# the potential of redd in ghana
# A study of a pilot area, Aowin suaman district in the western region, ghana

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# THE POTENTIAL OF REDD IN GHANA

## A STUDY OF THE PILOT AREA, AOWIN SUAMAN DISTRICT IN THE WESTERN REGION, GHANA

**BY**

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Signature: …… Date: …….

**Konlan Samson Sambian**

## DEDICATION

This thesis is dedicated to the family of Konlan Lanbon, my wife Gertrude Kansuk and my lovely daughter Bridget Yenuyab Konlan. The patience, love and support were an inspirational banking point that uplifted me to this far.

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## TABLE OF CONTENT

## LIST OF FIGURES

## LIST OF TABLES

**LIST OF ACRONYMS AND ABREVIATIONS**

| | |
|---|---|
| ASDA | Aowin Suaman District Assembly |
| CBAGs | Community Biodiversity Advisory Groups |
| CBFM | Community Base Forest Management |
| CDM | Clean Development Mechanism |
| CFC | Community Forest Committee |
| CLS | Customary Land Secretariats |
| CODAPEC | Cocoa Disease and Pets Control Exercise Committee |
| COP | Conference of the Parties |
| CPF | Conference on Protection of forest |
| CREMA | Community Recourse Management Areas |
| ENGOs | Environmental Non-governmental Organizations |
| FAO | Food and Agriculture Organization of the United Nations |
| FC | Forest Commission |
| FCPF | Forest Carbon Partnership Facility |
| FD | Forestry Division |
| FSD | Forest Service Division |
| GHG | Green House Gas |
| GSBAs | Globally Significant Biodiversity Areas |
| HIPC | Highly Indebted Poor Country |
| IISD | International Institute For sustainable Development |
| IDS | Institute for Development Studies |
| IPCC | Intergovernmental Penal on Climate Change |
| IUCN | International Union for conservation of nature |
| LAP | Land Administration Project |
| MES | Ministry of Environment and Science |

| | |
|---|---|
| MLGRD | Ministry of Local Government and Rural Development |
| MLNR | Ministry of Land and Natural Resources |
| MOF | Ministry of Agriculture |
| NFTPs | Non Timber Forest Products |
| NORAD | Norwegian Agency for Development Cooperation |
| PNDC | Provisional National Defence Council |
| REDD | Reduce Emission from Deforestation and Forest Degradation |
| RESTA | Re-use of ecological sanitation product in Tropical Agriculture |
| R-PP | Readiness Preparatory Proposal |
| STW | Small Town Water |
| SRA | Social Responsibility Agreement |
| TC | Timber Contract |
| TUC | Timber Utilization Contract |
| TRNR | Timber Resource Management Regulation |
| UN | United Nations |
| UNDP | United Nation Development Programme |
| UNEP | United Nation Development Programme |
| UNFCCC | United Nation Framework Convention on Climate Change |
| VPA | Voluntary Partnership Agreement |
| WBCSD | World Business Council for Sustainable Development |

## EXECUTIVE SUMMARY

This study is aimed at describing peoples' livelihoods, access to and use of land to determine whether REDD could be successful in Ghana as part of the globally emerging agenda of tackling climate change. To accomplish this, a case study was conducted in six villages (Adonikrom, Boinso, Jensue, New Yakasi, Sewum and Asantekrom) in a high forest zone, Aowin Suaman District, Ghana. Considering the aim of the study, the following research questions were addressed: What are the main organizations and institutions involved in management of land and forest resources and how do they deal with land issues? How important are forests for peoples' livelihoods and how does that vary across social economic groups? What are the perceptions and attitudes of the local population towards forest management? Last but not the least, what could be the expected effects of introducing REDD in the study area?

The theoretical frameworks and concepts that were very useful for the study included livelihood framework, which was used to explain the interlinking processes of assets, institutions, livelihood strategies available for the local people and the outcomes. Institutional approach was use to explain resource management in relation to property rights structure. In addition, a framework for studying environmental governance systems was used to explain institutional structure that facilitates interactions between actors. In addition, it was used to illustrate how power is executed to control the behaviour of actors in resource use in an environment.

A household survey with 200 respondents across the villages was undertaken. In addition, focus group discussions, key informant interviews and field observation were part of the data collection. Secondary data has also been used, which includes research conducted by NGOs, general literature and policy documents related to forests and land.

Concerning the main organization and institutions involved in management of land and forest resources and how they deal with land issues, we have identified that traditional authorities own land, which is administered in an environment of legal pluralism. Traditional land ownership is based on allodial title from which all other interests are derived. Generally, the chiefs or other traditional leaders who act on behalf of that community, legally hold the actual title to that land. Their aim is to ensure land security for the benefit of community members. Forests are owned by the state and various agencies are delegated to deal with land and forest issues. These include Ministry of Land and Natural Resources and its two major divisions: (a)

Land Commission and Office of the Administrator of Stool Lands, specifically dealing with community land. (b) The Natural Resource Commission with its units: Forestry Commission and Forest Service Division in the districts also deal with forests. Forestry Commission was established when Article 269(1) of 1992 Constitution empowered Parliament to establish by an Act of Parliament, a Forestry Commission to regulate and manage the use of forestry resources and to co-ordinate related forestry policies.

Currently, the Forestry Commission is the REDD implementing agency in Ghana. However, there are unclear property rights regarding forests on stool land. It seems "semi legal" for farmers/ landowners to expand farms into forests, but regarded as illegal when farmers fell trees for economic benefit. The traditional authorities are not powerful enough to deal with forest issues. They only assist in the selection of forest committees in the villages to help in forest management. The state is responsible for the protection and regulation of forest activities. However, forest officials are inefficient to protect the forests. Despite these weaknesses, economic and political actors interact in various ways for the use and management of forest resources, which are regulated by both formal and informal rules. Generally, forests in Ghana is under pressure, the government has started a policy review through the Ministry of Land and Natural Resource to protect the remaining resources, and it is regarded as the first step to meet REDD institutional requirements.

Looking at the importance of forests for peoples' livelihoods and the variation across social economic groups reflected in their livelihood strategies. Concerning the major livelihoods for the people, these include agriculture activities, dependency on forest resources and non-farm activities. The dominant crop is cocoa and in order to expand farm sizes for cocoa cultivation forests are cut. It seems the cultivation of cocoa is very dependent on clearing of forest because there is no fallow land. As a result, about 9% of land from forests has been cleared for agriculture activities in the last 10 years and it is assumed that in 50years, large forests land would be cleared. In the study area, cocoa cultivation was the major sources of income and farmers' ways of preparing new land for cultivation was by clearing primary forest or clearing patches in the forests that have been partially logged by timber companies. The clearing of forest was typical among the people regardless of the income levels in the communities, but we could see that the poor were much dominating in clearing of forests and shifting cultivation because they had less capacities to improve permanent agriculture land and they were also observed to have less parcels of land for agriculture activities.

The local peoples' perception and attitudes towards forest management varied, but majority confirmed they were satisfied with the rules that govern use and management of state forests. In the survey, 80% confirmed they followed the rules. Conversely, in the focus group discussions people revealed that there were no proper enforcement of rules in some villages because forest staff patrols were not effective and rules were not actually followed. Though some parches of the forests were intact, other places were encroached by community members and companies were engaged in exploitation of other resources. Besides that, local people affirmed that there was low community involvement in making decision related to forest issues, which needs improvement for collaborative forest management.

Currently, it is hard to specify the effects of introducing REDD in the area because of its initial phase. However, the people were positive towards REDD in all the villages. About 90% agreed they would be committed to avoid deforestation if compensated. In the focus group discussions, people expressed their feelings about the negative impacts of deforestation in relation to irregular rain pattern, drying of regular water sources, floods etc. They see that REDD compensation could reduce dependency on forests and service as an alternative source of income to engage in non-farm activities rather than depending on forests. In the villages, 75% of respondents agreed that the overall income would be better in the communities if payments go to community members. It was also discussed and people emphasized that conflicts may not arise because traditional land distribution will not be changed but property rights need to be strengthened.

In relation to the right authority that will be responsible for REDD management in the villages; people were inclined to specific selected committees. However the introduction of REDD will affect livelihood activities such as expanding farms into forests, collection fuel wood, charcoal production and poles/timber harvest. This will finally lead to poverty, which is against international REDD agenda of poverty alleviation. The dependency of these resources raise the following questions: Will there be compensation to local for the loss of income from forests? Will REDD money go to the state alone? We recommend that the state could either give *de facto* rights to the local people for loss of rights.

Furthermore, the government could either change rules or rights structure, but that could be a big political question to change things legally. The local people could benefit from REDD through established compensation programmes by the government in the communities.

## 1. INTRODUCTION

The republic of Ghana is losing forest at an alarming rate and it is becoming increasingly difficult to get precise figures for the country's total forest cover or total area degraded (Gharty, 1990; Benhin and Barbier, 1998; Blay *et al.,* 2009). In Ghana, the major factors causing deforestation and forest degradation include excessive legal and illegal logging, agriculture activities, harvest of fuel wood, surface mining, infrastructural development and bush fires. These causes are themselves influenced by interaction of different factors, which include cultural, social, political and economic actors (Boons and Ahenkan, 2007). Forests could play very important role in mitigating climate change not only storing more carbon or serve as carbon sink, but constantly remove carbon from the atmosphere through the process of photosynthesis. Besides, forests contain a very significant amount of carbon of the planet. In general, as forest absorbs carbon; deforestation is putting carbon back into the atmosphere (Myers-Madiere, 2008). This has attracted significant global attention.

Parallel to this we have observed that the national and international climate change negotiations have directed attention to deforestation and forest degradation with their associated green house gas emissions (GHG) and biodiversity loss. There is now overwhelming scientific evidence that greenhouse gases which cause global warming is coming from human activities (UNFCCC, 2011). In this light, the global nature of climate change calls for mitigation policies. Hence, governments, environmental non-governmental organizations (ENGOs), industries and stakeholders have joined efforts to cut down global (GHG) emissions form deforestation and forest degradation in sustainable levels. However, the efforts will be in accordance with countries' common but differentiated responsibilities, respective capabilities, and their social and economic conditions (UNFCCC, 1992).

In addition, the elements and actions needed from organizations and parties are support and facilitation of capacity building, technical assistance and transfer of technology in relation to methodological and technical needs as well as institutional needs for developing countries to reduce deforestation. These were the elements adopted by the Conference of the Parties (COP) in Bali in 2008 (UNFCCC, 2011). Decisions in the conference provided a mandate for several elements and actions by the parties to further strengthen and support ongoing efforts. Moreover, there is the need to undertake demonstrations to address drivers of deforestation and mobilize resources to support developing countries in relation to the various efforts provided. However, the concept of reducing emissions from deforestation and livelihood issues came into play earlier in the Forth Assessment Report of the Intergovernmental Panel

on Climate Change (IPCC) (IPCC, 2007). It was established that after succeeding the reduction in emissions, some climate change impacts are unavoidable because of green house gas emissions, which lead to environmental problems such as changing frequencies of weather and extreme weather events among others and must be adapted.

The adoption of REDD gained momentum at the UNFCCC conference of the parties (COP 13) in Bali in Indonesia 2007. The adaptive strategy was on business perspective base on forest financing reform to improve the welfare of rural people in developing countries because most forest communities depend on forest for fuel wood, logging, NTFPs and expansion of farmlands to support their livelihoods (ETFRN, 2009). Governments and international donor organizations all over the world are working hard to redefine and institute effective policy measures to curb deforestation while improving the livelihoods of the local population. Notably, the UN and donors provide funds to improve livelihoods of developing countries through increase in technology and human resource base to avoid deforestation and forest degradation (Levina and Tirpak, 2006; IPCC, 2007).

Firstly, the concept of reducing emission from deforestation was introduced at COP 11 in 2005 and expanded to include reducing emission from deforestation and forest degradation (REDD). Currently, it has extended to REDD, which involve conservation, sustainable management of forest and enhancement of forest carbon (IISD, 2009).

Altogether, carbon emissions from land-use change are estimated to account for 7.6Gt/18% of the global carbon emissions (Stern, 2006). The difference in past and future contributions to overall levels of greenhouse gases raises important equity issues that are at the heart of international negotiations over how best to mitigate and adopt to climate change (Schommer, 2001). Notably, to maintain existing forest has been regarded as low cost of climate change mitigation option (Stern, 2006). Therefore, reduced emissions from deforestation and forest degradation (REDD) in developing countries have emerged as important mitigating strategy of the global climate change regime. The global REDD regimes and national REDD strategies propose to address challenges by providing financial resources in the form of compensation or incentives payment to change various activities that currently lead to deforestation and forest degradation (Vatn and Angelsen, 2009). In the developing countries, REDD has expanded policies on conservation, sustainable forest management and enhancement of forest $CO_2$ stocks (IIDS, 2009). The high forest zone in Ghana could be an appropriate area to introduce REDD considering the livelihood activities and the rate of deforestation.

## 1.1 Statement of the problem

In Ghana, there are major issues that have been identified in the high forest zone hindering sustainable forest management. These include clearing of forest, shifting cultivation and over dependency on forest resources. These practices and poor forests management in the communities are the cause of deforestation and forest degradation with their associated effects on the climate.

Land ownership, land rights and tenure are under the control of the traditional authorities whereas the government owns and controls forests and economic trees on agriculture land. This implies that, land is owned by traditional authorities and forests are owned by the state. Management of forest is under state delegated agency: Ministry of Lands and Natural resources with its sub-division divisions: Forestry Commission and Forest Service Division. However, there is great interest of local communities over forestland. The institutions and coordination of organizations in relation to forest management seems to be complex and weak, which lead to illegal activities in the forests. REDD may experience drawbacks if institutions are not clear and cannot be strengthened to ensure sustainable use of forest resource.

The dependence on forest for expansion of farmlands and extraction of forest resources is far from reaching a sustainable forest management. There has been consistent reduction of forest sizes due to forest clearing, shifting cultivation and extraction of forest resources. In addition, forests seem to play a significant role in peoples' livelihoods among social economic groups through the consumption and sale of forest products in the high forest zone. Large quantities of wood resources are extracted daily and hectares of forestland are cleared yearly for improvement of livelihoods in the forest dependent communities. REDD will be highly challenged if the extent to which the people depend on forest resources are not known for immediate intervention.

The local people's views about forest management are very important in reducing deforestation and forest degradation. The people could be having different perceptions and attitudes towards forest management and conservation. Some people may feel forest protection is not necessary since it may limit their access to forest resources and will eventually affect their livelihoods. Others may feel protection will improve the environmental quality. REDD activities will be challenged if collective views about forest management and the sentiment that remains strongest are not known in the communities.

Local people have no incentives that could encourage them to reduce deforestation and forest degradation. REDD compensation in the form of cash payment could be helpful but the local people may demand different type of incentives and it is important to know what actually would motivate them to avoid deforestation. Introducing REDD without understanding the interest and motivation areas of the people could be a hindrance to REDD activities in the communities. Besides that, the level of commitment to avoid deforestation may vary base on dependency levels. The right authorities to manage REDD in the communities might not be state agencies but could be specially selected community members. The activities of REDD may be challenged if the authorities chosen to manage REDD activities are not generally accepted in the communities.

### 1.2 Objective and research questions

Forests provide various environmental services, which include carbon sequestration, biodiversity protection as well as water protection. However, people's livelihood activities that are causing environmental problem should be understood. Global climate change policy introduces payment for environmental services within certain agreement levels on management and land use by natural resource user in the communities. Recently, REDD policies and strategies have been initiated across the tropics, where participating countries focus on reducing emission and increasing carbon stocks that they hope to be paid for through global mechanisms.

Relating to this system, there might be challenging issues regarding policies, institutions and processes at both national and local level that could be examined to enable the building of REDD framework for its implementation. In line with this, six communities were selected in the high forest zone, Western Region, Ghana for consideration in this study. The study meant to assess whether REDD could be successful in Ghana. In addition, the study might show certain indicators for policy options by answering the following questions:

1. **What are the main organizations and institutions involved in management of land and forest resources and how do they presently deal with land use issues?**

Concerning this question, I will investigate about the institutional structures and how land is managed to the benefit of community members. How coordination is done among chiefs, NGOs and other organizations to provide general administration services.

2. **How important are forests for peoples' livelihoods and how does their importance vary across social economic groups of the study area?**

The aim of this question is to explore community social economic groups' activities and use of forest resources for their livelihoods. How does the use vary between the rich and the poor? How do people protect the forest? What livelihood diversification strategies are chosen and are they sustainable?

3. **What are the perceptions and attitudes of the local population towards forest management and conservation practices?**

This question is designed to look into local peoples' views on forest management. What sentiment remain the strongest, whether the forest should be protected or used? What are the current policies and the attitudes of the people towards forest management and conservation in general?

4. **What would be the expected effects of introducing REDD in the forest study area?**

This question will address the expected effects by looking at what community members would prefer. What the women will prefer might be different from the men. What will be the best substitute for different resources? What kind of payment would be appropriate at the community level? Who could but manage REDD programme against deforestation. What will be peoples' attitudes towards REDD policies on forest management and conservation.

### 1.3 Delimitation

The research is undertaken in the high forest zone, Western Region, Ghana. There are many villages adjacent to forests in the region. However, the large number of fragmented forests in the region prevented the establishment of REDD pilot study to cover the entire forest areas. Hence, it was convenient to select six communities as REDD pilot area.

## 1.4 Outline and structure of the thesis

The outline of the thesis is as follows: Chapter 2 will offer background information on Ghana's forest policy, REDD strategy and the situation at Aowin Suaman District. Chapter 3 is a presentation of the theoretical basis for the study. Chapter 4 gives the overview of the methods used. Chapter 5 includes the presentation of local and national institutions and how they presently deal with land issues. In chapter 6, I will present an overview of forests and adjacent communities, emphasizing the importance forests to peoples' livelihoods. Chapter 7 includes the presentation of local peoples' perception and attitude towards forest management and conservation practices. In chapter 8 I will present and discuss the expected effects of introducing REDD in the study area. Chapter 9 includes conclusion and recommendation of the study.

## 2. BACKGROUND

The Republic of Ghana is located in West Africa. It lies between Latitudes $4^0$ N and $12^0$ N and Longitude $4^0$W and $2^0$ E. Ghana is bounded on the West by Cote D'Ivoire, North by Burkina Faso, East by the Republic of Togo and to the South by the Gulf of Guinea. Aowin Suaman District is located in the mid-western part of the Western Region of Ghana and the capital is Enchi. The major settlements include Dadieso, Boinso, New Yakasi, Jema and Asemkrom.

The total area of the district is 2,717 square kilometres, which constitutes about 12 percent of total area of the region, which is 23,921 square kilometres. That is also estimated about 10% of Ghana's total land (Ghana statistical service, 2000). The Aowin Suaman District is bordered in the east by Amanfi West District and North by Juaboso and Sefwi Wiaso District and South by Jomoro District. The Republic of La Cote D'Ivoire also shares common boundary to the west with Aowin Suaman District. Generally, the soil in the district is clayey loam and can support wide range of crops as well as trees. Moreover, there are two rivers: Tano and Boi with numerous tributaries that run across the district and serve with regular supply all the year round.

The ecological zone of Ghana consists of coastal savannah, wet evergreen, moist evergreen, deciduous forest, forest savannah transitional zone, Guinea savannah and Sudan savannah (FAO, 2005). Generally, the vegetation of the country is tropical and is composed of forest (moist) at the south western part of the country and savannah at the north. However, the forest (moist) zone also comprises four ecological types. It consists of wet evergreen, moist evergreen, moist semi-deciduous and dry semi deciduous. The climate of Aowin Suaman District is the Wet- Semi Equatorial type and temperature is generally high with an annual average temperature of 26 degree centigrade ($26^oC$). The hottest months are March and April, that is, before the beginning of first rains. The district experiences two rainy seasons. The major rainy season occurs from May to July while the minor rains are experienced in September and October. Generally, the annual rainfall is between 1500 and 1800 millimetres.

