for conservation purposes, these 1.6 million hectares of land were designated for forests preservation or are marked as Forest Reserves in different parts of the country (Dadebo, 2010). In order to protect and preserve these designated areas, the Government of Ghana has mandated the Forestry Commission to protect and preserve these forests.

4.1.2.1 Forest Management in Development Zones.[1]

The remaining of the 8.2 Million hectares of forests are not under the jurisdiction of government and therefore owners of the land who may be traditional chiefs, individuals or institutions that have bought the land from chiefs do whatever they want to the land. Most of the areas have been earmarked for development projects which have included and still include

[1] These are extracts from an interview with the Senior Programs Officer, EPA Ghana.

mining, construction, agricultural and lumbering activities. These activities have led to grave deforestation in the country over the years. The Environmental Protection Agency in Ghana has been mandated to manage what is left in the development areas. Thus, the agency prevents the destruction of trees in areas where not necessary and also has a plant tow trees to fell one tree policy; the short fall of this policy however is their inability to know of all trees that are constantly felled in the development zone. They have programmes that encourage people to plant trees where ever possible. They also try as much as possible to achieve the minimal destruction of trees during necessary development projects and even have arrangements that would compensate for the trees destroyed. For instance in the event of construction of a road, architects and engineers are encouraged to try as much as possible to avoid destroying trees.

Specifically during road constructions and other developmental projects, the Parks and Gardens Department makes sure that there is landscape planning around the areas of construction. The Department of Parks and Gardens or the construction companies plant trees along the roads or around developed areas. In cases where it is impossible to go ahead with a landscape plan, as is the case along the Circle-Achimota Highway, the department grows trees in other sites to compensate for what is lost along the road or development site.

The EPA also ensures that biodiversity is preserved after exploration projects in the mining sector. Before a mining company digs a forest area, the company goes through a process of getting inventory of all species on the area to be explored. The company then lays out how it plans to restore biodiversity after the project. The company is expected to restore biodiversity by replanting all trees and sending all animals that were taken out before their mining operations which is known as the Land Restoration Program. The Senior Programs Officer of the EPA, Ghana, testified to the fact that there are some very good examples of companies that have restored forests areas after mining operations. He specifically mentioned the Amansie district in the Ashanti Region where a gold mining company restored the vegetation after its operations.

Illegal mining in Ghana has also been a major source of worry in recent years. The illegal miners of late are using sophisticated equipment such as excavators and bulldozers in search of minerals. Because their works are illegal, they are not under any obligation to go through thorough environmental assessment procedures. As a result, they destroy large portions of forests without having to through and Land Restoration Programs to replant the areas.

Despite not owning the land, the EPA has the power to prosecute individuals or entities that destroy trees in areas designated for development without appropriate authorization. According to the Senior Programmes Officer, if someone wants to build a house, the person must obtain permission to fell any tree on his own compound, if the owner fails o do this, the EPA has power and authority to prosecute the owner.

4.1.2.2 Challenges with Managing Forests in Development Areas

According to the Senior Programmes Officer, the main problem the Agency (EPA) is the lack of human resources to effectively monitor the felling of trees in development areas. The Agency does not have that many workers to be at different places at different times to monitor the indiscriminate felling of trees by individuals or entities carrying out development projects. Thus if the felling is not reported, there is no replacement for the tree. This has led to the agency finding out about a felling only after the damage has been done and offenders are nowhere to be found.

Conditions of service of the employees are also not the best. The employees of the Agency are not well resourced to carryout their mandates as a result offenders get away without charge. There are inadequate vehicles for effective monitoring; workers are not properly armed and therefore armed offenders easily overpower them and get away with illegal activities. Workers

are also not well paid thus giving the chance to offenders to bribe them easily.

Another major setback is the lack of public awareness with regards to feeling of trees in areas designated for development. Most individuals in Ghana do not know that, they are not allowed to cut down trees for any developmental projects without a license from the EPA. Thus many entities ignorantly destroy trees without knowing they have committed any offense. They think because they own the land, they have total jurisdiction as to how they want to use their land.