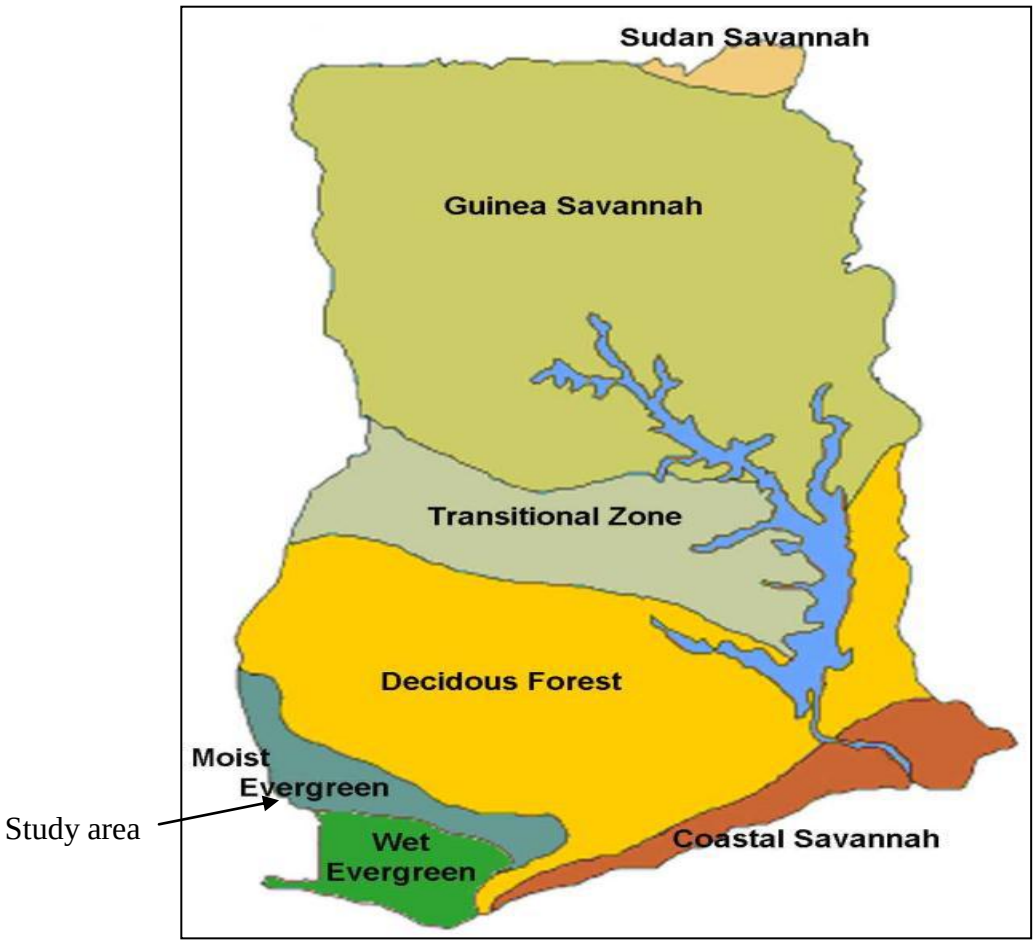


**Figure 2.1 Ecological type map of Ghana**

Source: RESTA (2010)

The district is located in the high forest zone of Western Region with a total land area of 2,717.8sqkm representing about 11.66% of the total land occupied by the Western Region, which is also estimated at 23,921 sqkm. The land is characterized by forests and sacred groves where the vegetation is usually the rain forest type. There are also trees crop farms/ plantations and wet lands. The District has nine (9) fragmented forests and they are abounding with many economic timber species (ASDA, 2008).

### 2.1 The demographics and the traditional authority

The Aowin Suaman District population is about 119,133 with 312 settlements and Dadieso, Boinso, New Yakesi, and Jema being the major settlements (Ghana statistical service, 2000). The population distribution is displayed in table 1 below.

**Table 2:1 Population distribution in Aowin Suaman District in 2002**

| Age | population | Percentage (%) |
|---|---|---|
| 0-14 | 52,711 | 44 |
| 15-64 | 63,080 | 53 |
| 65+ | 3,342 | 3 |
| | 119,133 | 100 |

Source: Ghana statistical service (2000)

The population is rural with proportion of 84.3 percent settlement as against 15.7 percent settlement in towns and the two major ethnic settlers are Brusas and Suaman. There are altogether 25,900 households in the district with household size estimated at 4.6. The households in the District follow the traditional household settings in Ghana, which comprises man as the head, wife, children and extended family members. There are also female-headed households with the same family composition (Ghana Population and Housing Census, 2000). The population growth rate is 4.7 percent, which is higher than the regional average of 3.2 percent. The growth rate is caused by the influx of migrant farmers from other parts of the country into the district.

**Table 2:2Occupational distribution of the population in Aowin Suaman District**

| Occupation | Male | Female | Total |
|---|---|---|---|
| Professional workers and related workers | 1,718 | 1021 | 2,739 |
| Administrative and managerial workers | 61 | 30 | 91 |
| Clerical and related workers | 922 | 169 | 1,091 |
| Sales workers | 611 | 1275 | 1,886 |
| Service workers | 532 | 1078 | 1,610 |
| Agric, animal husbandry, fishing and hunting | 25,154 | 20339 | 45,493 |
| Production, transport operators and labourers | 747 | 1341 | 2,088 |
| Others | 2,818 | 648 | 3,466 |

Source: Ghana statistical service (2000)

Aowin Suaman district has a large proportion of the people who engage in agriculture activities. These people are also involved in off farm activities, which include sales of items, production, transportation and others. However, there are professional and other related workers who are in the capital and work in the public sector.

The district is made up of two traditional areas namely, Aowin traditional area with its seat at Enchi and Suaman traditional area with the headquarters at Dadieso. The heads of the

traditional areas are known as paramount chiefs (*omanhene*) who rule with the support of other divisional chiefs. They have traditional structures that control and distribute land in the communities for both agriculture and settlements. In addition, the strong commitment of the chiefs and people of the district to develop and promote peaceful and friendly environment assures investors of a safe place for investment.

### 2.2 Infrastructure and public services

Aowin Suaman District has a total length of 123.1 km of truck roads and 240.6km of feeder roads. The two types of roads are not tarred. However, the major roads are regularly maintained to facilitate easy transportation services. Conversely, the roads leading to and within villages are left unattended, making accessibility very difficult between villages. Most community members use bicycles or walk through forests to neighbours in the surrounding villages. Among the selected villages for the study, Sewum and Boinso have health centres, but the other villages could have access to health care services at the district capital. As a result, emergency cases, for instance, a woman in labour is carried by various means to the government hospital in Enchi (ASDA, 2002). The district assembly, in collaboration with the Ministry of Education, agencies and other development partners has undertaken construction of classroom blocks and teachers' quarters for basic schools in the district, but the distribution of the infrastructure did not get to forest communities.

Moreover, the few basic schools in some of the villages lack teachers and that compels parents to send their children to the district capital for better education. This implies that children from poor parents have little access to better education and others travel far distances daily to attend schools with teachers. In the district capital, people enjoy potable water supply from Small Town Water (STW) facility. With this facility, underground water is pumped through pipe to the homes and small factories in the towns. One of such projects is based in Old Yakasi a community located about 15km from Enchi. Besides that, Jama and Dadieso in the district were selected to benefit from similar facility with funding from the European Union (ASDA, 2002).The district assembly and various development effort provided by NGOs have assisted in the construction of boreholes and hand-dug wells in most of the villages aim at increasing access to portable water in the district.

In addition, rural electrification is critical for rural development, but seventeen of the major communities have hooked to the National Electricity Grid. The communities with the fair share of the electricity have brought about some changes. Specifically, it has been observed

that some farmers store perishable farm products for long periods to attract high prices. In the selected communities for the study, there was electricity supply, but only the rich could afford to pay bills and enjoy regular supply. The poor use lanterns in the night as source of light (ASDA, 2002). The district capital enjoys telephone services from landline facility, where organizations, private homes and public booths are connected. The village dwellers could only enjoy the telephone facility in the district capital, Enchi. However, there is mobile network in some of the villages where the rich use mobile phone in communication.

### 2.2.1 House structure and housing conditions

In the district capital, the main construction material used for the walls of buildings is mud/ mud bricks. However, there is high proportion of wooden and brick buildings, which are completely detached houses. In the villages, house structures are typically traditional. The buildings in the villages are constructed with raffia palm leaves as walls and cocoanut palm leaves which are used as thatch for the roofs. There are other buildings constructed with mud and bamboo sticks. These materials are abundant in the forests and easy to access (Ghana statistical service, 2000). In the district capital, it is observed that a high proportion of the people live in compound houses privately owned by individuals in towns. The people occupying these houses share the same rooms, toilets and bath facilities probably due to large number of migrants who cannot own houses at the shortest possible time. In the villages, on the other hand, houses are owned by individuals and are occupied by household members.

### 2.2.2 Ethnicity and religious affiliation

Ethnicity in Ghana is characterized by one's mother tongue and that sets the inhabitants apart from each other. Akans in Ghana constitute the largest ethnic group and this is reflected in the language of Aowin Suaman district population with two dominant Akan languages: Fante and Twi. However, the language spoken by the indigenous population in the study area is Brosa. Apart from the Akans, other large ethnic groups who migrated into the district are Ewes, Brongs and Kusasis from the Upper East Region in Ghana. There are other ethnic groups such as Dagatis, Bimobas and Frafras, but they are affiliated to the larger ethnic groups because they are the minority groups in the communities. However, there is freedom of religious beliefs in the district but the dominant religion is Christianity, followed by Islam. There are people who practice traditional religion and others with no religious affiliation (Ghana statistical service, 2000). Generally, religion in the district is secular because members of religions co-exist in peace and unity.

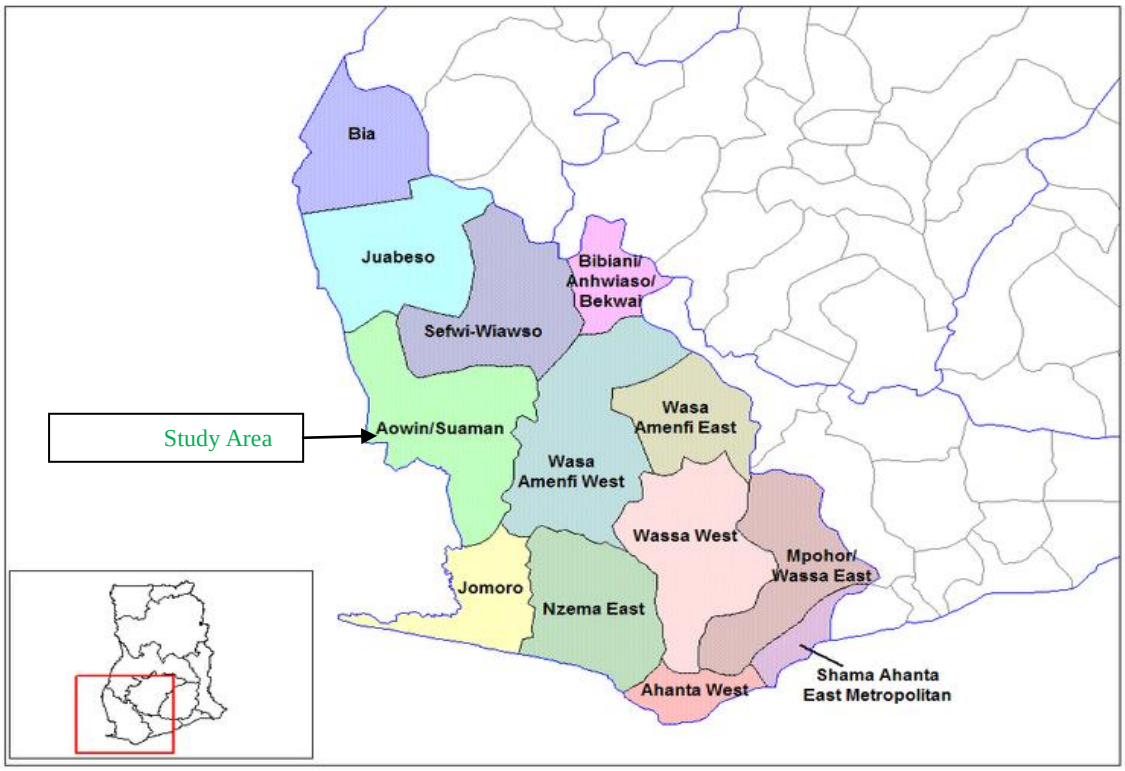


**Figure 2.2 Map of Ghana Showing the Western Region and the Study Area**

Source: Ahenkan and Boons (2011)

### 2.3 Livelihood activities in Aowin Suaman district.

The map in figure 1 above shows the location of the study area and the surrounding districts constituting the high forest zone in Ghana. Agriculture is the major occupation in the Aowin Suaman district. The occupation structure indicates that 78 percent of the economically active population is engaged in agriculture, forestry and fishing activities. The domestic economy continued to revolve around subsistence agriculture among small landholders. However, cocoa is the main cash crop grown and occupies about 45,550 hectares of land in the district. The output of cocoa for the year 2002 to 2003 cocoa seasons was 71,901 metric tonnes (MOFA, 2006; Ton *et al.*, 2006). There are fifteen licensed buying companies engaged in the buying of cocoa beans in the country and Cocoa High Technology has been introduced to increase cocoa yields. The local people engage in processing cocoa beans into pomade, alcoholic, non-alcoholic beverages and cocoa husks used for soap production and animal feed.

The other cash crops cultivated are oil palm, rubber, citrus and coffee. They are, however grown on smaller scale. In the district, selected food crops are cultivated and these include cassava, plantain and maize. Other farm produce are bought from big markets at different

regions and La Cote D'Ivoire, which shares border with the district. However, weekly markets are organized in the major centres in Enchi, Dadieso, Boiso, Aquai Allah and Sewum for the sale of both industrial and agricultural produce. The rivers and water-logged areas within the district give the greatest opportunity for community members to engage in fish farming. Some people take up fish farming to reap the advantages of large markets both locally and outside the district. The major identified timber species are Wawa, Odum, Mahogany, Emire, Sapele, Ofram and Samfena. These timber species have attracted a number of timber firms and the large firms include Samratex Timber and Plywood Company and General Development Company located at Samreboi and Takoradi, which are outside the District.

### 2.4 Improving of livelihoods

The government of Ghana has been assisting farmers to become more productive and efficient as well as trying to improve people livelihoods in the area. Therefore, successive governments realized that the adoption of substantially higher fertilizer rates in conjunction with a systematic spraying of cocoa farms would play a key role in showing the potential of market incentives in the form of higher yield. The government introduced mass spraying of cocoa as part of Ghana's determination to maintain high position of cocoa production. Parallel to that, Ghana COCOBOD was equipped to initiate a national programme to control the incidence and spread of black pod diseases as well as pests, which contribute to the decline of cocoa yield over the past decades. In addition, there was Cocoa Disease and Pest Control Exercise Committee (CODAPEC) that was formed to ensure the effective implementation of the project. The main aim of the project was to facilitate increased production of cocoa that would also increase farm income to enhance the living standard of farmers. The government effort is regarded as providing free assistance to farmers in controlling cocoa pests and diseases that are reducing cocoa yields over the years. Besides, there has been initiation and innovation of cocoa fertilizer production as well as application to increase yield.

Following the high production of cash crops at the expense of food crop in that area, the government is introducing rice farming, which require simple and efficient technology with low input levels especially in the marshlands or swamps. This aims at reducing higher costs of rice the poor households could not afford to meet their food requirements. However, the response is limited in some communities and gaining grounds in other areas. The district agriculture officials are initiating by providing extensive services, giving farmers subsidized

inputs as a way of motivating them to go into rice farming and the exercise is likely to cover larger communities in the near future. In general, combination of subsidized inputs and better farming practices are the major concern of the government to ensure balance between high productivity and environmental safety.

### 2.5 Forest policies and laws simplified for forest communities.

In response to legal and policy reforms to combat illegal logging and other activities that are causing environmental damage and impoverishing forest dependent communities, the government of Ghana brought simplified forest laws to be followed by the local people. These were revised past laws. In Ghana, the Forestry Department was established in 1909 by the colonial masters with forest management responsibilities. During that period, Chiefs and local people were viewed as clients and finally forest reserves were established within the period of 1920 to 1935. The major role of the Forestry Department was to provide professional advice to forest owners to benefit from forest on their lands. Consequently, forest management and policy, which started gaining grounds, went through various transformations. Hence, forest policy statements have been shaped by several ordinances, acts and decrees to maintain forest (Ayine, 2008).

It is important to note that, before independence in 1957, Ghana had two formal forest policy statements. One was formulated in 1946 and approved in 1948. The second was the 1974 forest and wildlife policy, which aimed at ensuring the flow of optimum benefits to all segments of society, encouragement of participatory decision-making processes that involve local communities regarding welfare, among others (Ayine, 2008). Ghana Forest Commission was also established in 1999 with forest commission Act (Act 571) as the legal backing. The commission is responsible for executing and ensuring operational agencies' coordination for forest management, development and protection (Damenu, 2010). Moreover, the functions of the commission follow series of forest law transformations from the creation of forest in 1948 to the present forest laws for protection and management

**Table 2.3 Major forest policies and legislations with their focus in Ghana (1948 -2002)**

| Number | Year | Forest policies and legislature | Major objectives |
|---|---|---|---|
| 1 | 1948 | 1948 forest policy | ➢ Creation of permanent forest estates owned by the state<br>➢ Protection of forests<br>➢ Protection of water catchment areas<br>➢ Environmental protection for ecological balance |
| 2 | 1951 | Forest ordinance | ➢ Protection of forests<br>➢ Protection of forest reserves |
| 3 | 1960 | Forest improvement Act of 1960 | ➢ Forest plantation development<br>➢ Timber plantation establishment and management |
| 4 | 1961 | Wild animals preservation | ➢ Preservation of wildlife |
| 5 | 1974 | Wildlife Reserves and Conservation Policy of 1974 | ➢ Protection of wildlife resources<br>➢ Species conservation<br>➢ Wildlife conservation areas<br>➢ Protection areas development |
| 6 | 1974 | Forest Protection Decree | ➢ Defined forest offences<br>➢ Forest protection |
| 7 | 1974 | Trees and Timber Decree | ➢ Logging guidelines for timber industries<br>➢ Sanctions for non compliance with the guidelines<br>➢ Promotion of export for processed timber |
| 8 | 1974 | Forest Protection Decree | ➢ Forest protection and protection of water catchment areas |
| 9 | 1983 | Timber and chainsaw operation regulation of 1983 | ➢ Regulation of felling of trees<br>➢ Forest plantations<br>➢ Regulation of logging activities |
| 10 | 1986 | Forest Protection (Amendment) Law, 1986 | ➢ Defined forest offences and penalties<br>➢ Forest protection<br>➢ Protection of water bodies<br>➢ Species conservation |
| 11 | 1994 | Forest and wildlife policy in 1994 | ➢ Protection of forest<br>➢ Species conservation<br>➢ Regulation of timber harvesting<br>➢ Development of cottage and agro-base industry<br>➢ Community forest and forest conservation<br>➢ Deregulation and streaming of bureaucratic control on wood export<br>➢ Involvement community in conservation of forest and wildlife resources<br>➢ Rehabilitation and development of degraded forests |
| 12 | 1997 | Timber Resource Management Act,1997-Act 547 | ➢ Timber utilization contract<br>➢ Offences of illegal logging<br>➢ Protection of logging on farms and plantations |
| 13 | 2002 | Forest protection (Amendment) Act, 2002 | ➢ Review forest offences and fines upwards<br>➢ Community forest management and conservation<br>➢ Protection and afforestation programmes<br>➢ Forest protection penalties<br>➢ Protection of water catchment areas |
| 14 | 2002 | Timber Resources Management(Amendment) Act, 2002 | ➢ Timber utilization contract<br>➢ Offences for illegal logging<br>➢ Protection of logging of farms and plantations<br>➢ Community forest and forest conservation<br>➢ Protect land with farms from logging<br>➢ Protect private forest plantation<br>➢ Duration of timber concession rights |

Source: Ahenkan and Boon (2010)

### 2.5.1 Forest laws simplified for high forest zones in Ghana

This section deals with timber resource management regulation amendments from 1998 to 2002, simplified for the study area. These include identification of land suitable for timber rights, procedure in relation to lands that are not public lands, prohibition from harvesting timber without utilization contract and protection Decree and Act that affect forest reserves.

#### 2.5.1.1 The Timber Resources Management Act, 1997(Act 547) as amended by the Timber Resources Management Amendment Act, 2002 (Act 617)

It states that the right to harvest tree and extract timber from a specified area of land shall not be granted if the land has already been acquired by a person through an outright sale of the land by the owner unless the consent of the person who acquired the land through the outright sale has been obtained. Moreover, the right to harvest trees and extract timber from a specified area of land shall not be granted if there are farms on the land, unless the consent of the owners of the farms has been obtained.

It stated that a person who invests in any forest or wild life enterprise is entitled to such benefits and incentives as are applicable to its enterprise under the law of Ghana. Any person responsible for the management or protection of a forest resource by virtue of his employment in any institution of government by any act or omission in the performance of his duties facilitates the breach of any provision of the act (Forestry Commission, 2003). Any person who condones or connives with any other person in the provision of this Act commits an offence and is liable on summary conviction to a term of imprisonment of not less than six months and not exceeding two years.

#### 2.5.1.2 Timber Resources Management Regulations, 1998 (LI1649) as amended by Timber Resources Management Amendment Regulation, 2003 (L11721)

This law identifies procedure for granting of timber rights. The chief executive of the Forest Commission shall be responsible for the identification of lands that are suitable for the grant of timber utilization contract. After identification, the chief executive shall instruct Forest Services Division to take inventories of forest and timber on lands identified by the Government as public lands or stool lands (Forestry Commission, 2003). The Timber Resources Management Regulations (LI1649) has the following procedure when lands that are not public land or existing forest is to be granted for timber harvest, the District Forest Officer of the area with the help of the District Chief Executive must seek the written consent and agreement of the owners of the land before it is given to a contractor to fell timber.

The district forest officer must inform the land owners by posting a notice at the office of the District Assembly, Traditional Council and Unit Committee of the area where the timber is going to be felled. Any person who claims ownership the land in question must inform the District Forest Office within 21 days. The terms and conditions of timber utilization contract demand that before timber rights are granted to a contractor he must fulfil an undertaking to provide social facilities and amenities for the people in the contract area (Forestry Commission, 2003). The value of the social facilities and amenities shall be 5% of the value of the stumpage fees from the timber that is harvested.

#### 2.5.1.3 Forest Protection Degree 1974 NRCD 243 as Amended by the Protection Amendment Act 2002, (Act 624)

The NRCD 243 and Act 624 affect only forest reserves. It states that if any person enters a forest reserve without obtaining written permission from Assistant District Forest Manager or a higher officer and goes ahead to fell a tree branch, cut the back of a tree in order to collect the sap that flows or damage timber commits an offence. Any person who makes a farm or puts up building in a forest reserve commits an offence. The same offence is committed when a person takes any forest produce through any manufacturing process or collects, carries or removes any forest produce, feed cattle or allow cattle to enter forest reserve (Forestry Commission, 2003). If an offence has been committed in a Forest Reserve, any Forest Officer can seize the timber, tree, all other forest produce together with all instruments, vehicles and other articles suspected to have been used in committing the offence.

Moreover, if a person is found guilty of committing an offence under this Decree, he must be punished and an order will be given for all forest produce, instruments, vehicles and other articles used in committing the offence to be forfeited to the Republic of Ghana. If after 14 days the seized item owner cannot be traced, the item is considered as the property of republic of Ghana (Forestry Commission, 2003). Besides that, anything, which is forfeited to the Republic of Ghana under this section, may be sold or otherwise disposed of by Minister for Lands and Forestry and the amount obtained from the sale should be used for forest rehabilitation. They are the legal consequences forest fringe communities are suppose to know.

## 2.6 National and international REDD strategy

The UN REDD collaborative programme that aims at bringing forest nations and donors to join UN action to support country led integrated REDD programme has strategy in its framework. It includes the establishment of baseline at the country level. It also considers the country's readiness for monitoring and assessment. The REDD strategy facilitates stakeholders engagement as well as forest dependent local communities (FAO, UNDP, UNEP, 2008). Moreover, the REDD strategy which involves consultation and identifying resource owners, people with traditional right and economic agent might enable the effective planning for REDD payment distribution structure, especially when REDD policies and forest laws are followed in the local communities.

Global climate change policy is international treaty between developed nations and developing countries, which aims at stabilizing greenhouse gas emissions in the atmosphere at an acceptable level that will not be dangerous to human health and the environment. Kyoto protocol came as a result of series of UNFCCC conferences that defined countries into broad categories according to development status defined by the World Bank. The defined countries were assigned responsibilities: developed countries (Annex I countries) are to use defined mechanisms to reduce emissions to varying levels and industrialized countries (Annex II countries) should also provide emissions reduction assistance to developing countries. However, in developing countries no emission reduction is required, but should be committed to REDD policies based on agreement (Myers-Madeira 2008; UNFCC, 2008).

The United Nations collaboration programme on reducing emissions from deforestation and forest degradation (REDD) suggests adopting methods to reduce emissions through land use change. The REDD activities include projects that promote conservation efforts towards the maintenance of vegetation cover that is likely to face deforestation and it is usually a small and specified area. The formation of conservations in small units seem to be ideal for REDD acceptable project that could generate carbon allowances. According to Myers-Madeira, the policy changes in a country that result in reduced deforestation are eligible for carbon allowance.

Hence, practical efforts to maintain carbon sequestration in various techniques such as policy reforms that will discourage subsidies for agriculture activities, which result in deforestation or policies that encourage selective lumber will make REDD objectives achievable. REDD policies suggest that an acceptable forest monitoring system that will qualify a country for

carbon allowances requires basic guidelines. The initial forest inventory should be used to assess the nature of the forest ((Myers-Madeira, 2008; World Bank, 2010). Moreover, there should be ongoing remote sensing to ensure that details on the monitoring reflect the qualifying level.

Last, but not the least, sequestration value of forest carbon should be estimated through sampling. The REDD identifies additionality and this occurs where a forest is designated as globally significant biodiversity enhancement area. In this case, deforestation is unlikely to occur and is not eligible for carbon allowance. REDD policy requires that a base line should be established in a pilot area to provide a particular set of conditions at a time for assessment (Myers-Madeira, 2008). However, a qualifying programme must also provide quantitative evidence that shows reduced deforestation in comparison to a base line scenario, which will enable the estimations of deforestation projections.

### 2.7 Land administration and rights

The idea to establish the office of the administrator of stool lands started as far back as the 1950s. The reason for its establishment was to put in place a mechanism, which would ensure equitable enjoyment of the benefits accruing from stool land resources by the entire subject of stools. Parallel to this 1992 constitution in article 267(2) stipulated the establishment of the office. In the year 1994, parliament passed the office of the Administration of Stool Lands Act 1994, (Act 481) and the office started effective operation in 1996. The main aim is to enhance stool land revenue mobilization and disbursement to facilitate sustainable management of stool lands to benefit the present and future generation (OASL, 2008).

In Ghana, Customary Land Secretariats (CLSs) were established by the local Land Owning Communities, backed by the government, to improve land management and administration in the country. The office is under Ghana Land Administration Project (LAP) being implemented by the Ministry of Lands and Natural Resources. Their duties, among others, include provision of accurate land records at the local level that can be accessed by the local community and the public. The clarification of ownership and land use right is done by the office. It also ensures clarity of ownership and land use right.

On the part of documentation, it keeps records related to community's ownership of land, layout/planning schemes prepared for any portion of the community's land (OASL, 2008). These give a solid ground for land dealings in the local communities. Ghana's constitution

gives recognition of land ownership and about 80% of lands in the country are under the ownership and control of customary authorities, which is in the form of stool or skin lands, clans, family and heads of communities. Moreover, the ownership or possession is expected to benefit the larger community (Blay, 2005).

### 2.8 REDD in Ghana

The understanding of forest policies and the cooperation local people may be the ideal starting point for REDD implementation. Following the Bali Action plan which provided a plan for REDD readiness in 2007 and was later confirmed at Copenhagen in 2009, Ghana embraced REDD and it has been gaining momentum for implementation. In addition, Ghana REDD readiness preparatory proposal (R-PP) was approved in March 2010 at a conference on the protection of forest (CPF) fifth participants' meeting held in Gabon by the World Bank and donor countries (Bamfo, 2010; Mann, *et al.*, 2010). In line with the approval, Ghana received US$ 3.6 million which was allocated to facilitate the REDD readiness process. In addition to the subsequent funds Ghana received, the World Bank donated US$ 80,000 for projects supporting REDD related activities through Forest Carbon Partnership Facility (FCPF), which is run by the World Bank in Ghana (Mann *et al.*, 2010).

Furthermore, Ghana is going through a REDD implementation processes, which include funding for REDD projects through Clean Development Mechanism (CDM) scheme. At the national level, Ministry of Lands and Natural Resources (MLNR) as well as the Forest Commission (FC) have been reviewing policies and emerging with new global regulating standards and schemes such as Voluntary Partnership Agreement (VPA) to address forest related problems (Tropenbos international, 2010). Currently, the government of Ghana is undertaking a series of legislative reforms to promote environmental services through effective forest management. In relation to REDD, it is important to note that Ghana is shaping key institutional players to create awareness and promote consultation processes for effective REDD implementation in the near future. It all began by stakeholders mapping and consultation especially those that will be affected by REDD and those that will implement REDD activities and other interested parties. However, at the national level, Forestry Commission is REDD implementing agency.

The consultation of REDD in Ghana involves stakeholders mapping and consultation processes. The stakeholders include those that will be affected by REDD and those that will implement REDD activities. The state level includes Ministry of Lands and Natural Resources

and the sub units under the ministry. The private sector involves timber industries, wood workers associations, charcoal producers, fuel wood collectors, agriculture and forest related business. In relation to civil society consultation, attention is directed to forest fringe communities and at the local level, focus is on forest fringe communities, chiefs and the traditional council. Further consultation conducted in collaboration with local NGOs and international NGOs (Tropenbos, katoomba etc) involving national house of chiefs, regional house of chiefs, forest dependent communities and civil society. The consultation focused on variety of issues including the nature and scope of REDD, participation plan, land use rights, tenure systems, forest governance, benefit shearing and so on( Banfor, 2010). Besides that, REDD strategy preparation proposed detailed assessment of conditions driving deforestation at the local level especially expansion of agriculture and small scale agriculture among others.

## 3. THEORETICAL AND CONCEPTUAL FRAMEWORK

This chapter presents the concepts, theory and analytical frameworks relevant to the study. It has applied a livelihood framework, institutional analysis and resource governance as a useful guide to the complex interlinking processes of institutions and actors interactions with natural resources. This study has specifically emphasized institutional theory within this framework. Introducing REDD implies changing and adapting the institutional structures. Moreover, these processes demand better understandings of the role institutions play in particular settings in a society. The livelihood framework is chosen for the study because it shows assets influence institutions for outcomes. Resource governance will provide better understanding of how actors interact for the use of resources.

### 3.1 Institutional analysis

Institution theory contains a variety of different approaches to institutional phenomena but in relation to my study, I will emphasize on how formal and informal rules determine agents' interactions and also shape individual behavior. I will advance with the theory by defining basic concepts that relate to institutions. These are informal rules (convention and norms) and formal rules.

I will first of all start with conventions, which take variety of forms but share common features: Conventions are referred to the various metric system of measurement like weight, length, time and others or coordination behavior that creates regularities in a society. They make issues simple by "combining certain situations with a certain act or solution" (Vatn, 2005:62) There are instances people misunderstand what happens in a community until they are informed or they observed the pattern of behavior instituted as part of culture before they adjust to situations. This applies to resource use with people with different interest in a society.

Norms are considered in variety of forms. They combine in a certain situation with a required act, which supports values. In my study, they are rules that require people not go the forest on Wednesday or cut the branch of a tree on that day. This has been the practice of some communities in the high forest zones in Ghana. Norm "is a prescription intended to support a certain definition of how we should treat others, what is a good life and so on" (Vatn, 2005:63) Norms and conventions are overlapping but in this case, norms define what is an appropriate to do as a member of a society. It is observed that, when norms are internalized they work without external regulations or sanctions because people have the feeling of guilt if they go against rules of the society.

Formal rules combine certain situations with an act that is regarded as forbidden, often governed and sanctioned by the third party such as the state. The sanctioning system may be law and violating what is prescribed by a count for offence committed is liable to punishment such as imprisonment or fined.

It is observed that when individuals emerge or form consensus, they shear common value or incentives and that is typical structural feature of a society. In relation to my study, REDD establishment of partnership with forest communities to meet climate change challenges should identify the components of institutions to strengthen those that need reinforcement. The structural features of society should be the basis for REDD authorities to provide incentives to forest communities in Ghana to conserve forests. The incentives as a source for income, which could improve livelihoods will be a motivational factor to strengthen the independent construct of institution such as emergence and conformity for a common goal.

However, that rationality depends on how actors follow rules, procedural and normative orientated behavior. The agents' process of interactions involves wisdom and is reflected in conventions, habits and rules. It is important to affirm that institutions are composed of various combinations of elements and argument is usually base on the dominant elements in a particular setting (Scott, 2004). I have observed that there are some common elements in resource regime and institutional theory. They both study the institutional structures under which choices are made; there is sheared understanding among actors, common perception and members conform to rules. The pattern of interactions in a regime is also governed by rules that exist within an institution to shape individual behavior.

Resource regimes are referred to both rules defining access to resources, inheritance and rules concerning how resource will be transferred. In local communities, we identify informal institutions like norms and conventions, which are combined with formal rules to regulating the use of resources. In relation to my study the utilization of timber in the forest, will affect the ecosystem and the forest cover which absorb carbon. Therefore, independent use of the forest resources without regulations will finally accumulate and result into negative changes in the environment. Institutional structures should be well established to regulate resource use.

According to Scoones (1998) and Vatn (2005), institutional processes embedded in both formal and informal institutions mediate the ability to carry out strategies to achieve outcomes. The state of outcomes depends on how institutions are formed and function. However, the

functioning of the institutions will depend on legitimacy of institutions and how institutional structures influence actors' motivations, perceptions, interest and interactions between agents. Scoones expresses his views that institutional processes enable the achievement of sustainable livelihood. Moreover, policy settings, politics and socio-economic conditions coupled with livelihood strategies influence outcomes in the form of actual resource use. In relation to my study to understand and design institutional framework for REDD at both international and national levels will provide greater opportunity to mainstream REDD into national policy and programme. Institutions will also facilitate agents coordination and institutional leadership for the REDD agenda.

### 3.2 The livelihood framework

In the last decade livelihood has become a popular topic in social science research and the livelihood framework has been used to express complex survival strategies. The framework has been adapted as an analytical device in development studies research to study livelihoods in developing countries (Scoones and Wolmer, 2002; Ellis, 2000; Carney, 1998). The livelihood approach dates back to the work of Chambers in mid 1980s and the concept was later developed to sustainable livelihood approach (SLA) by the British Department for International Development (DFID) (Collmiar and Gamper, 2002).

In 1992 Robert Chambers and Gordon Conway proposed a definition which ensures sustainable rural livelihood to be applicable at the household level; "A livelihood comprises the capabilities, assets(stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefit to other livelihoods at the local and global levels and in the short and long term" (Krantz , 2001:1).

According to (Ellis, 2002) the concept of livelihood is widely used in relation to poverty and rural development but the meaning goes beyond these two issues. He defines livelihood as a "means to a living". He states that Scoones, (1998) has identified five types of capital, which are components of assets in the definition of livelihood. These assets support strategies of individual and households to earn their living. According to the Institute of Development Studies (IDS) discussing paper (1992:3) livelihood is regarded as "a means of living", and various components are livelihood capabilities, tangible assets such as stores and resources and intangible assets which include claims and access.

Parallel to these definitions, Ellis (200:10) summarizes by stating that "livelihood comprises assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household". It is observed that these elements do not remain the same from one year to another. They can be built up or linked to support livelihood and they can also be destroyed. Therefore, the livelihood framework is adopted to express the complex processes and factors affecting livelihoods of rural communities. The framework in figure 3.1 will express the main resources (livelihood assets/capital) available to local people. It will also include formal and informal institutions governing access, use and management of resources. The framework will display the interconnection of some elements that influence rural livelihoods and these include trend, vulnerability and livelihood strategies.

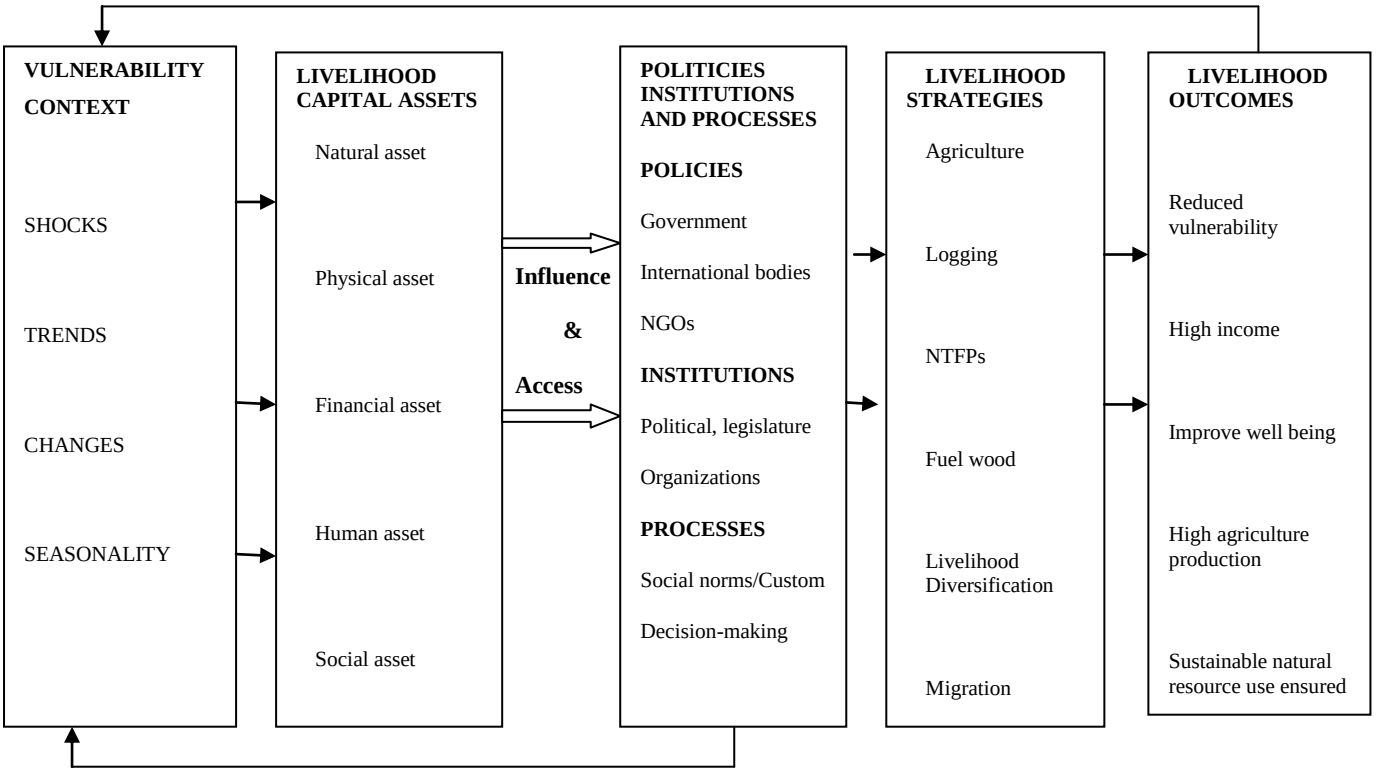


**Figure 3.1 Livelihood framework**

Source: adopted from Scoones (1998)

The guiding assumption of the framework is that people pursue a range of livelihood outcomes, which they hope will improve their livelihoods. Scoones states that to understand the complex processes through which livelihoods are constructed, there is the need to analyze

the institutional processes and organizational structure that link various elements together. He defined institutions as rules that regulate practices or pattern of behavior and these include formal rules, informal rules and norms of society, which have persistent and widespread use and are imbued with power.

The institutions mediate access to livelihood resources, which in turn affect livelihood strategies as well as livelihood outcomes. Scoones states that the definition of institution is very broad but in relation to the livelihood framework, the definition is derived from sociological and anthropological literature. It is regarded "as regularized practices or pattern of behavior structured by rules and norms of the society which have persistent and widespread use". Institutions are referring to both formal and informal and usually subject to various interpretations by different people. The institutional practices are usually influenced by power relation through the processes of social negotiation (Leach *et al.*, 1997:12). They endorsed North's 1990 term of institution as the "rules of the game" and further distinguished that from organizational structures (agents/ players).

The framework also facilitates critical thinking about the major links between policies and vulnerability contexts. The livelihood outcomes and vulnerability contexts also provide precaution for formulating policies to overcome constraints. It is affirmed in social science literature that institutional processes are initiated by the government, private sector and communities to carry out strategies to achieve outcomes. These livelihood outcomes comprise of reduced vulnerability, income, improved well being, agriculture production and sustainable use of natural resources among others.

The framework identifies five different forms of capitals, which could be substituted for each other and they are natural, human, physical, social and financial. It also identifies the assets that are weak or lacking in each category of assets as well as those that are deteriorating because of adverse processes in the livelihood strategies or utilization of natural resources. Assets are acquired and utilized through variety of activities known as livelihood strategies, which include agriculture, logging fuel wood, NTFPs, livelihood diversification and migration. In the framework attributes related to high income level, income stability and reduction in adverse seasonal effects will eventually make people less vulnerable and capable of managing adverse trends or cope with shocks.

On the part of agriculture as a strategy, a farmer can decide to intensify resource use in combination with given land area or extending the land area for cultivation. In this case, the

land is an asset and intensification and extensification are directing attention towards institutions that facilitate change in agriculture. For the purpose of the framework, apparent information of capital assets and their categories need to be stated and explained. Assets are owned, controlled, claimed and at times accessed by household. They are means by which households are able to undertake production or generate the means of survival. It has been observed that different researchers have their own way of identified capital. Scoones (1998) identified five broad categories forms of capital assets and these could be substituted for each other and serve as the building blocks for livelihood.

- Natural assets: these are termed as environmental resources. In my study they are referring to land and produce, water, forest land used for agriculture and forest products utilized by people to generate means of survival.

- Physical assets: These comprise of infrastructure needed to facilitate livelihood. In my study, they include roads, household ownership of buildings, water supplies, electricity, agriculture inputs (seeds, fertilizer and pesticides) and other infrastructure used to generate income flows for livelihood.

- Human assets: this category includes health, knowledge, skills labour and education. On the part of education and skills could be increased by investment and training. These enable people to pursue livelihood strategies to achieve outcomes. Labour is also effective by being free from illness.

- Financial assets: these represent financial resources households have access to support livelihoods. In my studies, they include credit in the form of loans, savings, income form paid work, pension and income transfers such as state support and remittances.