4.1.2.3 Forest Reserves in Ghana[2]

The Forestry Commission of Ghana is mandated to protect forest reserves in the country. Currently there are a total of 290 Forest reserves spread all in all ten regions of the country. Forest Services Division of the Forestry Commission deals specifically with the reserved forests. There are also other forest reserves that are not under the mandate of the Forestry Commission; these are known as Off Reserves. They comprise of community forests, Sacred Grooves and River forests. Community forests are forests that communities have come to meet and preserves for various socio-development needs. These needs may be wood fuel for cooking, or a haven

[2] Extracts from an interview with the Business Planning Manager at the Forestry Commission.

of natural herbs that is used to heal. River forests are forests located close to rivers; they are normally the barrier entrance and exit points of the forests.

There are also private plantations where individuals or entities have purchased large tracts of forests or lands to develop plantations. Plantations may include cash crops such as cocoa, rubber and cashew. The Forestry Commission does not gazette these areas as they are not under its jurisdiction. The Commission however encourages tree planting exercises in these areas and has been successful in getting some environmental activities and groups to grow trees in such areas.

The Forestry Commission is responsible for giving licenses for lumbering. There are areas earmarked for felling for timber as it is very important to the economy of the country. Thus if any entity wants to acquire or fell timber, there is a process to go through before felling the trees. Most of the areas designated for the timber felling however are not in the preserved forest zones thus giving illegal loggers the chance to fell trees when there is no monitoring.

4.1.2.4 Forestation Programs

Forestry Commission has taken major steps to check degradation and deforestation in the country. In 2002, the Ghanaian government instituted a massive tree planting program which as at the moment has developed 125 000 hectares of tree plantations. When it began in 2002, the plantations program started with a minimum of 20 000 hectares a year. In 2009 however government has increased the minimum planting to 30 000 hectares a year. The trees take about fifteen years to develop to maturity. The plantation is carried out community based forest areas as these are the places where many illegal loggers operate.

4.1.2.5 The Forestry Commission on Conserving Forests in Ghana.

According to the Business Planning Manager of the Forestry Commission, in view of the fact that Ghana has lost many trees due to social and economic activities in the 1990s since the inception of the Millennium Development Goals in 2000, the Forestry Commission has focused more on mitigating factors. These include tightening the grip on indiscriminate destruction of forests and carrying out massive forestation programs. The Forestry Commission only has figures on the area of existing forests and that of its plantations in recent years. It is not involved in the measuring of forests to assess the trend of deforestation. The UN's FAO solely measures the proportion of forests to that of land areas.

Some of the main causes of deforestation in recent years have been an expansion in agricultural mining and logging activities. Since these are major sectors of the Ghanaian economy, it is difficult to stop their activities all together. In the area of agriculture, more forests are being converted to the more lucrative cocoa farms; in other areas, other areas, there are increasing rubber plantations. Farmers do this in forest areas because the crops need these areas to grow. The Commission is very serious about logging, it has strictly monitored to make sure there is not excessive logging. It also makes sure that logging is conducted in areas, where the felling of a timber has minimal effects on little maturing trees.

The Business Planning Manager acknowledges that the main cause of deforestation in Ghana is the lack of a land use plan. This is has resulted in the improper development structures where people position anywhere they feel is appropriate. This has resulted in areas which there could be parks and gardens or even more forest reserves being used as markets or lorry stations or for other development structures. There are also areas designated for proper vegetation by water fronts but people acquire these lands from traditional chiefs, who own the land, filling these areas with sand and putting up structures on them. This has resulted in so many land areas which are not conducive or the growing of forests.