- Social assets: these refer to claims individuals and households can draw by virtue of their belonging to social groups to meet their livelihood outcomes. In my studies, these include social networks, social movement, institutions (norms, rules and sanctions) and level of trust and mutual support among community members.

The best way to understand the complexity of forest resources, livelihood activities and institutions governing resource use in the study area is to relate these to the livelihood framework. The household survey was designed in line with the livelihood framework to understand people's general means of gaining living through local access to resources.

Chambers and Conway, (1992) see livelihood activities as means of living and can cope with, recover from stress, shock, and provide opportunities for next generation. In my study, the livelihood activities in communities pursuing the range of forest resources in increasing the rate of deforestation. The intensification of cocoa farms into the forest and excessive logging by agents has no much to offer for the next generation. The future consequences outweigh the advantages considering the impact of deforestation. In this case, institutions could be changed to facilitate sustainable use of resources. In the study area, the research team identified the above livelihood indicators of the assets' categories at both household and community levels which were used to examine livelihood strategies and outcomes. Moreover, vulnerability categories were also identified at the community and household levels and they serve as a guide to map out the vulnerability context in the study area. The resource analysis and the livelihood framework have some common elements. The both recognized that institutional processes

**Table 3:1 Venerability in community and household levels in the study area**

| **Vulnerability** | **Vulnerability categories** | **Vulnerability at community level** | **Venerability at household level** |
|---|---|---|---|
| shocks | • Food, draught, deaths,<br>• Violence, civil unrest | • Flood | • Flood<br>• Deaths of family members |
| Trend and changes | • Population and environmental change<br>• Technology<br>• Market and trade | • Population inflow<br>• Environmental change<br>• Technology<br>• Market | • Population inflow<br>• Environmental change |
| Seasonality | • Rain dependent production<br>• Change in consumption pattern<br>• Change in income<br>• Seasonal cocoa production<br>• Pest and diseases | • Rain dependent<br>• Change in income<br>• Change in consumption pattern | • Total rain dependent<br>• Change in income<br>• Seasonal cocoa production |

Source: Adopted from Scoones 1998

In the livelihood framework and the institutions analysis, have common elements that are relevant to my study. They both consider social capital for changing institutions[1] of resource

Scoones, 1998 separated social assets from institutions, which are categorized under livelihood assets whereas Vatn, 2005 considers social asset to be embedded in institutions to play the same function.

use. Social capital such as social relations, associations, affiliations and political power needs coordination actions to pursue livelihood strategies. Scoones states that the starting point of establishing livelihood strategies is to consider the type of livelihood resources available before making decisions on gaining access. Vatn added that resource characteristics influence outcomes and influence agents' choices

### 3.3 Institutional approach to forest management

Institutional concept is very important in this study because institutions are means of securing livelihood in local communities. Institutional approaches to natural resource management like forest are centred on property rights structure of the resources. The structure influences sustainability of resources and improving livelihoods. Issues related to livelihood and property rights structure are broad and complex. However, decrease in livelihood could lead to high dependence and eventually lead to degradation of natural resources. Usually exclusion from the use of natural resources due to changes in property rights regime results in increase deprivation and vulnerability of some rural households in the developing countries (Adihkari, 2001). Forest resources share attributes with many other resource systems, which pose problem to institutional approaches to forest management that could be sustainable and efficient.

The issue of exclusion among beneficiaries from access and use of forest resources in forest management systems is usually difficult and costly (Ostrom, 1998). The difficult appears when individuals who benefit from the resources will not contribute to long-term sustainability of the resources. Hence the issue of multiple users appears. The consumption of resource units by one individual leaves fewer units available to other thereby making many aspects of the forest resources to be considered as common pool resources. This shares attributes of both public as well as private goods. This can be seen in the case of forest, irrigation systems and fisheries. Common pool resources are characterized by difficulty of exclusion. The factors associated to that include cost of fencing a resource and cost of designing rules as well as enforcing rules to assign property rights to exclude access. The best option is institutional arrangement that can be designed to ensure exclusion and eliminate free riding. Parallel to the above attributes of forest resources, conventional theories of common pool resources emphasizes privatization or government control measure that could be appropriate solution for overuse of resources or over access to resources, which would eventual lead to degradation.

The conventional theories affirm the contribution of privatization and government control but are based on the prediction of "tragedy of the commons" (Hardin, 1968). The supporting argument is that common pool resources will be overexploited and finally be degraded as a result as result of individual maximization of utility as stipulated by the rational choice model. The tragedy of the commons gave rise to various schools of thoughts in relation to common property and institutional arrangements.

The property rights school of thought asserts that the creation and enforcement property would solve the problem of degradation and overexploitation (Hardin, 1968; Smith, 1981). Moreover, government ownership (state property) and the control would reduce over exploitation. Another school of thought is "assurance problem approach" based on voluntary compliance (Adhikra, 2001). This school of thought advocates that regulator will act in the interest of public to understand social ecological systems and if necessary change institutions in order to induce socially optimal behavior (Ostrom, 1998; North, 1990). The conventional theories of common pool resources state that the nature of property rights regimes and distribution of access to common pool resources do not only affect the level of livelihoods in a particular location but also affect the quality and quantity of resources (Adhikari, 2001). Hence, well-designed property rights structure is a determinant for long term economic, social, ecological sustainability of the common pool resources. However, it also depends on the extent to which people extract natural for their livelihoods.

### 3.3.1 Property rights

Generally, in recent literature of resource use, there are different property rights structures or regime, which enables institutional arrangement for resource use and conservation: the regimes govern access to resources and set rules concerning transaction over the use of the resources (Vatn, 2005). It is important to note that when resource structures vary, resource regimes may function in different ways. In the case of private property, it is thought to be ownership of the individual. This could also be applied to common property, which is privately owned by group of people. For example, forest could be owned by group of farmers or all the inhabitant in a village.

The ownership grants the individual or the people certain rights and obligations concerning the use of the forest. The rights school of thought argues that the private model act efficiently to internalize externalities that may arise when access is unregulated (Demsetz, 1967). In a common property situation, there are those who are members of the common and those who

are not. Others define rights to resources, determines which benefit streams can be utilized, which members are suppose to utilize, to what degree and what means (Vatn, 2005). However, the issue of exclusion may be successful in private property rights. There is also an argument that it may be difficult to address exclusion well because of people perception of common pool resources.

In the case of common property, there is difficulty of enforcing private claims to property because it is opened to competing claims to common rights to resources (Feeny *et al.*, 1990). This regime may be preferred to open access where resource users have no appropriate incentives to avoid overuse of resources or regulate external effects of different users. State property regime is a set of highly formalized rules that regulate access rights and rate of resource exploitation. State control over common pool resources is reflected in the state excises its power through legislature or coercive on resource use. A successful property rights in relation to ecosystem governance demand clear boundaries, specification, interests, commitment of transaction costs, establishment of enforcement and the adoption of processes at appropriate level (Ostrom, 1990; Adinkari, 2001). In recent social science literature, institutions have been illustrated in many ways to explain human behavior. These give understanding why humans developed institutions or what institutions are not intended. Hence, two basic camps have appeared to explain human behavior and institutions: individualist perspective, which states that individuals are self-contained with predefined capabilities and social constructivist positions, which sees individuals to be influenced by the external society concerning their abilities, ideals and needs.

### 3.3.2 Institutional positions

Human behavior can be understood by looking for a course for an act. It might be necessary to differentiate between immediate and alternative causes, but now I will look at positions in relation to human behavior and institutions. Neo-classical economic position sees human beings as economic rational actors. Implies that, humans are economically motivated by the force in an environment with its of scares resources. The force is conceptualized as a drive to maximize individual utility utilities under the constraints scares resources. For instance, when the price of scares commodity changes, economic rational actor will change the quantity demanded or quantity supply of the scares commodity. This change in behavior can be explained as the immediate cause for the change in price and the alternate change is referred to the economic force. The presence of the economic force serves as an incentive to price

change (Vatn, 2005). There are contrasting traditions to the neoclassical economics position. These are two major economic traditions meant to give better understanding to human behavior in relation to natural resources management: the new institutional economic perspective and classical institutional tradition.

The institutional economic perspective has been prominent in natural resource management. This tradition is emphasis individualist model of rational choice as it appears in the neoclassical economics perspective. However, the perspective relaxes some assumptions but incorporates institution as additional constraints (North, 1990; Coase, 1960). According to that tradition, institution is the "rules of the game in a society" (North, 1990:3). Institutions are external rules and have no role in forming individuals. They are humanly devised constraints that shape political economics and social interaction. They consist of informal rules such as norms, conventions, taboos and sanctions. The formal rules include laws, constitution and property rights. The new institutional position also stresses that institutions work to minimize transaction costs and reduce uncertainty through frameworks, which guides individual decision and management (North, 1990; Vatn, 2005). It emphasis that individuals have one kind of goal: the maximization of individual utility. Rationality action is equated with the maximization and preferences are considered stable. Individual has predefined ability to understand not only his/her own needs, but also the performance of others and what is working in the natural world. According transacting is costly and institutions are to reduce transaction costs. They are regarded as instruments that make exchange become more predictable, simple and efficient (Vatn, 2005).

The classical institutionalist position was developed by (Veblen, 1919; Bromley, 1989). They emphasized that institutions are choice sets from which individuals, households, firms and other decision-making units choose course of action. This stands is closer to the views that institutions are mainly external to the individual but different in two ways. First, Bromley focused his attention on the role institutions facilitate choice and second, emphasized the normative aspect of institutions (Vatn, 2005). This tradition asserts that both the social capabilities of individuals and the way they see the world are socially constructed. "Individuals as social being are constituted through learning the typifications of both the material world and the social relations as established by the society" (Vatn, 2005:11). Individuals learn the meanings that have been created by the society in which they are raised. Furthermore, society itself is likewise perceived through the concepts that are collectively produced (Berger and Luckmann, 1967). Institutions enable people to act accordingly or

define which act should be done in specific situations in a society. They define what is rational to do in a society. The classical institutional perspective expressed institutions beyond external rules (Veblen, 1919; Bromley, 1989; Berger and Luckmann, 1967; Vatn, 2005). These authors emphasized that institutions have formative influence on the individual. They are both external rules and structures shaping the individuals.

Institutions in this context are further explained in both normative and cognitive aspects. According to (Bromley, 1989) institutions do not only enable constraints and choices but they specifically simplify and regularize situations. He emphasized that what is rational is not just as a result of an individual calculation given external institutional constraints. Institutions influence our interests, what we observe, which values we find right to defend and what preferences we hold. Rational choice is not only what is optimal for an individual but also what is right to do in a certain situation or institutional context (Vatn, 2005). The cognitive aspect concerns our metal structures, how we classify objects and give meaning to them as well as act under their defined domains like that of being a daughter in a family and so on. The normative aspects also involve formulation of roles and values in the domain where choice is made among the values that the roles should support. These may not be sufficient to guide and assure a certain behavior. It may be necessary be necessary to reward and punish (Scott, 1995; Vatn, 2005). This position further stressed that punishment may become redundant in certain situations. It is rational to do the appropriate thing.

In social science literature, institutions have the elements of both normative and cognitive, which explain human agency and institutions. The emphasis of the classical institutions position is that institutions are crucial for supporting individual choices and impossible for the individual to act rationally without the support of social institutions. Hence, there is the need for communication and dialogue in this context. Communication or dialogue concern reasoning together and deciding what is best. It also has to do with testing arguments regarding which norm, behavioural rules or preferences should be supported in a society. Generally, these issues are much associated with natural resource use.

In the local and national levels REDD architecture involves institutions and actors. Institutions are both formal and informal rules. The formal rules include laws and legislature that form part of actors and regulate relationship between them (Scott, 1995; Vatn, 2005). The actors comprise individuals, households, organizations such as firms, NGOs, local decision makers and so on. Institutions in this context perform the following functions: they facilitate

the distribution of rights and responsibility among actors. They ensure cost of coordination or interaction between them (transaction cost). They also show how structures influence actors' perspectives, interests and motivation. However, governance forms institutional structures to make these processes work.

### 3.3.3 Resource regime

In a resource regime, there are different types of property holders who may want to conduct transactions with one another over the products they make when utilizing the property they hold. This may not be applicable to open access because there are key elements related to transaction: it concerns the property regime that governs the use and transfers of the right to the resources and the rules that govern transactions concerning the result from the use of the resource (Vatn, 2005). It is certain that firms may sell their products in the market. The same way private firms under state license may involve in producing some public goods, which the distribution may not be based on purchasing power but in the form of social criteria. The states too may allot their produce to citizens based on social or community base principle. The state/public authority may engage in market transaction. Co-owners of common property act like firms and often engage in market transactions over their produce (Vatn, 2005). Therefore, private owners, co-owners of a common property regime and state agent may operate in markets. The systems need institutional arrangement for effective transactions.

In line with this, the implementation of REDD scheme need clear property rights to determine rights and responsibilities of landholder for transactions. In addition, land tenure and use rights are very important for REDD outcomes. For instance, forest tenure will determine who can use what resource, for how long and under what conditions (Angelsen, 2009). Hence, payment for environmental services in the communities may demands co-owners of common property, private or state ownership of land and the performance.

## 3.4 Framework for analyzing institutional change

The framework in figure 3.2 contains core elements that I will like to emphasize. These are the interaction between actors and institutions. Institutions are very crucial in this analysis because they regulate actors and their interaction processes. Institutions in this context are the conventions, norms and formal rules that form the actors and regulate interaction between them (Scott, 1995; Vatn, 2005). Looking at figure 3.2, we have resources and their attributes (I) and available technology to utilize the resources (II). The characteristic of the resources is assumed to influence the extent of regulations or change in institutions, which will certainly

change the pattern of interactions (V) and finally outcomes (VI). In this processes actors play a crucial role. The framework divides actors into two: those having access to productive resources (economic actors IV) and those that have the power to influence interactions rules and institutions such as rules concerning access to resources (political actors III). The interactions between the economic actors for resource use may influence political actors to change institutions.

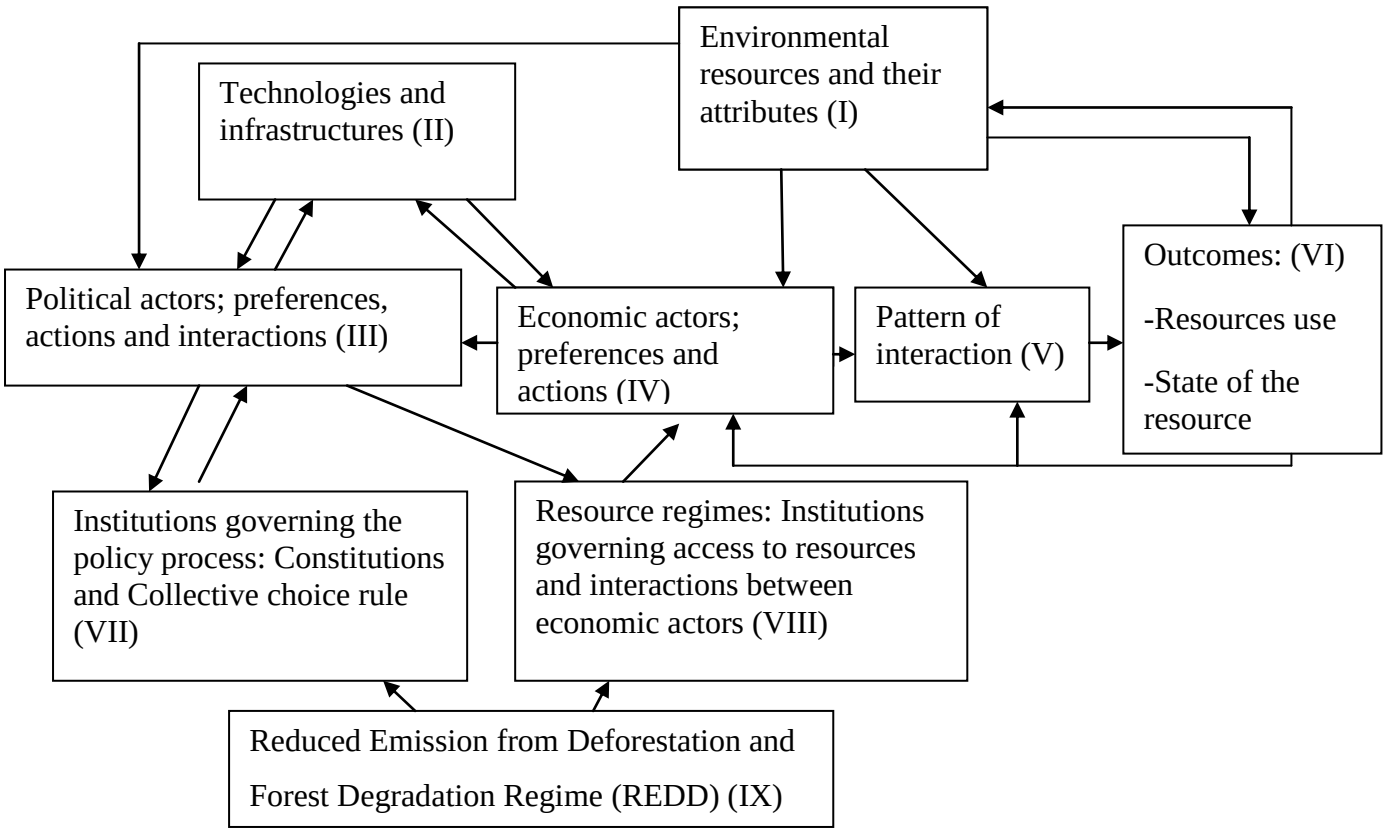


**Figure 3.2 A framework for studying environmental governance systems**

Source: Adopted from Vatn (2011)

In relation to environmental governance, political actors are those that participate in establishing rules for economic actors and their interactions. The economic actors may include the state, communities and privates individuals (Vatn, 2011). These actors may be distinguished at different levels of the political systems.

In the local communities, elected local government authority, community councils, executives of community based organizations, the customary or local chiefs and members of village traditional councils could be considered as political actors. The national level political actors may include government, parliamentarians, and political administrators, whereas at the

international level, international organizations and donor agencies are important actors. We could also indentify NGOs within the local and national levels as political actors representing the interests of civil society (Vatn, 2011). However, in the local communities, chiefs and traditional council members can be economic actors if they have economic interest in the resources.

The institutional structure that facilitates the interactions between these actors within the governance structure may include rules that govern resources. However, there are many types and forms of access and interaction rules. The interaction rules may concern transfer between actors of the resources or products obtained from their use. Furthermore, interactions of actors can take the form of market exchange where interactions between parties are formally equal and exchange is thought to be impersonal for goods and services to be transacted (Vatn, 2011). This leads us to the concept of resource regime where institutional structures govern use of resources in the production of goods and services. In environmental governance, there are rules governing the use of resources: rules governing access to productive resources and the rules concerning the interactions between the actors that have access to the resources. In relation to rules governing production resources, property and use rights as defined by formal or customary law are of special importance.

Moreover, the interaction and access rules can be formulated as property rights or use rights and can also be analyzed further in the four groups of property rights: private property, state property, common property and open access (Bromley, 2006; Vatn, 2011). In environmental governance systems, command is also crucial and it is based on hierarchical power. In this regard, authority is usually resting with the state. The state exercises its power to guarantee legally defined property rights and ensures redistribution. This type of interaction is used when public standards are set, for instance to protect the forest and when rights and responsibilities concerning forest resource used are defined. Moreover, there is community based interaction rules of which reciprocity is a typical form.

The interactions are noted to be operating horizontally, but they differ from exchanges in being relational and personal. For instance, there are community rules that regulate land use activities and the rules are typically norms concerning how one is allowed to use land that will not affect the other. We have another type of interactions where there is no rule and actors are free to do whatever they wish despite consequences for others. Therefore, it is important to recognize a given governance structure for introducing REDD in a pilot site in Ghana because the REDD goals of reducing deforestation and alleviate poverty seems conflicting and

different governance structures will treat them differently depending on the socio-economic, political and cultural conditions of the context.

In relation to REDD and the necessary institutional changes, power and recognition are important issues. Local authorities are recognized as partners and certain power resources are transferred to them to enable them act or respond to local needs and aspirations. The kind of power resource confers via recognition and the ability of the local population to scrutinize and exercise the power is very crucial in resource use. Power is therefore, a key variable in analyzing the effects of recognition on local representation. Power is often used as an explanatory factor in environmental governance and it is not always entirely clear what is understood by the term. Besides that, the concept of power varies substantially like the concept of institutions and that makes it difficult to define power. However, in social sciences literature power is typically defined as capacity to act, respectively as a relationship between agents. Notably, power definition would emphasis agent's ability to realize his/her interests or goals. It may also be defined as the ability to control ones environment, including the behaviour of other agents (Dahl, 1979). The latter understanding may be interpreted to include both the physical and social environment. According to Dahl (1957:202-203) "A has power over B to the extent that he can get B to do something B would not otherwise do." Dahl studied behaviour as it could be observed – not least concerning decision-making in organizations and political bodies.

Following this definition, we could identify three different forms of power; power to control or maintain access, power of exclusion and power as legitimizing. The relation between power and *access* could be seen in power to control and maintain access. (Ribot and Peluso, 2003) affirmed that, in environmental governance there are some actors and institutions that have the power to control the access to natural resources while others have to maintain them through those who have control. "*Access* is understood as ―the ability to benefit from things—including material objects, persons, institutions and symbols" (Ribot and Peluso, 2003:153). While access *control* involves the power to mediate others' access, access *maintenance* requires power to keep the access to the resources (Ribot and Peluso, 2003). This implies that the actors and institutions possessing access control may also have the power to *exclude* others from accessing the benefits. This distinction could be useful to analyze the type of exclusion emerging from the REDD process.

Furthermore, power as legitimizing is very important in forest governance. Legitimacy is a core concept in environmental governance and has been defined as "the acceptance and

justification of shared rule by a community (Bernstein, 2005:142). What is considered as legitimate varies between and within cultures and over time, and is continuously re-established through conflict and negotiation. Legitimacy can be viewed in different angles. However, REDD regime may obtain legitimacy in the high forest zone based on participation, acceptance, appropriateness and desirability if structures are put in place and at the same time consistent to societal values.

## 4. METHODS

This chapter presents methodology. I will begin with my research design, which will be followed by the discussion of issues concerning validity and reliability of the study. In addition, I will describe the method of data collection and explain the data analysis. I will finally show the limitations and challenges of the study as well as ethical considerations.

Poverty and sustainable development impacts of reduce emission from deforestation and forest degradation (POVSUS REDD) involved gathering of data on household characteristic, peoples' livelihood activities, their access to and use of land in relation to property rights/tenure regimes. It also involves gathering of data in relation to decision-making process regarding to land use and peoples' perceptions and norms on conservation and use of forest resources. The establishment of dataset of this nature may eventually determine REDD introduction in the study area. To collect the necessary information for POVSUS-REDD project, recommends specific research instruments, I began the data collection process with the assistance of a research team, which we were provided with three research instruments: household questionnaire, participatory rural appraisal based on local resource person's interview and participatory rural appraisal based on focus groups discussion. In addition, we were provided with a manual for the research instruments, which guided us on how to choose the study area and provided relevant definition and various considerations on carrying out the research. Besides, the aim of the project, our focus was to assess the possibility of REDD implementation by analyzing how the REDD scheme will affect the lives of local people and emphazing the important of forest to people livelihoods in Aowin Suaman District, Enchi. Base on that, we were given access to the data to conduct our analysis. With the use of quantitative method, "researchers are rarely concerned merely to describe how things are, but are keen to say why things are the way they are" (Bryman, 2001:76). In addition, using quantitative approaches, researcher will be in a better position to say his or her findings that can be generalized beyond the confines of the particular context in which the research was conducted.

### 4.1 Research design in relation to the study

A research design represents a structure that guides the execution of a research method and the analysis of the subsequent data (Bryman, 2001:27). In other words, it is a framework for collection and analysis of data. It is important to note that the choice of research design depends on decisions and priority being given to the range of dimensions of the research

process. These may include issues such as "understanding behaviour and meaning of that behavior in it specific context" (Brayman, 2001:27). In addition, it could involve generalizing larger groups of individuals than those actually forming parts of the investigation. In this light, there are several research designs in social science research, which are appropriate for environment and development studies but for the purpose of this study. The case study design was chosen with the intention of in-depth and detailed analysis of the REDD pilot project at Aowin Suaman District, Western Region, Ghana.

Case study is part of a two-stage project, which enables a researcher to compare the results of first baseline study with a later follow up study. Hence, it is part of a comparative approach in relation to my study. According to Bryman a case is commonly used when research associates a study to a location, such as community or organization with intensive examination of a setting. However, a case study can entail several cases or multiple cases in a setting. The case design is often said to be suitable for research seeking to answer "how" and "why" questions. Besides, case studies are often of a qualitative nature (Yin, 2003).

Within the case study framework, different types of cases can be differentiated. These include exploratory, descriptive and explanatory case studies. The exploratory case studies are conducted to address a problem, finding what is happing or finding insights and generating new research. The descriptive case studies are often conducted to illustrate events in their specific context whereas the explanatory case studies link an event with its effects and may not show causal relationship (Yin, 2003). In relation to my study, I combined both exploratory and descriptive case studies in order to describe the situation and show causal relationships between variables suitable for REDD. It important to note that, case design employs a broader range of data collection instruments such as observation and interviews with different people involved and allows a holistic study of a phenomenon (Yin, 2003). Moreover, the data collection in involved triangulation that is mixing the use of survey and interviews to enhance the validity and reliability of the study.

### 4.2 Validity and reliability

In order to ensure the quality of results of the study, there was the need to employ techniques such as validity and reliability[2], specifically construct validity, internal and external validity as well as reliability. According to Bryman, generally, validity refers to issues whether a set

[2] The first approaches to POVSUS-REDD is baselines study which we have done and is to return to the pilot project in Aowin Suaman Dictrict Enchi at the later stage to do the follow up study.

of indicators devised to measure a concept really measures what is suppose to measure whereas reliability concerns the issue of consistency of measurement. With internal validity, the emphasis is on whether the conclusion that incorporates a causal relationship between variables (dependent and independent impact) holds water. In relation to the study, we wanted to establish that the relationship of variables set by POVSUS-REDD could be used to draw a conclusion. Besides, internal validity is important for explanatory case studies because it produces an apparent causal relationship of variables in details (Yin, 2003). In line with this, respondents were probed further to be sure of factors responsible for variations in communities and the inference of other variables.

External validity "concerns with the question of whether the result of a study can be generalized beyond the specific context" (Bryman, 2001:29). In order to generate representative sample that can be applied at local and national level, we chose communities that are forest dependent and will give useful information for REDD assessment and implementation in Ghana. In addition, the generalization could be added literature on forest related issues. With construct validity researcher are encourage to hypothesis from theories that are relevant to the concepts, which will be a guide to draw ideas about impact of variables (Bryman, 2001).

Hence, livelihood framework and end environmental governance framework were adopted to examine relationship between relevant variables and the interaction process of actors for resource use. Last but not the least is reliability. It is important to note that validity presumes reliability. This implies that if a measure is not reliable, it cannot be valid (Bryman, 2001). However, validity concerns the question of whether the results of a study can be repeated. In order for the study to be replicable, we tried to define concepts and be consistent in our procedure throughout the study. In addition, we worked in a careful manner to minimize possible data collection errors from the start to analysis stage with the intention of maintaining validity level.

### 4.3 Data collection procedure

Study site selection and mapping began by selecting communities based on property rights/land tenure regimes, level of deforestation, importance of forestry for income, remoteness, perceptions and norm regarding forest management and conservation. In addition, we considered villages that could be representative for the study. The assessment of these indicators could determine REDD established in the near future. Based on that six villages

were selected; Sewum, Adonikrom, Jensue, Boinso, New Yakesi and Asantekrom for the study. However, Asantekrom was not part of the pilot area but geographically closer and was selected because of similar characteristics for future comparison.

Standardised data collection tools developed by the POVSUS-REDD project were employed in this study. In the selected communities, the data collection processes started by conducting local resource persons' interviews by using the already prepared structured interview guide to obtain factual information about the situation in the pilot/study area concerning demographic, general livelihood conditions, property rights, resource management rules and market for land.

The resource persons' interviews also provided supportive information for household survey and the focus groups discussion. Besides, it created a chance for the research team to be familiar with the local context and community members' direction of discussions. However, the focus group discussion attracted more attention and people participated actively. The resource persons' interviews were time consuming and could cover a limited number of individuals. In the communities, we used the questionnaire to cover large households in these communities to provide quantifiable pieces of information from which we could understand the general situation in the study area.

### 4.4 Data collection techniques

In relation to the sample size, we realized to increase the sample size would increase precision of the sample. To maintain that will depend on how much sampling error one is prepared to tolerate (Bryman, 2008). In order to minimize sample error and appreciate the significance of sampling error for achieving a representative sample, we employed a simple random sampling technique, which is another form of probability sample (Brayman, 2001). It allows each unit of the population to get an equal probability of inclusion in a sample.

In each village, we obtained list of the total number of households to establish a comprehensive sampling frame; the listing of all units in the population from which a sample is selected. Furthermore, we employed a probability sampling technique, specifically simple random sampling. According to Bryman (2001), the technique has the following advantages: firstly, there is almost no opportunity for sampling bias to occur because people would not be selected based on whether they are friendly or approachable. Secondly, the process is not dependent on the respondents' availability. The selection is done without their knowledge. This implies that they only know when the interviewer contacts them.

In our study, the sample frame was the list of every household in a village. The lists were obtained from chiefs in each village. The villages were relatively of equal population in size and we randomly selected 30 households in each of the five villages. The control population comprised 50 household from one village near the pilot area, which is for future comparison. In all, 200 households were selected in accordance with the standardised manual on poverty and sustainable development impacts of REDD architecture (POVSUS-REDD). In each village, we randomly generated number through excel and matched them with the village household lists base on that households were selected randomly. Our aim of using random sampling was to get a representative sample, which would enable as draw a conclusion. It is important to note that the sample size was compromised between the constraints of time and cost. However, as stated earlier increasing the size of sample would have increased the precision of the sample.

### 4.4.1 Structured interview (Survey)

In a research interview, researcher elicits all manner of information from the interviewee or the respondent considering his behavior, attitude, norms beliefs and values. It is usually employed in data collection process in both quantitative and qualitative research (Bryman, 2001). There are different types of research interview but when all manner of information: interviewees' believes, attitude behaviour, norms and others are to be answered in a survey research which questions are closed, closed ended or fixed choice it is usually referred as structured interview (Bryman, 2001). The interview procedure is often preferred to other forms of data collection because it allows for a richer flow of information. Besides, it promotes standardization in relation to the asking of questions and recording the answers.

For our study, structured interview was employed, where research team asked series of questions that were in general form of an interview schedule but varied sequence of questions and more flexible to elicit information concerning peoples' livelihoods, access to and use of land, property rights structure, norms and perceptions . Moreover, all the respondents were given exactly the same context of questions. The structured interview guide was already designed and the procedure was employed with our own developed interview guide to obtain information from key resource persons both at the local and regional level. In addition, the procedure provided for the opportunity of a relaxed conversation between the research team and interviewees where we were mindful of keeping the interviewee's attention on our interest areas.

In the selected communities, the data collection processes started by conducting local resource persons' interviews by using the already prepared structured interview guide to obtain factual information about the situation in the pilot/ study area concerning demographic, general livelihood conditions, property rights, resource management rules and market for land. The resource persons' interviews also provided supportive information for household survey and the focus groups discussion in the sense that research team became familiar with the local context and direction of discussions.

In the household questionnaire, the questions used to collect data were of two types; they were open-ended questions giving respondents the chance to express themselves and another set of questions designed were of a closed or structured type with list of possible answers. The household questionnaire was structured into five sections meant to measure specific variables.

Section A: was concern with household structure and livelihood assessment. In this section, questions were designed to map out household characteristics, assets and ownership.

Section B: dealt with the assessment of resource use, income and constraints. Questions were designed to map out the livelihood activities and strategies of the households. In this section, household resource use included both forest and agriculture. It was also meant to map major changes in the use of land resources over time.

Section C: was intended to identify property rights, use rights and management systems. The questions were designed to map out ownership, management and use rights to forests land and forest resources. It was also involved the mapping of people's views on management systems and rules defined for use rights.

Section D: concerned perceptions, attitudes and norms regarding resource conservation. The questions were designed to map out local peoples' perceptions, attitudes and norms about forest conservation in the pilot area.

Section E: was the final section and dealt with pre-REDD analysis. The questions were prepared to gain insight about what type of REDD policies local residents would prefer.

The scattered nature of the communities and the technicalities of the questionnaire demanded a research team. People with previous experience were trained properly and tested to ensure good understanding before the household questionnaires were administered. In each village, on arrival meeting was held at the chiefs' palace. Assemblymen, subjects of the chief and

other opinion leaders were present for the research team to explain the purpose of the work and the nature of the data collection process. After chance was given, we demanded the lists of households from chiefs and community members were immediately informed to be approachable to answer questions from the research team because community leaders were well informed about their work. It is a tradition that if a team of workers or visitors come to the communities, members are immediately informed to be aware of their purpose. The announcer in the chief palace gave information to community members. That gave us the chance and we interacted with the people freely. Household lists were obtained from chiefs in the villages to employ a probability sample technique. The intention was to give each household the same probability of being selected (Brymman, 2004). In relation to this, a total number of 200 questionnaires were administered in the villages addressing specifically household heads.

### 4.4.2 Focus group discussions

Participatory rural appraisal using focus groups was another method used to collect primary data in the communities. In each village at the chief's palace, opinion leaders both men and women were asked to assist by organizing groups for discussions at the community centres. The discussions were meant to provide an insight into how local people see and express their general livelihood conditions such as income, food security, health and education.

The questions and discussions in the focus groups were also meant to evaluate local governance and power structures, institutional, organizational and policy changes. We also probed into their general attitudes, values and norms related to forest resource management and use. Discussions were also based on ideas and suggestions they would have for possible REDD schemes related to opportunities and expected problems (Pre-REDD analysis) in the communities. The focus group discussion organized was in a form of open forums but with women and men in separate groups.

In local communities, women express themselves better when they are separated from men. In some communities in Africa, it looks abnormal for a woman to be dominating among family heads. The research team asked questions and various answers were given. Finally, there were instances the research team deliberated and categorized some answers that were not specific into appropriate variables. Most often, leading and probing questions where posed to get the repeated information on a specific issue in order to increase reliability. The focus group discussions were organized in the evenings in all the communities. It was the ideal period to

get a large number of people to attend and have enough hours to spare after daily work. The discussion was in Twi, which is common language people understand and can communicate in despite the integration of ethnic groups with different dialects. Four hours was the minimum time spent in all the communities because people were much interested in the discussions and to know how REDD scheme operates.

### 4.4.3 Informant interviews

It was presumed that the information obtained from household questionnaires, focus groups discussions and key resource persons interviews would provide a clear picture of the situation in the area. However, it was quite expedient to conduct informal interviews and engage in discussions with other chiefs, assemblymen, unit committee members, forest management committees and government officers who were not targeted but were engaged informal way also provided vital information that supported the data collected.

### 4.4.4 Study area observation

This method involved keen observation in order to gather information during the stay in the study areas. The nature and availability of infrastructure such as hospitals, schools, roads and existing projects were taken into account. The traditional use of resources, illegal logging, collection of NTFPs, lumbering for construction and cocoa farming activities were also noted. The research team had the opportunity to visit cocoa farms, timber processing company sites, concession operation areas and Tano-Ehuro forest, which was encroached through illegal farming activities and now tend to a settlement in the middle of the forest.

### 4.4.5 Secondary data

Secondary data of different kinds related to the research were obtained from existing records and reports from various departments. General information related to the studies was obtained from previous studies done in the region. This method provided the following additional information;

- The profile of the district was obtained from the district assembly, which included infrastructure distribution and service levels, social services, economy and investment opportunities.

- Documents on forestry laws simplified for communities in the region, which included timber resource management regulations and forest protection decree were obtained from the District Forestry Department.

- The mini-strategic plans for some forest reserves were obtained to study the state of the forest resources, regeneration levels, ownership, rights and responsibilities, NTFPs and community interest.

- Important data in relation to the research on cocoa farming, the actors involved and introduction of new varieties, which result to the extension of cocoa farms into forestlands, were obtained from NGOs and previous studies, conducted.

### 4.5 Data analysis

The data collected from the survey was first entered into a database management system known as access for the purpose of the project. Later, the data was exported to SPSS and stata for various outputs for analysis. The following statistical tools were used. Frequency distribution tables were used for percentages and total of respondents to investigate the most dominant responses among several choices given by respondents. Descriptive statistics were used for cross tabulation and explore for percentages and means for comparisons. Chi-square tests were used to determine significant relationships between selected variable. In, addition chi-square was used to test the level of dependency between two variables. The statistical significance was set at 95% confidence level. Implies that if our results are significant at $P<0.05$, we may be confident at 95% probability that the difference results from a test or the effect is real.

#### 4.5.1 Calculation of incomes

The incomes that will be included in the calculation are forest income, non-forest income, business and remittances. These calculations will determine the extent to which the rural people depend on income from forest resources and other sources. The estimation and understanding of environmental income reveal how natural resources are important to rural people's livelihoods. The information helps policymakers to design and implement effective poverty reduction strategies and assess the implications for issues for conservation and sustainable resource use. This implies that dependence on forest income is conditioned by different political, economic, ecological and socio-cultural factors (Vedeld et al., 2004).

Specifically, the household income information (income sources) obtained will be categorized into forest, forest/ non-forests and non-forest incomes, which are calculated incomes per year. The household income will be further classified into income from sales and consumption. Income from sales comprises sales of forest product and agriculture produce in household. The income from consumption refers to the estimated prices of what household has consumed from both forest and agriculture. Further grouping will be in ascending order based on per capita income, which will be put into three groups: poor, medium and less poor.

The forest income: this included primary and secondary income sources. The primary sources were estimated prices of poles/timber, fuel wood and charcoal both cash and subsistence. The secondary was the sum of income from forest services and business.

Forest/non-forest income: this also included income sources, which it difficult to assess whether they were based on forest, or non-forest sources. These were the estimated sum of income from tourism, water catchment projects and others. Moreover, it was convenient to add trade and transport in this income category.

Non-forest income: this category was also primary and secondary income sources. The primary was the sum of income from crops, livestock and fish from agriculture land. When calculating the crops income, I took the market price of the crops grown by households multiplied by the actual yield for each household. The livestock income was calculated by taking total number of livestock multiply by each livestock for a household. Fish income was also added. That is multiplying the fish catch in kilograms by the market price. The secondary non-forest income includes the sum of income from other sectors than forestry, remittances and business.

### 4.6 Limitations and challenges of the survey

In the process of carrying out the research, we encountered some limitation. The household questionnaire included recall type of questions, which required respondent to remember activities they performed in a year. It was observed that, some household heads were not keeping exact records of activities and had to rely on their memories. The study concerned local people livelihoods and forest dependence based on which REDD will evaluate for the next steps to be taken. In order to calculate accurate household income we followed strictly and relied on outputs and their market values.

There was a challenge on output measured in (kg) and value added to each product in the market. The price of produce also depended on the distance to the market. The weight of charcoal in bags varied depending on the type of tree used to produce the charcoal and bags used. Fuel wood was also in bundles and varied in weight, and poles varied in sizes. When calculating the income we focused on these forest products, collected, consumed and sold.

In order to be consistent we took an average weight and average price each product. That is the forest gate price and market price. To calculate what was use in a month by a household we focused on weight of average number of sticks and weight of a bundle with its market price. To get what was consumed in a year, we multiplied the value obtained by twelve. However, we were aware that variation could occur within some months in a year. There was also a challenge in measuring some farm produce.

However, cocoa has a standard measurement 64kg per bag across the country but a bag of maize and rice varied. We took an average of each per bag. Besides that, some household members could mention maize consumed or sold in a generally accepted measuring local bowls known as *olonka,* which the local people are aware the number of bowls a bag contains. In addition, bunches of plantain varied drastically in term of kg but we measured and took an average with the price. Cassava was measured in both baskets and bags (Average of 4 baskets in a bag). Considering measurement in averages especially plantain and cassava we were aware that there might be under or over measurement. However, we tried to maintain accuracy as possible in the data collection and the calculation of the incomes. Despite these challenges, we feel that we were able to capture what was on the ground in the study area.

Some community members thought we were government representatives and were trying to express their limitation of access to forest resources and land use but when they were informed about REDD agenda in the communities, especially the provision of positive incentives, some were opened. Others were engaged in ordinary conversation first and we redirected our conversation towards forestry in relation to livelihoods. Later, REDD agenda in the communities regarding livelihoods before administering the questionnaire and that could make people reveal their livelihood activities in the forests. In addition, some people also responded positively to issues related to institution and forest management because some of them were familiar with forest policies and by-laws. The most interesting part was that members of the research team were all Ghanaians and some of them were coming from

villages closer to selected communities and were familiar with the situation. That gave additional advantage to probe further into certain issues to ascertain facts.

However, it was clear evidence that the forestland reported to have been cleared for agriculture activities were underestimated. The amount of farm produce in bags mentioned by some farmers in relation to the parcels of land cultivated, showed that there were other parcels in the forests, which were not mentioned or the number of hectares mentioned by some household heads were underestimated.

In relation to that, some respondents revealed extra parcels of land to us when we were comparing the number of bags a hectare could produce considering all factors except weather. Similarly, there were instances respondents were trying to be dishonest but our interactions and the way questions were framed several ways relating to the situation in the area made some people came out openly to tell the truth. However, majority of the people revealed their dependency on forest when they realised the purpose of our study. There was also a problem appearing in the land tenure system where a tenant could not differentiate between stool (community) and individual land because land is owned by the stool but we simply treated individual land as the person receiving the rent or the person that has user rights. Above all, we were always consistent to get correct answers to our questions.