4.1.2.6 THE UNDP ON THE MDGs IN GHANA[3]

The role of the UNDP in helping countries achieve the Millennium Development Goals is mainly by offering advice and providing some technical assistance where possible according the MDG Support Advisor at the UNDP's Ghana Office. The UNDP also offers intervention program and offer strategies that can be integrated in the overall socio-economic development of the country. She remarked that most of the planning to attain the different targets of the MDGs is the responsibility of the National Planning Development Committee (NPDC). The NPDC's main role "is to advice the President of Ghana on development planning policy and strategy for providing a national development policy framework and also ensuring that the strategies including consequential policies and programmes are effectively carried out …" (NPDC, 2010). Thus, the UNDP facilitates the NPDC with the appropriate data and advices on strategies to help Ghana achieve its Millennium Development Goals.

The NPDC works with the Ministry of Environment Science and Technology, the Ministry of Lands and Natural Resources as well as the Forestry Commission to effectively monitor the progress Ghana is making towards reducing deforestation. The indicator used to monitor the progress of reducing deforestation is the proportion of land area covered by forest. The UNDP facilitates this for Ghana by measuring the proportion of land area

[3] Extracts from interview with the MDG Support Advisor of the UNDP Ghana Office.

covered by forest; which as at 2007 is 20.84 percent of where the target is 35%. The FAO measures the proportion of land area covered by forests with the help of a forest. It was done within a five year period starting from 1990 but since 2005 there has been an annual release of this rate of loss. It is important to note that, the MDGs are not separate form the development policies of the government. They are rather benchmarks that have been integrated into the country's developmental policies with a deadline in 2015, where it is hoped most countries would have reduce extreme poverty which is described by UN as living on less than $1 Dollar in a day.

4.1.2.7 The UNDP's Assessment on Deforestation in Ghana

A UNDP report estimates that the country has lost about 79% of forests at the beginning of the 20th Century; the report further states that between 1990 and 2000 Ghana lost an average of 135,400 hectares of its forests cover annually(GoG/ UNDP 2006). There has been an increase between 2000 and 2005 of 115 400 hectares more annually. In summary the country lost about 1,931,000 hectares of forests between 1990 and 2005.

Some of the causes of deforestation in Ghana according to the UNDP is largely as a result of poor enforcement regulations on natural resource utilization, and inefficient management of forest resources and the dependence on fuel-wood by the poor. There are concerns that resource

degradation has increased as a result of increasing mining activities and a high level of real estate development and other construction activities of which there is also a high demand for wood products as construction materials.

The UNDP also acknowledges some of government intervention programmes such as the restoration of 60,000 hectares of degraded forest reserve that was fast tracked and completed earlier, in 2005, than the target date of 2008. The UNDP identifies the major challenges are to restore the degraded areas and an increase in participation of key stakeholders in forest management and sustainable use of environmental resources. Thus the limited government capacity for forest management needs to be improved significantly.

The UNDP identifies the following initiatives as positive steps towards reversing the loss of environmental resources:

- The first is the restoration of 60, 000 hectares of degraded forest reserves;
- The continuation of the plantation development programme;
- Extension of competitive bidding in the allocation of logging rights for existing natural and planted timber;

- Undertaking a pilot forest yield assessment programme in 12 forest reserves to determine the scientific basis for the conversion of all existing timber leases;
- Training of 300 people in the use of bamboo for furniture making, crafts and construction work as part of the sensitisation programme on the economic potentials of lesser known species as alternative to timber.

4.2 ANALYSIS

The main target for reducing deforestation in Ghana as described under MDG 7 is to reduce the rate of and the net rate of loss. According to the UNDP Ghana Office Ghana's target is to achieve about 35% percent of land covered by forests, meaning there should be a total area of forest cover should be greater than or equal to 7,448,000 hectares of in 2015. The goal of this research is to find out whether Ghana can meet this target by 2015 as well as find out what policies in place to meet this target whilst developing sustainably.