Moreover, challenging areas in the survey were standard measurement of total output in kg and sold items in kg but we used local standard measuring bowl to get the number of bags before measuring maize and rice in kg of a household. Furthermore, the data collected contains large amount of information related to livelihood and forest dependence, which have variables such as household income sources, output and market value base on which REDD will be evaluated. To calculate household income was quite challenging because we needed measurement of output in kg and prices of output to be able calculate to total income, forest income, forest/non-forest income and non-forest income sources. There was variation in prices, except cocoa, which had fixed price across the nation. Fuel wood, charcoal, poles and timber have lower prices at the forest gate but attract higher prices at the city market because handling and transportation costs are factored into the overall value of items. In addition, the majority of respondents found it very difficult to estimate how much fuel wood they use or sell in a month.

Furthermore, the limitation of the survey was that people could not easily recall and estimate total output of crops produced by household $(kg)^3$ or sold in $(kg)^3$ in the last 12 months. It was

very easy on the part of cocoa because its standard measurement across the country. Household members could not give exact price per unit of each product in the course of the year. Moreover, prices of commodities are determined by demand and supply in every local market day. The same thing applies to seasonal goods. Therefore, the quality of the data will depend partly on the respondents' ability to estimate and give exact prices for some products. Another limitation was that some people grew impatience with having to sit for an hour or more to be interviewed as the questionnaire demanded.

### 4.7 Ethical issues in relation to the study

There is not an exhaustive range of ethical issues that might rise in the course of conducting social science research. However, ethical issues often arise between researcher and research participants, which need to be considered in our study. Moreover, it is important to note that a research, which is to be conducted and is likely to harm participants is unacceptable by most people (Bryman 2001). Harm in this case refers to physical harm, harm to participants' development, which include loss of self-esteem and stress among others.

In relation to this, we considered two ethical principles; informed consent and confidentiality. The issue of informed consent is an important area in research. The "principle means that prospective research participants should be given as much information as might be needed to make an informed decision about whether or not they wish to participate in the study" (Bryman, 2001:511). Parallel to this, on arrival in each village, we went to the chief, who represent the entire community and explained our mission of coming to the village; what we are specifically looking at (REDD) and the purpose of the information. It was a way of giving participants enough information that was needed to make informed decision.

The most interesting part of the study was that in the community after informing the chief and his subordinates that our mission involved no element of harm; they proceeded without hesitation to prepare the grounds for our study. In addition, the informed consent gave us the chance to communicate with the people freely. It also influenced their willingness to participate in the household survey and focus group discussion.

In our study, care was taken to treat records and identities confidential. "Harm to participate is further addressed in ethical codes by advocating care over maintaining confidentiality of records" (Bryman, 2001:510). In this light, participants were assured the names obtained from community household list and the information obtained will not be published to cause harm to

participants but that keeping a record of names was for the purpose of interviewing them during the second round of the surveys in order to assess changes as a consequence of REDD scheme. Besides, the opinion leaders and forest officers did not know our procedure of selecting households. Therefore, identities and records were assured to be confidential except for the internal use in the project.

# 5. THE MAIN ORGANISATIONS AND INSTITUTIONS RELATED TO LAND AND MANAGEMENT OF FOREST RESOURCES

This chapter addresses research question one by presenting the governance structure of land and management of forest resource in Aowin Suaman District, Enchi. In addition, show coordination is done among stakeholders. It begins with the overall property rights structure and the interactions of actors that are involved in the use and management of forest resource. In addition, it presents the results and discussion of institutions and management of natural resources in the communities within the study area.

## 5.1 Core institutions in forestry

In Ghana, there are two types of legal ownership of land. In the communities, land is owned and controlled by traditional authority whereas some parches of land are owned by the state, which were acquired compulsorily through executive instrument in the interest of the public after the colonial period. It is important to note that the symbol for traditional authority is Stool or Skin[3]. The lands that are owned by groups or community are represented by stool or skin as an identity. However, under the community ownership, the stool, clan, family or individual, could own land.

The land tenure system is complex because land is administered in legal plural environment but in general, paramount chiefs own all lands within their territorial borders on behalf of the communities and divisional chiefs at the villages are appointed as caretakers of stools and are held in trust for communal landowners (Kotey, 1996; Abebrese, 2002). Basically, land ownership in the communities is based on allodial or permanent title, which was acquired in ancient times by original occupation, discovery or gift based on which other interest or rights over land was derived. The allodial ownership will be subject to the rights of the stools' members in possession because, the stool performs the customary services and occupants are made to follow the customary law of the land. It is important to note that the allodial title is the highest interest in land known in customary law in Ghana, above which there can be no other interest. Based on that, land is generally thought to be vested in the stool (entire community). The chief or other traditional leader who acts on behalf of that community legally holds the actual title to that land. (Blocher, 2006; Kasanga & Kotey, 2001). Thus,

[3] Stools, skins and tindanas are traditional terms for land ownership. In relation to the two major division-southern and northern sectors, stool is used at the southern sector whereas skins and tindanas are used in the northern sector of the nation. Members of stool are responsible for communal land in the traditional communities.

even though chiefs officially hold the highest title to land in most areas, they do so only in a capacity somewhat resembling a trusteeship, administering it for the benefit of their subject which include those living, dead, and not yet born. The allodial titleholders under customary law are not allowed to alienate that land solely for personal benefit.

### 5.1.1 Property rights related to stool lands.

The trees on the land designated as forests and economic trees on agriculture lands are owned by the state (Abebrese, 2002). In addition, Article 257(1) and (2) of the 1992 constitution vests all public lands in the president in trust for the people of Ghana. This includes all land acquired by the State before 1993 and after, which includes all the forest reserves that were demarcated for that purpose (Sarpong, 2006; Osafo, 2010). The constitution also vested all stool lands in the appropriate stool or skin on behalf of and in trust for the subject. This means it was to make customary law predominant base for land tenure in most parts of the nation. Following the constitution and forest policies, management and rights to commercial trees belong to the state in both off reserves and reserves. Moreover, other resources in the forests are also controlled and managed by the state, but communities have access to the resources, except in areas designated as Globally Significant Biodiversity Areas (GSBAs). However, compensation is paid to landowners when such areas are established (Allotey, 2007). With that, some members of the communities are mindful of the restriction and the purpose of the conservation.

### 5.1.2 Property rights granted over government land.

The lands that are owned by the government may be attached to various rights, which include lease and licenses for timber felling, mining and quarry operations. The timber license, which is known as the Timber Utilization Contract (TUC) is a written agreement that specifies the terms of timber rights granted to operate in an area of land within a specific period to allow the forest to regenerate. The TUC is regulated by Timber Resource Management Laws, which stipulate size and limit of the contract, obligations and payment of annual rent to the Office of the Stool Lands. There are state agencies delegated to deal with land and forest issues. These include Ministry of Land and Natural Resources and its two major divisions: Land Commission and Office of the Administrator of Stool Lands, specifically dealing with land issues. Whereas Natural Resource Commission with its units: Forestry Commission and Forest Service Division in the districts also deal with forests. The Forestry Commission began when Article 269(1) of 1992 Constitution empowered Parliament to establish by an Act of

Parliament, a Forestry Commission to regulate and manage the use of forestry resources and to co-ordinate related forestry policies

### 5.1.3 Property rights in household structure

In Akan-speaking communities, including the study area, people practice matrilineal system of inheritance. Hence, landholders could transfer land to brother or nephew. Furthermore, landholder could transfer to his niece or cousin for food crop production or cocoa cultivation. However, the matrilineal inheritance was circumvented legally by PNDC Law 111, which states that a portion of a person's estate should go to the spouse and children. Additionally, land is transferred to wives and children due to economic reasons (Asare, 2010). Besides, stool lands or family land can be made available to a community member for cultivation or government for developmental projects. In addition, lease and rental over land for agriculture or commercial activities are based on seeking permission from allodial title holder or successor. The land can be reverted to allodial titleholder or landowner at the end of the lease or cessation of the activity for which the lease was granted.

### 5.1.4 Access to land and position of immigrants

In the communities, strangers have no easy access to land, because they are non-subjects of stool, clan or tribe. It is important to note that a stranger who wishes to acquire land must seek permission from the chief to settle first and proceeds to contact landowners for a contractual basis such as hiring or share cropping. In the focus group discussion, community members disclosed a prevailing arrangement between landowners and tenants, where a designated area is cleared and cocoa is planted by the tenant. The cocoa trees mature and the parcel of land is divided evenly 1:1 (*abunu*) or produce shared 2:1 (*abusa*) between the tenant and the landowner respectively.

The tenant retains user rights as long as the cocoa plantation exists. Furthermore, renting of land also occurs on short terms and seasonal basis for cultivation of food crops, but tenants have no rights to existing cocoa trees on the farm (Asare, 2010; Kasanga and Kotey, 2001). In the focus group discussion, in all the communities, it was revealed that in the past when land was abundant, virgin and fallow lands were given to migrants by entrusted chiefs on *abunu* basis. Currently, population growth and the inflow of population for cocoa cultivation have increased the demand for land and no land is left to fallow except area where there is conflicting interest over a piece of land, which is under investigation or negotiation for fair handling.

### 5.1.5 Challenging areas

In Ghana, both the state and traditional authorities own natural resources: as forest is for state, land is for traditional rulers. This legal pluralism is poorly defined leading to unclear property rights in the communities. The unclear property rights degrade the environment, could cause climatic changes, disrupt projects, undermine livelihoods and affect national policy on forestland use. In addition, forest management is not effective and failure to manage forest related issue could lead to community level social unrest, hence resulting in policy derailment (Kasanga and Kotey, 2001). In addition, the unclear property rights are characterized by conflicting decision-making processes, benefit sharing and competing use of forestland in the local communities. Formal rules are not well enforced and some are not accordance to informal rules and believes at the community level leading to illegal activities such as clearing the forest for agriculture activities and over extraction of wood resources. Besides that, traditional authorities are not able to govern the use of forest resources in relation to enforcing access rights, illegal harvest of timber and competing forestland use.

There are variety of customary arrangements locally between migrants and landowners. Land was given to migrants almost free when forest was abundant before the introduction sharecropping. In some communities, they were only made to contribute towards yearly sacrifices or festivals for the use of the land. In extreme cases, they were asked to organized communal labour to work on the landowner's farm seasonally as a form of payment. Currently, some of these migrants have complete user rights such that they may not need to contribute anything because of their long time contributions. In addition, "Customary law forbids selling the land, therefore sale is replaced with long-term lease. Migrants who have long-term lease rights are perceived as landowners" (Amanor, 1999: 10). Some of them have cocoa plantation, which cocoa is expected to last 60 years and above. The parcels of land used by these migrants had true owners but they are silent about claims but the introduction of REDD based on performance may raise the issue of who should receive the payment. This type of arrangement may needs a well-defined property rights to enable easy payment for environmental services recipients. This may also lead to poverty since migrants depend on farming for their livelihoods but the percentage of those who enter into such arrangement is not significant. This issue could be solved by allowing local arrangement of benefit sharing base on performance. According to Amanor (1999), indigenous resource management systems reflect the way communities organize their lives within the constraints of the environment in which they live. Moreover, decision-making institutions focus on utilizing and

managing environmental resources based on the knowledge of the community. Therefore, the people in the local communities may organized the systems for REDD strategies if they are willing.

### 5.2 Actors in forest governance

There are various stakeholders and actors involved in forests governance. Identified actors include individuals, households, associations, companies, institutions, traditional authorities, NGOs, communities, agriculture extension officers and other government officials (Ros-Tonen *et al.,* 2009). It is important to note that institutions are referred to as organizations in this section but in my presentation, institutions are formal and informal rules. In my study, actors are categorized under political and economic actors. The political actors are government agencies or the delegated authorities of the government. These include Ministry of Lands and Natural Resources (MLNR), Forestry Commission and its divisions, Administration of Stool Lands, District Assemblies, Police, Military and Judiciary. However, there are civil society organizations, which include National NGOs, International NGOs, Ghana Forest Watch, Rural Organizations, Care International, Tropenbos International, Katoomba and others serving as intermediaries between the government and local communities.

#### 5.2.1 Economic actors in the forest communities

This group includes actors who use forestland and trees for their livelihood (household NFTPs extractors and farmers), legal timber operators (concession holders or timber utilization contracts), investors in commercial timber plantations, individual tree growers, wood processors, lumber sellers and buyers.

In Ghana, timber companies obtain license before they are allowed to operate in the forests. Besides, they are required to sign Social Responsibility Agreements (SRA) constituting a precondition for grant of timber rights. In Aowin Suaman traditional area, Sarmartex Timber and Plywood Company, the holder of Timber Utilization Contract has signed SRA to provide services such as portable water, clinic, construction of palace, electricity poles and construction of roads for communities that are surrounded by the timber concession areas. Legislation requires that logging firms must provide such social amenities for utilizing the resources of the communities (Ayine, 2006). However, the type of services and maintenance should be negotiated between the contractor and the landowners.

In the study area, chainsaw operation is still the supplier of lumber to the domestic market. Illegal lumber and its associated trade such as furniture production and building constructions are sources of livelihood and contribute to the rural household income, apart from agriculture activities (Obiri and Damnyag, 2011). In addition, the cultivation of cocoa was concentrated at the Eastern part of Ghana, but now cocoa farmers have shifted to the high forest zone due to deterioration of cocoa farms in the cultivated areas. The causes of shift include soil depletion, loss of appropriate vegetation cover and diseases. Currently, no land is left to fallow; rather pressure is on forest for the expansion of cocoa production. Traditionally, cocoa farms are established by removing thick forest canopy for cocoa seedlings to grow into trees. Coupled with that cocoa is best grown in forest zone because of high soil fertility, which results in high yield. These practices call for political actors' attention to change policy, which will also influence cocoa farmers' pattern of interaction for REDD effectiveness and sustainability in the forest communities.

In the forest zones, a household has at least one person involved in NTFP activity. The influencing factors in NTFP activities include accessibility of the area and proximity of the area to market. Generally, women are engaged in these activities and the reason in entering into this business is lack of capital and alternative livelihood (Ahenkan and Boons, 2008). In the focus group discussions, women revealed that they engaged in the collection of snails, mushrooms, wild fruits, medicinal plants for sale and domestic use, despite the restrictions to use of forest resources.

### 5.2.2 Actors in the formal/state governing structure

The republic of Ghana provided constitutional regime in the year, 2002 for protection of land, forestry and environment. The formulation of policies for protection, management and regulation of the resources are under the responsibility of appropriate ministries and other institutions of the government. As a result, there has been documentation of a plan of action for forest sector objectives and strategies from 2002 to 2020. The plan of action is three amendments to 1994 Forest and Wildlife Policy, which include Forest Protection Amendment Act 2002, the Timber Resource Management Amendment Act 2002 and Forest Plantation Amendment Act 2002 (Ahenkan and Boons, 2010). Hence, the government delegated authorities to the Ministry of Land and Natural Resources and other organizations under the ministry, which will be responsible for managing forest and trees related to livelihoods as well as land use. These organizations include Forestry Commission and Office of the

Administrator of Stool Lands. There are also environmental agencies that aim at protecting the environment and forest activities that affect the lives of people. Generally, they collaborate in various ways for their administrative duties and management of forest resources. (Abaidoo, 2005; Ros-Tone *et al.,* 2009).

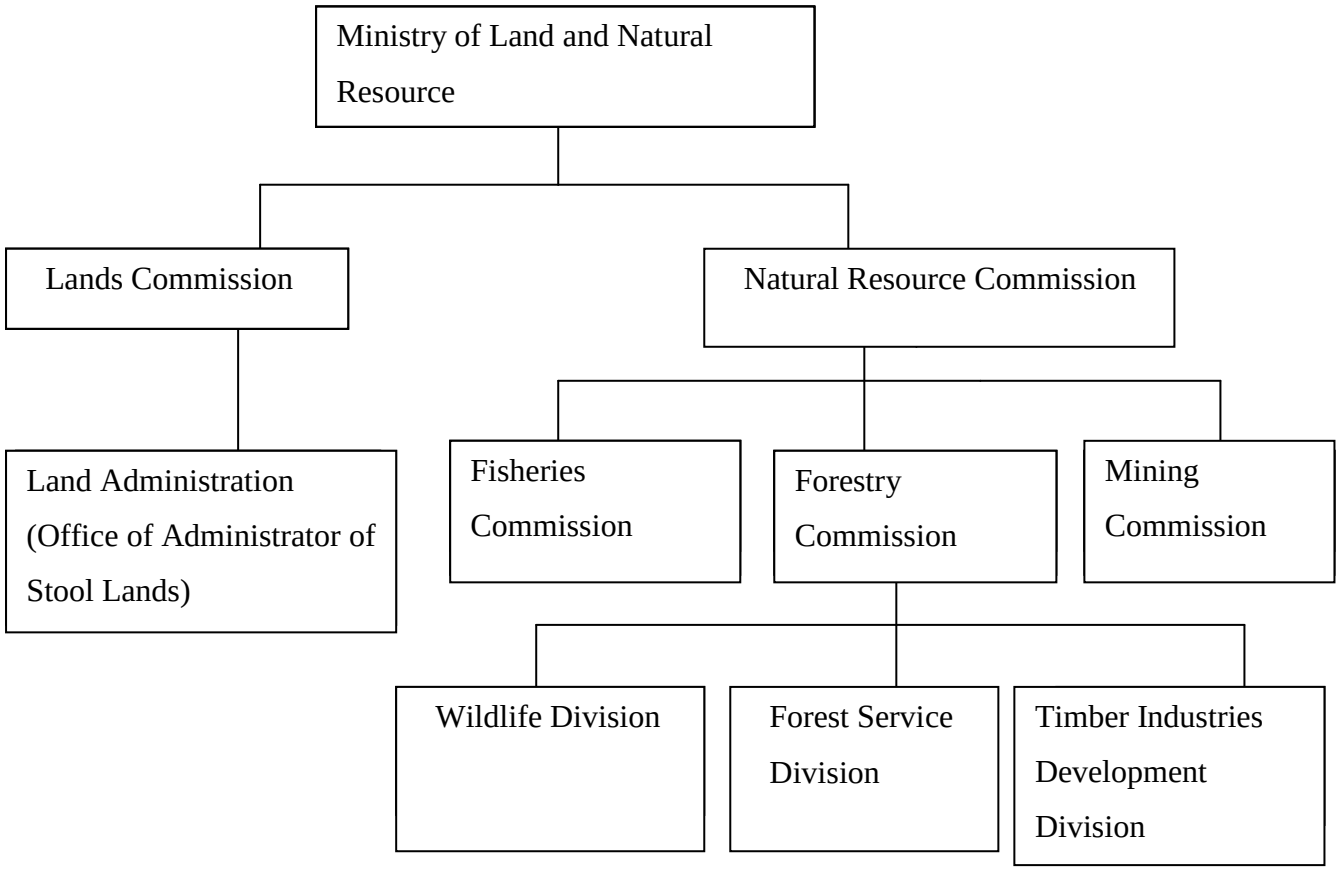


**Figure 5.1 Structure of Ministry of Lands and Natural Resources in Ghana**
(Ros-Tone *et al.,* 2009; Asare, 2008).

### 5.2.2.1 The Ministry of Lands and Natural Resource (MLNR)

This ministry has full responsibility for sector planning, policy direction, monitoring and evaluation of development projects as well as policies related to land and forestry. In 1999, the Ministry of Lands and Natural Resources developed the Ghana Land Policy, which seeks to address some of the fundamental problems of land administration in the country. The problems include insecurity of land tenure, indeterminate boundaries for land owning groups, which creates conflicts and litigation, multiple sales of the same piece of land and weak capacity and fragmentation of existing land agencies (Osei-Tutu *et al.,* 2010). The document includes important sections covering wetlands, national parks and reserves.

Hence, the mission statement of this ministry includes sustainable management and judicious utilization of land, forest and wildlife resources of the nation for socio-economic growth. Parallel to that the ministry has stated objectives, which include the equal accessibility, benefit shearing from land and security to land and forest resources. Additionally, it is to develop and maintain effective institutions at the national, regional, district and community level for land, forest, wildlife resource and land use. Above all, its task is to foster good governance and relationship between the government and traditional landowners with regard to land administration by internalizing measures for participatory management, accountability and transparency. Besides, MLNR aims at facilitating effective private sector participation in land services and management.

#### 5.2.2.2 The Forestry Commission

The commission began when Article 269(1) of 1992 Constitution empowered Parliament to establish by an Act of Parliament, a Forestry Commission to regulate and manage the use of forestry resources and to co-ordinate related forestry policies. The Commission was established by virtue of the Forestry Commission Act, 1999 (Act571) as a body corporate [Section 1(2) of Act 571] with the Minister responsible for forestry having ministerial responsibility for the Commission [Section 3(1) of Act 571]. These may give general directions to the Commission on matters of policy (Section 3(2) of Act 571) "for the regulation and management of the utilization of forest and wildlife resources of Ghana and the co-ordination of the policies in relation to them" (Republican Constitution of Ghana 1992 article 269 I; Asare, 2008).

The commission performs functions, which include the regulation of forests and timber resource utilization, manage forest reserves, assisting public sector and other bodies with policy implementation among others. Moreover, the functions of Forest Commission are executed with the support of three major divisions namely, Forest Service Division (FSD), Wildlife Division and Timber Industry Department Division ( Kasanga, 1992 ; England, 1992; Abaidoo, 2005; Ros-Tone *et al.,* 2006; Asare, 2008).They perform various functions and are answerable to the commission in relation to management responsibilities and decision-making processes on resource utilization.

#### 5.2.2.3 Land commission and its administrative function.

Land commission is the major agency under the Ministry of Lands and Forestry and its office is under the Administrator of Stool Lands. It is important to note that a provision under the

1992 Republican Constitution was established by the Lands Commission Act 1994 (act 483) to execute functions on behalf of the government. The functions include the management of public land vested in the President. Besides, it gives advice to traditional authority and government on policy formulation for the development of particular areas in order to ensure that development of individual pieces of land is coordinated with development plan for the area. In addition, it is involved in formulation of government policy with respect to land use and submits to government for recommendation. It also assists in the registration of land title to land through the nation.

#### 5.2.2.4 The Environmental Protection

Following the development in international environmental policy since 1992, the government of Ghana was obliged to create a new Ministry of Environment in 1993 and it was later replaced by Ministry of Environment and Science (MES) to take formulation of policies for sound resource management and sustainable development in the nation. The ministry has specific functions, which include environmental protection through policy, science, and economic as well as technological intervention for mitigation of harmful impact caused by developmental activities (Environmental protection agency, 1991). The ministry is also involved in supervision, co-ordination, monitoring and evaluation of activities that relate to targets of the ministry as well as sustainable development of the nation. Furthermore, the Ministry ensures the promotion of activities that require standards and policies for planning and implementation of development activities are executed. It is also involved in supervision, co-ordination, monitoring and evaluation of activities that relate to the targets of the ministry as well as sustainable development of the nation.

#### 5.2.2.5 Environmental Protection Agency

This Agency was created by an Act of parliament called Environmental Protection Agency Act 1994 (Act 490). It has a sole responsibility of regulation and ensuring the implementation of government policies on the environment. However, initially, the Ministry of Environment was only responsible for formulation of policy, but no enforcement role and that brought the creation of a new agency in the ministry. The Act provided the establishment of regional and District offices to perform regulatory and enforcement role.

#### 5.2.2.6 District Assembly and civil society governing structure

In Ghana, the local government system consists of the Regional Coordination Council and the District Assembly, which is the basic unit of the structure. The District Assemblies are in charge of administration and development decision-making for the government. They are assigned with deliberative, legislative and executive functions. Hence, the Assemblies have the capacity to integrate with civil society and stakeholders to achieve the needed allocation of power and geographically dispersed development in the nation. Furthermore, civil society organizations collaborate with the District Assemblies for management of natural resources.

The 1992 republican constitution of Ghana provided appropriate ministries and institutions for the protection of lands and natural resources.

#### 5.2.2.7 The civil society governing structure

It is important to note that, "section 11 of the Civil Service Law, 1993 (P.N.D.C.L. 327) as amended by the Civil Service (Amendment) Act, 2001 (Act 600) provides the statutory basis for the creation of Ministries and Departments as the President of the Republic may determine" (Abaidoo, 2005:5). In exercise of these powers conferred on the President, the Executive Instrument (E.I.) No. 6 known as the Civil Service (Ministries) Instrument was duly made constituting various Ministries, including the Ministry of Environment and Science and the Ministry of Lands and Forestry (Abaidoo, 2005). Following the Civil Service instrument, Forest Watch Ghana as civil service coalition was formed in 2004, consisting of 35 NGOs working towards forest development through campaigns as follows:

- Improve access to forest resource in forest communities and fair access to forest resources between stakeholders.
- Ensure fair distribution of benefit from forest resources between forest dependent communities.
- Foster Civil Society mobilization in forest fringe communities for the regulation of forest resource use.
- Ensure democratic participation of stakeholders in forest policy making and management in forest communities.

The civil service coalition aims at solving the distorted relations between logging industry, politicians and forest officials (Bekoe, 2010). Generally, the aim is to eliminate corruption, eliminate public revenue through illegal logging and improve rural communities. Currently, in Ghana civil society structure include national and international environmental organizations and NGOs that contribute to forest management and ensuring legalities. The national

organizations include Forest Watch Ghana (FWG) and Rural Youth Development Association (RYDA) whereas the international organizations include Tropenbos International Ghana, which is responsible for research, Care International for humanitarian aid, Katoomba for research and Forest Stewardship Council responsible for certification of sustainable forestland management. In addition, the forest governors and actors in the formal sector responsible of revenue and law enforcement are the police, military and the judiciary.

### 5.3 Territorial traditional governance structure

In Ghana, the traditional structure consists of communities and customary institutions. Besides, the structures and units of organizations in a community deal with norms, values and beliefs that guide social interaction. Institutions are means of shaping local organization whereas leadership structures and their functional roles ensure compliance with the rules, norms and values. The traditional institutions of Ghana comprise all the systems and processes used to govern the people and have been passed down from generation to generation (Kendei and Guri, 2004; Awua-Nyamekye, 2009). Furthermore, appointed chiefs are responsible for executing judicial, governance and land management within their territories. The village chief is traditionally called Odikro (literally owner of village). He is the caretaker of land and forest resources. The Chief (Ohene) usually appoints the (Odikro) and a number of Odikros serve under his jurisdiction. The (Ohene) also serves under the head of traditional state (Oman), which is the whole territory (Awua-nyamekye, 2009; Kendei and Guri, 2006). However, in the communities, (Abusuapanyin) heads family groups or clans are distinguished from household heads (Ofiepanyin). Both are politically important, because of the coordination functions they perform between family groups (clans) and the whole community.

In the study area, paramount chief down to the village chiefs have council of elders who assist in administrative functions. The traditional council of the paramount chief (Omanhene) consist of the (Omanhene) himself, Ohemaa (Queen mother) and all the divisional chiefs (Ohene). The divisional level council of elders also comprises Ohene and his Ohemaa, sub-divisional chiefs (Apankahene) and clan heads (Abusuapanyin). They perform administrative functions within their territories and refer difficult issues to the paramount chief (Mayers and Kotey, 1996; Asare, 2000; Kasanga, 2003; Kendie and Guri, 2006). The figure below shows the traditional leadership structure in the study area.

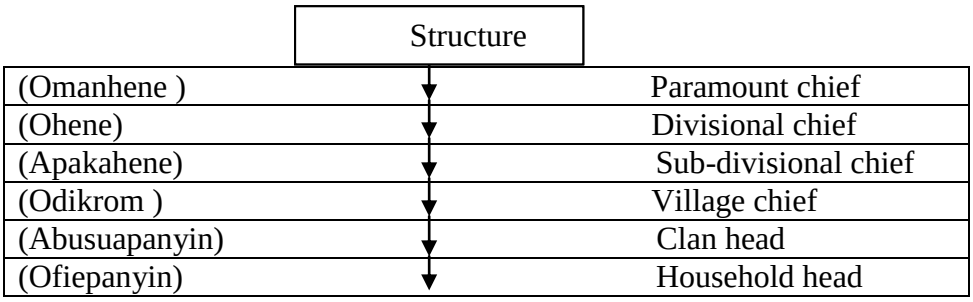


**Figure 5.2 The traditional leadership structure**

### 5.3.1 The interaction of state, community and traditional authority

The political actors, including chiefs in resource governance, define rules for economic actors and their interactions. They formulate rules concerning access to resources and interaction between economic actors. It is important to note that these rules could be formal or informal. Furthermore, policy processes related to resource governance are directed towards formulating formal rules such as property rights and regulations of forest activities. Government agencies like Forest Commission and Land Commission play a very important role. In addition, civil society participates through political parties, NGOs and direct action by creating and strengthening informal rules like customary law and norms of good conduct in communities.

Despite the fact that political actors regulate access to resources, they also need access to resources and usually create that through membership fees like the timber contract fee paid by the timber companies or donation, in the case of timber companies social responsibility agreement in providing social amenities to community closer to concession areas. In relation to resource and available technology, the attributes of resources influence the resource regime of political actors' choice and the actions of the economic actors. Excessive logging in the forests has influenced the government to put a ban on unregistered chainsaw operations and introduced various tree-planting programmes. Similarly, outcomes of resources may influence both political and economic actors' choices. If economic actors themselves are not happy with the outcomes, they may change their actions and try to influence the policy processes. In the communities, chiefs can be political actors and at the same time economic actors depending on their interest. This is typical in communities where chiefs collaborate with the government for law enforcement and encourage community members to form forest committees for forest management.

### 5.3.2 Stakeholders' participation

The implementation of REDD needs various government sector involvement; the ministry of energy has its contribution just as agriculture sector will be involved in formulation of policies to reduce deforestation. On the part of property rights the element of REDD will involve the Ministry of Land Natural Resources in Ghana. In addition, at the local level the traditional authorities including chiefs, clan heads and other economic actors' participation in the consultation process and during implementation of REDD is very important. These actors interact in various ways and their pattern of interactions could be changed to meet the demands of REDD provided both economic and political actors interests could be taken into account. In relation to the framework for studying environmental governance systems, REDD will introduce new regime which may change the interaction of the actors for a common goal.

### 5.3.3 The benefit shearing mechanism for fees collected from timber companies

In Ghana timber contractors (TC) with a timber utilization contract operating in a concession area have to pay a stumpage fee, which is fulfilment of social contract between the Forestry Commission and its customers as well as the general public. Furthermore, contractors pay stumpage fee on each tree felled and the accumulated revenue is shared periodically according to a fixed formula stated in the 1992 Constitution, but reviewed every quarter to ensure appropriate pricing of timber. The stool deducts 10% from the total amount and the remaining amount is shared among beneficiaries (Hansen and Owusu, 2007, Ahenkan and Boons, 2010; Arosen *et tal.*, 2010). A Timber Rights Fee was introduced in 2003 and accumulated money is shared proportionately as the stumpage fee. The aim was to increase government revenue from timber harvest and the fee follows competitive bidding system for awarding timber concession rights by timber resource regulation. With the agreement of the sharing ratio, National REDD fund which is to market Ghana's REDD base carbon credit could equally follow agreed benefit sharing among beneficiaries.

**Table 5.1 Timber stumpage fee benefit sharing**

| **Areas of Benefit sharing (Beneficiaries)** | **Percentage of stumpage fee** | **Percentage of stumpage fee** |
|---|---|---|
| | Forest Reserve | Off Reserve |
| Administration of the stool lands | 4.0% | 6.0% |
| District Assemblies | 19.8% | 29.7% |
| The Stool Lands | 9.0% | 13.5% |
| Traditional Council | 7.2% | 10.8% |
| Forest Commission | 60.0% | 40.0% |
| **Total** | 100.0% | 100.0% |

Source: (Ayine, 2008; Hassen and Owusu, 2007; Aronsen *et al.*, 2010)

### 5.3.4 Timber companies social responsibility in the communities

In Ghana, timber companies are required in the provision of resource management Act from 1997 to present proposal to assist in addressing social needs of communities closer to applicants' proposed operation area. The proposal will demand the statement of specific social amenities for the benefit of community members. The management and maintenance of the amenities provided will be under the responsibility of District Assemblies (Ayene, 2008, Hansen and Owusu, 2007, Aronsen *et al.*, 2011). Moreover, Timber Resource Management Regulation (TRMR) from 1995 stated that timber companies must compensate farmers if in the process of harvesting timber caused damage to their land or crops. The constitution of Ghana selected three actors to receive communities' share of loyalties, the District Assembly, Stool and Traditional Authority on behalf of forest fringe communities (Opoku, 2006). This implies forest communities are familiar with benefit sharing and that could facilitate decision making with regard to REDD compensation.

### 5.3.5 Collaborative management practices

In the high forest zones in Ghana, various institutions support the Forest Division staff in management processes. These include Community Forest Management Committees (CFC's) Community Resource Management Committees (CRMA) and Community Biodiversity Advisory Groups (CBAGs). These institutions involve in monitoring and reporting cases, demarcation of degraded areas and taking inventory of forest stock. They also assist in fire management plans, identification of necessary inputs and clearing of forest reserve boundaries. (Abaidoo, 2005; Tropenbos International Ghana, 2010). There are forest certification projects, which aim at improving forest management and accountability. Furthermore, it is a way of making forest products acceptable for environmentally sensitive markets, especially in Europe (Birikorang *et al.*, 2001; European Commission, 2003). In Ghana, the actors involved in the forest committee for that purpose include chiefs, traditional authorities, government representative and NGOs (Bird *et al.*, 2006). Besides, the main objective of the certification and the interactions of these actors are supposed to improve transparency, acknowledgement of landowners and user rights.

### 5.3.6 Community forest management projects

In the high forest, there is collaboration between forests fringe communities and government to rehabilitate degraded forest reserves while increasing agriculture production, extraction of dry wood, NTFPs and strengthening the capacity of relevant institutions. The beneficiaries

include indigenous subsistence farmers and migrant farmers who have access to land. The project also allow forest fringe communities to participate in collaborative forest management as well as gain access to fertile land in degraded forest reserves for crops production. The community members combine agriculture activities with tree planting which in turn empower the poor to gain higher income and improving their livelihood (Kasanga, 1992).

In addition, the Forest Commission is running large-scale plantation development programme with investors where both sign land lease agreements for the establishment of a plantation in degraded forests. When the trees mature, they can be harvested and the revenue is shared between the investor and beneficiaries. The investor takes 90%, landowners receive 6%, the FC takes 2% and the adjacent community receives 2% for development (Tropenbos International Ghana, 2010). There is also off reserve (farmlands) timber tree planting, where 100% trees and crops are for the planter if he is the landowner. In a situation where the planter is hiring, 67% of the revenue is for the planter and 33% goes to the landowner. However, the right to buy mature timber trees at prevailing market price goes to the company that provided seedlings and important services.

### 5.3.7 Modified Taungya system in the high forest zones

The Modified Taungya System in Ghana (MTS) is a practice of farming whereby a farmer receives a parcel of degraded forest reserve earmarked for plantation to produce food crops and replant trees in the degraded area. The farmers usually interplant crops on the parcels of land for three years, which is enough for trees to form canopies and the farmer shifts to another parcel and allows the trees to grow. The system is legally binding land lease and benefit sharing realized when the farmers are guaranteed 100% of food crops proceeds. In addition, the benefits from trees are shared based on 40% for farmer, Forestry Commission receives 40%, and landowner receive 15% and 5% for adjacent forest community.

### 5.3.8 The HPIC initiative plantation

In the year 2001, the government of Ghana sought relief under the Heavily Indebted Poor Country (HIPC) initiative. The aim was to reduce poverty and relieve the country's debt burden. Parallel to that, donor countries agreed that with debt relief more resource will be made available for investment in both human and physical capital, especially among the poor. As result, the government established plantations with the HPIC funds in the rural communities where planters were given wages. Generally, the aim was to improve living conditions with the short-term employment opportunities. Moreover, the scheme was meant to

increase tree cover in degraded forests and that was supervised by non-staff of Forest Service Division, who monitored tree planting with food crops cultivation in the degraded areas. Currently, the scheme has been taken over by other projects in the high forest zones following the change of government.

### 5.3.9 Timber tree nursery establishment

Similarly, trees are nursed by individuals and are sold to Forest Service Division (FSD) or private investors for establishment of plantations in degraded forest reserves. The seedlings used in the plantations of the HPIC scheme and MTS were supplied by FC and FSD was responsible to provide good quality seedlings. The FSD executes that duty by contracting individuals or groups to produce timber tree seedlings. The FC purchases the tree seedlings from producers and supplies them to tree planters. These days, there is another tree planting system where either the investor or the farmer is responsible for producing his seedlings for commercial or on farm planting, but the rights to the trees on the farm is yet to be established.

## 5.4 The Government commitment to REDD initiative

The government of Ghana confirmed its commitment to assessing appropriate policies and measures to protect the remaining forest resources, reduce degradation and enhance forest carbon stock. Furthermore, the government is committed to REDD readiness process and participating actively in international REDD negotiations and has put measures for the implementation of environmentally and socially sustainable land use and forest policies. This is reflecting in forest governance initiatives, which include forest laws enforcement, governance and trade/ Voluntary Partnership Agreement (VPA) with European Union coupled with sector approach to land use and natural resources under the Natural Resource and Environmental Governance (NREG). In addition to that, Ministry of Lands and Natural Resources (MLNR) is currently reviewing the existing 1994 forest and wildlife policy as well as 1996 Forest Development Master Plan to meet REDD activities and institutions requirement (Bamfo, 2009).

Moreover, the national climate change committees, which are under the Ministry of Environment, Science and Technology, are currently developing national strategies on climate change mitigation and adoption for forestry as well as energy options. The actors include various committees of government, landowners, civil society (NGOs) and development parties' representatives. All together various institutions and working groups interact within Ghana in the context of REDD.

### 5.4.1 Agro-forestation and REDD initiative in the high forest zone

The dominant position of cocoa production in the high forest zone presents an interesting opportunity in relation to REDD in the sense that local people believe increasing tree cover with cocoa production could work for REDD. The agriculture sector is redefining options for REDD because the sector has identified deforestation related to agriculture and agro- forestry conservation. Hence, the sector engages Ghana Cocoa Board (COCOBOD) and cocoa research institute to encourage farmers to plant shade-loving cocoa variety that will maintain vegetation cover. The strategy is initiated by the co-operative venture of MLNR, Ministry of Food and Agriculture (MOFA) and local government. Furthermore, to complement their efforts, the sector occasionally convene specialist working groups on REDD, focusing on strategies that will promote REDD policy agreement with shade loving cocoa production. Besides, MOFA is currently working on policy promotion that will grant farmers ownership rights over native trees, which is supposed to influence their behavior to plant native trees, reduce cutting down mature trees and replacing old cocoa trees. As a result, MOFA has considered inter-sector coordination mechanism and has involved major organizations such as Forest Commission, MLNR, COCOBOD, Civil Society and farmers to achieve that objective (Bamfo, 2009; Asare, 2010). The attention is on both off reserves and degraded parts of forest given to farmers for agricultural activities.

### 5.4.2 Summary

In Ghana, traditional authorities owned and control the largest portion of the land and it is administered in an environment of legal pluralism. Paramount chiefs owned territorial land on behalf of the community members and sub-chiefs in the village serve as caretakers. However, individual, family or clan could own land and the ownership could be through inheritance or first settlers. In the communities, outright sale of land was not common, but the land tenure arrangement included sharecropping, renting and gift. The state owns forests, economic trees on agriculture land and some parches of community land, which was acquired compulsory through executive instrument in the interest of the public. The state land may also be attached to various rights, which include lease, licenses for timber felling, mining and quarry operations. There are various interest groups for land and forest resource use. These groups can be identified as economic actors (individuals, households and companies) and political actors (traditional authorities, local government and the parliament). They interact in various ways aim at sustainable resource use but seem difficult to achieve. There are also NGOs in the communities serving as intermediaries between the local people and the government.

## 6. LOCAL PEOPLE'S LIVELIHOODS AND DEPENDENCENCE ON FOREST RESOURCES

The first section of this chapter gives an overview of structures and characteristics of the households in the sampled population. Next, I will give an overview of forests adjacent to selected communities. Concerning the elements of the framework, I will then present data about assets (capital). I will specifically look at financial and natural capitals. I will also look at the livelihood strategies and outcomes and finally discuss livelihood impacts and adaptation in the study area. The chapter will not include livelihood diversification and institutions as presented in the framework.

### 6.1 Household structure and characteristics

Aowin Suaman District is experiencing a steady growth due to influx of people into the villages. The continuous influx of active working group into the communities for agriculture activities may increase the number of some ethnic groups and family sizes due to extended family system. It may also affect land distribution or increase demand for land to expand agriculture production in the near future. In the communities, both men and women take the position of household head with the associated responsibilities. In the villages, people were identified with formal education working in the government sector and some combined that with agriculture activates. Other had no education but engaged mainly in farming and business. The population structure comprises ethnic groups from various corners of the nation, who come there purposely for farming and forestry.

**Table 6.1 Population growth with change of settlements in the study communities from 1970 to 2000**

| Locality | 1970 population | 1984 population | 2000 population |
|---|---|---|---|
| Adonikrom | 160 | 283 | 897 |
| Asantekrom | 748 | 1,171 | 2,124 |
| Boinsu | 687 | 1,462 | 2,584 |
| Jensue | 360 | 487 | 1,201 |
| New Yakasi | 1,959 | 1,803 | 2,538 |
| Sewum | 528 | 1,001 | 1,831 |

Source: Ghana Statistical Survey (2002)

In table 6.1 above, shows the population growth and settlement changes in the selected communities. There has been a tremendous population expansion due to influx of migrants for

cocoa cultivation and business. In addition, there are commercial activities during cocoa harvesting season, specifically from September to February. The migrants usually move to the surroundings of Enchi for farming and commercial activities. During our visit, it was observed that the people who come in for these activities eventually stay and others leave but those who stay were more than those who move back. The people who serve as caretakers of cocoa farms stayed for several years. That has been the pattern of movement over the past five years and accounts for the population expansion in the communities.