4.2.1 Analysis of Secondary data

According to data from Table 4.1 (p. 30), which deals with the proportion of forest cover to land area in the country over the years, if Ghana continues at this rate of deforestation, it cannot attain the goal on deforestation. Since 2000, when the MDGs when instituted, there has been a constant rate of loss of about 2.8% loss of forest cover with respect to land in 2005 in 2006 it area of forest cover to land dropped about 3.72% to 20.48 but interestingly in 2007 there is a slight increase to 20.84%. Showing that there is a reverse trend and the area of forest cover is beginning to increase. However considering the target being 35% of forests cover to land area, it is less likely that Ghana would meet the MDG target on deforestation by 2015.

The sudden increase in the percentage of forest cover to land area can be attributed to the aggressive nature of the Forestry Commission to introduce mitigation measures by increasing the umber of forest plantations in the country; and made an effort to meet a target it set for itself two years ahead. The restoration of 60 000 degraded forests as stated by the UNDP is also a major reason for this early sign of a rise in the proportion of forest cover to land area. This is definitely an interesting result as according to the Business Planning Manager of the Forestry Commission the trees planted are expected to mature in fifteen years after planting. Thus even the first batch of plantations in 2002 would mature in 2017, two years after the deadline of

this target. However a justification for the claim of plantations being the reason for this decrease in the net loss of forests is the claim by the manager that tree planting exercises, though not in a large scale compared to recent times, have been in existence before the institution of the MDGs in 2000. The positive aspect of this report is that if the over 125, 000 trees grown in recent years do mature in the future with all other things, such as current of felling, still the same, then Ghana would even exceed the 35% MDG target.

Also, an improvement in the enforcement of laws with regards to logging in the country has also contributed to the improvement on deforestation rates in Ghana. According to Dr. Dadebo of the Forestry Commission, there have been stricter procedures to follow to have access to forest products and this has discouraged rampant felling of trees. Also, the surprise visits which are made up of joint operations of the Commission and the Military has reduced the number of illegal logging in the country. It has also followed this with policies that are checking the ease to acquire timber in the country. An example of such policies is the extension of competitive bidding in the allocation of logging rights for existing natural and planted timber.

Despite these interventions of government, there are still underlying problems with deforestation. One major problem is he clearing of forests for economic activities. A number of forests are cleared to make way for rubber

and cocoa plantations. As they are very important to the economy of the country, little is done to actually stop these activities. Another major problem is the quest to for rapid development has led to more construction activities as a result more tress is felled without adequate compensation. There are laws that forbid the felling of tress without replacement but the EPA is under resourced to enforce this giving the offenders the lee way; considering the rapid rate of development more trees are destroyed faster without replacement. This has resulted in the state having to accelerate its plantation programmes in order to meet the target. This may have resulted in the poor showing in figures reflecting the area of forest cover so far. Another problem is also the issue of poor planning of land in the country. This has also led to the indiscriminate felling of trees reflecting in the poor showing of the data on forest cover.

4.2.2 Concerns with the measurement of tree cover

The FAO uses satellite photographs to measure the area of forest cover. It is possible these measurements do not actually reflect the situation on the ground. The cameras take into account the visibility of green leaves of the trees meaning a plant may have excessive leaves giving a wrong notion on the actual size of forests in the country. Another problem is the different in the definitions for forests. The FAO does not include crop plantations as forests whilst the Forestry Commission adds tree crop plantations to its

definition of forests. Though the Forestry Commission acknowledges data from the FAO for decision making, it does not see it as a valid authority for figures on deforestation in Ghana. However, since the Forestry Commission does not carry out any measurements of forests or plant cover on its own, it is helpful to use the MDGs targets and measurements procedures as a guideline, besides MDGs are measured by this yard stick. Thus the measurement may reflect good results but is ineffective if there are small fragments of forests all over the country. However, the great news is plantation programmes check these problems, as there is a larger area of tree cover within a specific location.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Ghana has done quite well in recent years in terms of recovering forests reducing the rate of deforestation as is noticed from the change in trend of forest cover since 2000; however due the large amount of depletion that has occurred over the mainly due mining, lumbering and the clearing of forests to develop agriculture with no appropriate forest management initiatives, it would take more years to attain the deforestation target under the MDG 7. There are also lots of issues with the indiscriminate felling of trees in development zones in the country, with the EPA is ill-equipped to check and deal with this problem.

The Forestry Commission has started an aggressive tree planting exercise and has tightened the process of logging in the country, this has improved the rate of deforestation; however, failure to deal with illegal loggers has not helped the situation of deforestation in the country. The commission has also donor agencies and has initiated a number of forestation projects. This is according to the Forest Transition Theory is a move in the right direction, as an increase in development also requires the appropriate sustainable

management of forests to reduce deforestation or achieve a net loss of forest cover in the future.

Ghana as per the data may not achieve the target of maintaining a forest cover to be 35% of land or not less than an area of 7,448,000 hectares by 2015 which is the MDG target. The country would however achieve and even exceed this target if it should continue with its reforestation programmes as well as effectively manage the felling in forests. Thus though Ghana is not prepared to meet the deforestation target under MDG 7 in 2015, if it continues its forest management policies and forestation programmes, it can meet the minimum 35% of land covered by forests target in the future years.

5.2 Recommendations

In accessing the progress Ghana has made in attaining the deforestation target under the MDG 7, this study evaluated data from the World Bank/IMF together with information from government agencies responsible for forest management and the UNDP Ghana Office's monitoring report.

The challenges using the data from the World Bank and IMF is that, they are not up to date: the area of land covered by forests is not measured annually, thus the data is always a reflection of what was measured about two years earlier. To solve this problem, the report should conduct its analyses with respect to the years the data is developed. Also all interviews should be conducted with the notion that the data is a reflection of the situation two years back.

With regards to the intervention programmes of the country, the research should visit at least ten selected relevant sites to use as case studies in validating the information gathered from officials of the state agencies. Most of the information presented is with respect to satellite data and this may be misleading when analyzing the state of deforestation in the country.

This study has put together a complete assessment of Ghana's preparedness towards meeting the deforestation target under the MDG 7. It has evaluated what the monitoring agencies in association with what the policy makers have put or are putting place for Ghana to meet its deforestation target. Most of the method used in this study can be adopted to effectively assess the progress any country is making towards achieving any of the MDG targets. It can also be modified to suit an assessment of an entity's quest to meet a target. This study has also clearly highlighted Ghana's progress so far and

stated how prepared or ready Ghana is towards meeting the deforestation target.

As the world rapidly develops, there is the need to be able to project or forecast deforestation patterns to influence policy making by governments. There is a need for a study that can use past data as well as developments in the past to project possible future trends of deforestation. The study should analyze past forestation policies and practices and then quantify the various relevant factors that influence forestation patterns. The study should develop a relationship for the different variables that can determine deforestation rates. This would make it easy to be able to project the future rates of deforestation and can influence

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APPENDIX A: Sample Questions for the Interview

Interview questions

- How important is MDG Goal Seven to development in Ghana?
- Since the institution of the MDGs in 2000, what progress has been made with regards to deforestation?
- What does Ghana have to do sustainably manage forests?
- Why the progress or regress?
- Come 2015 would Ghana be able to reduce the rate of deforestation and the rate of loss?
- What are the challenges in managing forests in Ghana?
- What policies are in place to sustain the forests?
- What policies can be put in place to reduce this loss?
- Considering the rate at which Ghana is developing especially after the discovery of oil, are targets under the Millennium Development Goal on Environmental Sustainability feasible? Can they be achieved?

APPENDIX B: Forest Reserves by the Regions of Ghana

Region	Number of Reserves	Area (km^2)	Zone
Ashanti	60	4,072.80	High Forest Zone
Brong Ahafo	22	3,463.27	"
Central	34	1,528.17	"
Eastern	48	1,611.40	"
Greater Accra	4	37.38	"
Volta	13	739.46	"
Western	43	7,380.26	"
Northern	23	4,160.00	Northern Savannah Zone
Upper East	27	1,535.82	"
Upper East	17	1,175.50	"
TOTAL	**291**	**25,704.06**	-