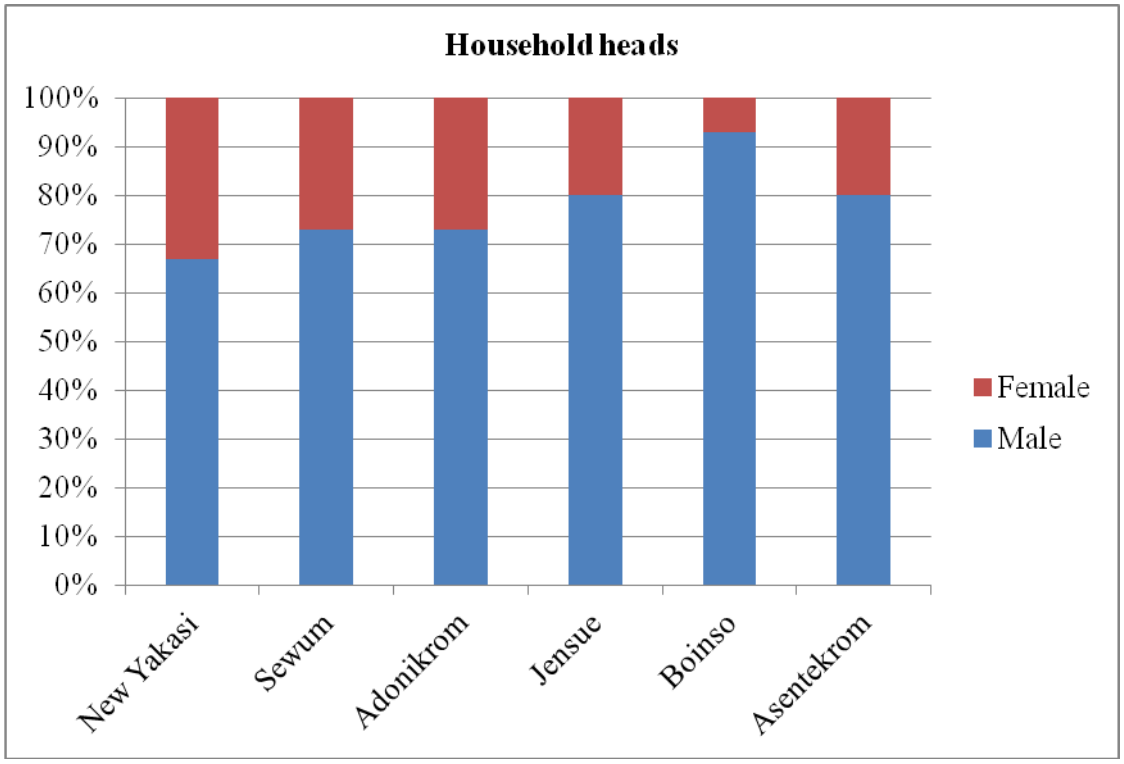


**Figure 6.1 Gender structure of the sampled population of the study area**

In the household survey, information was obtained from 200 household heads. Majority (155 or 77.5%) were males. Fifty respondents were selected from the control village of Asentekrom and 30 from each of the other five villages. In terms of religion, 92.0% of the respondents were Christians, 3.0% as Muslims, 0.5% traditional worshipers and 4.5% did not belong to any religion. The household members contributed by proving additional information when it was necessary.

**Table 6.2 Age and gender distribution of sampled population in villages**

| **Village** | **Adonikrom** | | **Asantekrom** | | **Boinso** | | **Jensue** | | **NewYakasi** | | **Sewum** | | **Total** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gender | M | F | M | F | M | F | M | F | M | F | M | F | M | F |
| Age group | | | | | | | | | | | | | | |
| 20- 30 | 5 | 1 | 3 | 1 | 6 | 0 | 4 | 0 | 2 | 1 | 4 | 0 | 24 | 3 |
| 31- 40 | 8 | 0 | 12 | 3 | 7 | 0 | 9 | 1 | 4 | 2 | 6 | 2 | 46 | 8 |
| 41- 50 | 2 | 4 | 13 | 5 | 7 | 2 | 5 | 2 | 10 | 4 | 5 | 2 | 42 | 19 |
| 51- 60 | 3 | 0 | 6 | 2 | 3 | 0 | 2 | 1 | 2 | 2 | 4 | 1 | 20 | 6 |
| >60 | 4 | 3 | 5 | 0 | 5 | 0 | 4 | 2 | 2 | 1 | 3 | 3 | 23 | 9 |
| Total | 30 | | 50 | | 30 | | 30 | | 30 | | 30 | | 200 | |

Furthermore, most of the respondents were between 31 to 50years and that range was noted to be the active group much engaged in agriculture and other activities. The people within this range were taking full responsibility of their families and were struggling to expand their farmlands to increase production. The elderly people from 60 and above were household heads with small family sizes because their children had moved out to settle. Most of those that fall with that age group with small families gave household head responsibilities to their senior sons and assumed household members. However, the group plays a major role in customary land distribution. They also contribute substantially to household labour force. In some communities, most could not walk to long distances to work like the active group but stayed home to dry cocoa beans and making contacts to sell farm produce.

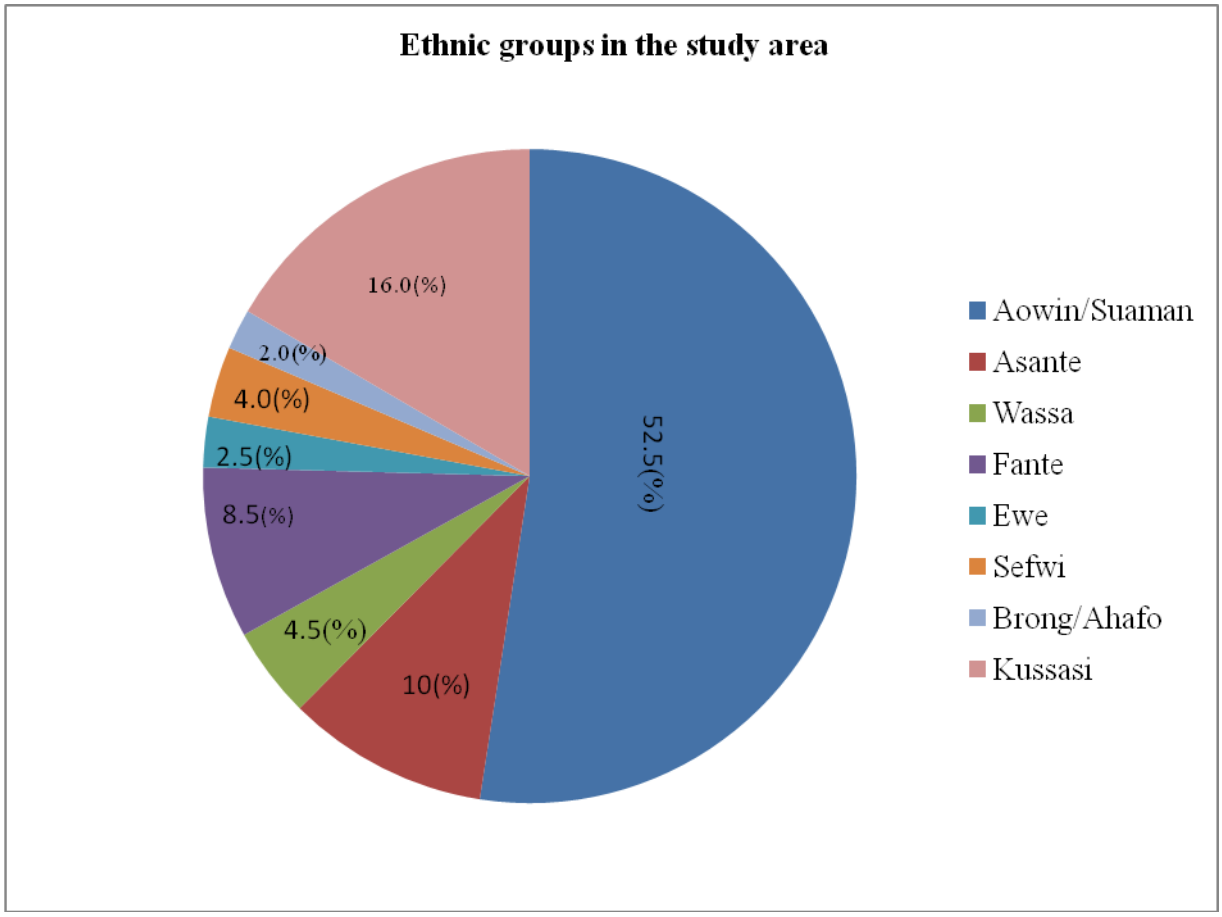


**Figure 6.2 Percentage respondents of ethnic group in the study area**

The indigenous people are two inseparable groups, Aowin/Suaman, who were first settlers in the district and these groups are dominating. Other ethnic groups are from other parts of the country. Among the migrants, the highest (16.0%) were the Kussasi from the Upper East Region of Ghana. There were also other tribes not included in the figure 6, 3, but they were affiliated to bigger ethnic groups for support and security and were not interested in disclosing their identity. Furthermore, our field observation and information obtained from the local resource persons' (key informants) interviews showed that the people who come into the district are actually more than those who move out and that has been the pattern of movement over the last five years.

**Table 6.3 Household head Level of education, Aowin Suaman Disrtict, 2010**

| Village | No Formal Education | Primary | Secondary | Higher Education | Total |
|---|---|---|---|---|---|
| Adonikrom | 5 | 15 | 8 | 2 | 30 |
| Asantekrom | 21 | 17 | 6 | 6 | 50 |
| Boinso | 8 | 6 | 13 | 3 | 30 |
| Jensue | 5 | 9 | 10 | 6 | 30 |
| New Yakase | 10 | 5 | 12 | 3 | 30 |
| Sewum | 5 | 10 | 11 | 4 | 30 |
| Total | 51 | 61 | 60 | 24 | 200 |

In addition, out of 200 respondents, 61 people have completed primary education, 60 had some secondary education, 51 had no formal education while only 24 had higher education (Table 6.3). They were government workers reside in the district capital, but have farms in the villages. Our sample shows greater percentage of respondents who fall within primary education than higher education. It is indication that majority of the people can read and interpret basic concepts in relation to forest policies. Agriculture is the major activity and source of income for almost all the households. A total of 95% of the respondents have access to land for agriculture.

### 6.2 Overview of forests and community members' forest use in the study area

In the rural communities of the high forest zone in Ghana, majority of the people depend on forest resources for their livelihoods. There are also extractive industries that depend on the resources for their businesses. Apart from these activities, farmers engage in extension of cocoa farms into forestlands. The trend of forest exploitation seems to be typical of community members (e.g. see Yiridoe and Nanang, 2001). People lack incentives to conserve forests as they rarely participate in decision-making. The forest policies in Ghana vest forest resources in the state but not land owners. Hence, people engage in illegal activities to benefit from trees and other resource. Moreover, it seems illegal for farmers to benefit financially from resources extracted from the forest but commit no crime to cut down tree to cultivate cocoa (Care, 2007).

The 1994 Forest and Wildlife Policy (FWP) aimed at promoting collaborative forest resource management in partnership with forest communities but most people in these communities were not aware of the policy because they were assertive that the policy was developed without consultation and had weak dissemination. Currently, most communities in the study area, Forest Service Division collaborate with the forest fringe communities to improve

protective role of the forest for the maintenance of environmental quality. The community Forest Management Committees perform duties related to protection and management supervised by Forest Division officer.

### 6.2.1 Adjacent forests to study communities

In the study area, selected communities were located adjacent to different forests with similar characteristics, some forestlands were jointly owned by different villages in the same traditional area, whereas management was under the District Forestry Division. However, forests were identified with different levels of human disturbance. In addition, they were with various management units with different level of disturbance.

### 6.2.2 Boi-Tano and Jema Asemkrom

The Boi-Tano and Jema Asemkrom forests constitute Forest Management Unit (MFU) 13. Boi-Tano has been entered for the first time on concession and regeneration is taking place especially class I species notably, Ceiba pentandra, Heritiera Utilis, Tieghemella heckelii which were logged in some compartments are forming canopies. In Jema Asemkrom Forest reserve, five compartments are now going through the first felling cycle by selection system even though primary forest is well represented in some parts. In the reserve, some parts were subjected to farming activities where secondary forest replaces the primary status of the forest.

The forest reserves' management lies within the administrative jurisdictions of Aowin Suaman District Assembly under the management of Enchi Forest District. Omanhene of Aowin Traditional council, the stool of Boinso, Omanpe and jema, jointly owns the Boi-Tano whereas Jema Asemkrom forest reserve owned by both Jema Asemkrom and the Aowin stool. The reserves have a gross area of 194.50km$^2$ of which about 4.41km$^2$ is unproductive and made up of village lands and admitted farms. The remaining net area is 190.09 Km$^2$. Currently, TUC/ Concession holders or Timber Harvesting Right is with a timber company known as Messrs. Samartex has applied to convert the lease to Timber Utilization Contract (TUC) and have signed the social responsibility agreement with stool owing communities (Regional Forest Management Plan, 2002). Among the surrounding communities, Boinso was selected for the study in these forest zones.

### 6.2.3 Boin River Forest Reserve

The forest derives its name from the River called Boin and located about 5km from Enchi closer to Yakasi. It extends west to Cote d'Ivoire and forms and forms part of the Forest

Management Unit (FMU 14). The reserve falls within the administrative jurisdiction of Aowin Suaman District Assembly with gross area of 278.00km$^2$ of which 1.29km$^2$ is unproductive and made of admitted farms and villages. This leaves a net area of 276.71km$^2$. The forest falls within the moist evergreen zone and forms shears boundary with Disue forest reserve to the North (Hall and Swaine, 1981). The main NTFPs collected in the reserves by forest fringe communities for domestic use include deadwood, pestle, canes, mushroom, sponge and raffia palm leaves for roofing. Several stools of Omanpe and Sewum all of which are under Aowin Paramount stool jointly own the Boi river forest. Currently, Messrs. Samartex as well as Plywood Company Limited are the TUC/ concession holder and have applied to convert the lease to TUC. Among the major towns and settlements closer to forest, Sewum and New Yakasi were selected for the study.

### 6.2.4 Disue Forest Reserve

The Disue forest is shearing boundary with Boin river forest reserve and also constitutes Forest Management Unit (MFU 14). It is located the western part of Enchi and falls under the jurisdiction of Enchi Forest District. It has a gross area of 23.60km$^2$ and no admitted farms. Besides, major exploitation has never taken place except the removal of few trees for construction of road to link Enchi to Dadieso and Adonikrom to La Cote D'Ivoire. The stools of Adonikrom and Sewum on behalf of the Aowin paramount stool jointly own the forest. Messrs. Samartex Timber and Plywood Company Limited were the former TUC/Concession holders but the forest has now been put under protection though forest fringe communities obtain NTFPs such as deadwoods, mushroom raffia palm leaves for roofing and others. The major towns and settlements closer to the forest include Fakabra, Adonikrom and Suzan of which Adonikrom was selected for the study.

### 6.2.5 Dadieso Forest reserve

The forest lies north of Boin river forest and Disue forest. It falls within the Aowin Suaman District Assembly jurisdiction. The forest has a gross area of 171.20km$^2$ and 4.50 km$^2$ is made up of admitted farms which are located along Ghana La Cote D'Ivoire international boundary. The forest has not been entered for logging except compartment 9, which is along the Enchi-Dadiaso highway road. Moreover, this was logged during road construction. However, the primary status of the forest is well represented especially along the slope and valleys. The reserve is owned by two traditional Authorities Suaman (Dadieso) and Aowin. One third of the reserve at the northern part is owned by Suaman (Dadieso) stool while Yakase stool savers

as caretaker for the two thirds of the southern part which also within the jurisdiction of paramount chief.

### 6.3 Household access to assets

In the local communities, natural resource use is very important to peoples' livelihoods. Resource regimes regulate economic actors' preferences and actions, which influence their pattern of interaction for outcomes as presented in the framework for studying environmental governance systems. In addition, resource use could contribute in asset accumulation in the local communities. As result, attention needs to be paid to assets and activities that distinguish the poor from other members. Moreover, in a way to strengthen assets with the view to enhance their contribution, increase security and resilience of livelihood requires the identification of components of the process and magnitude of assets for securing viable livelihoods. Besides that, social factors and institutions together with exogenous shocks or trends meditate assets status (Ellis, 2000). In relation to livelihood framework from Scoons (1998), assets refer to capitals, which have been categorized into physical capital, human capital, financial capital, social capital and natural capital. Furthermore, I will present the physical, social capitals and specifically categorize natural assets and financial assets into income groups. These groupings will be referred to as welfare measure, where households will be put into three income groups: poor, medium and less poor. The income groups show the overall welfare of the villages and give clear evidence that the welfare of the poorest is lower as one USD per day. In addition, household level of income is reflected in the material resources, which strongly affects the overall welfare of the people.

#### 6.3.1 Physical assets

In the villages, household heads were living in their own houses. The nature of a house constructed depended on the financial position of family members in a household. It was observed that the poor were majority living in simple constructed houses made with mud plastering, roofed with thatch and some lived in mud bricks houses. Those who had sound financial position were living in cement bricks houses roofed with iron sheets. This implies that a person living in his own house was not based on financial stand. It was rather the materials used in construction of houses, showed the wealth of a household. However, some people had two houses constructed with mud but the value could not be equated to a person with house constructed with cement bricks. Those who were found renting houses in the villages were new settlers. In addition, people access to big machinery was low. Few people

owned cars, tractors, generators maize mills and motorbikes in the villages. These were hired by most of the households. Mobile phone were widely used use and we could get a minimum of three phone used by household members. We were told that farmer use phone purposely to market their farm produce and search for agriculture inputs. Furthermore, the most important implements, which were widely used were cutlasses and hoes. The cutlasses were used to clear land and pruning of cocoa trees and hoes used for planting cocoa seedlings.

### 6.3.2 Social capital

Moreover, the people mentioned that they see their villages as the best place to live because there is peace and cooperation between neighbours. They also mentioned that their level of trust in some people in the communities was high. Besides that, the village council and the local government join efforts in various ways to ensure the well-being of community members especially in difficult situations such as flood and crop failure. Besides that, the people said their relationship with NGOs was very good, especially development and environmental NGOs in the communities.

In the villages, there were few identified groups, which included cocoa farmers groups and their aim was to supports each other in buying farm inputs and market farm produce. There were also various village committees but majority of the respondents were ordinary members not leaders. In addition, in all the villages religious groups were dominating especially Christians who honour, love and support one another without considering their tribal differences. The same way Muslim groups consist of different tribes, but see members as the same family in the communities. Surprisingly, we could not find people who belong to credit union and saving groups in the communities. Some people said they started saving as groups and members could not continue and other said they never joined any saving groups.

## 6.4 Livelihood strategies and outcome

This section presents the livelihood strategies and outcomes. In addition, natural capital and financial capital will be included this section. The strategies include conversions land in hectares cleared for agriculture activates for the last 12 months, household income sources that are categorized into forest income, forest/non-forest income and non-forest income. The forest income is further put into primary income sources (cash and subsistence) which include forest products (NFTPs) such as poles, fuel wood, charcoal, average annual income from bamboo, mushroom, medicinal plants, wild fruits, bush meat and others. Whereas secondary sources include annual cash and kind payment received from tourism, tree planting, benefit

from logging companies, cash received from carbon project and others. In addition, non-forest/forest income includes business and services related to both forest and non-forest. The last category is non-forest income sources of households, which are grouped into primary and secondary. The primary sources are income from crops, livestock and fish. The secondary sources also include wages, business and remittances. These grouping were not only to give the general picture of use and dependence of resource but also to reveal various income sources available in the communities.

### 6.4.1 Natural capital-land

All the respondents had access to land cultivation but for full year, two people did not use their land for agriculture activities. Average household had 7,85 ha of land. Besides that, most people access forestland for fuel wood, charcoal, poles and NTFPs. However, access to land varied among income groups and villages.

**Table 6. 4 Access to land for agriculture by income groups**

| **Land clearing for** | **Poor (n=67)** | | **Medium (n=67)** | | **Less poor (n=66)** | | **Total (n=200)** | |
|---|---|---|---|---|---|---|---|---|
| **agriculture (Ha)** | Area | % | Area | % | Area | % | Area | % |
| Permanent agricultural land | 5,45 | 81,8 | 7,72 | 85,1 | 6,95 | 88,8 | 6,71 | 85,4 |
| Forest cleared last 10 years** | 0,82 | 12,3 | 0,71 | 7,8 | 0,57 | 7,2 | 0,70 | 8,9 |
| Shifting cultivation** | 0,39 | 5,9 | 0,63 | 6,9 | 0,31 | 3,9 | 0,44 | 5,7 |
| Others | 0,00 | 0,0 | 0,02 | 0,2 | 0,00 | 0,0 | 0,01 | 0,1 |
| **Total** | **6,66** | **100** | **9,07** | **100** | **7,83** | **100** | **7,85** | **100** |

*(N=200). * indicates significant difference across income groups: *** at p < 0.01;** at p < 0.05; * at p < 0.1*

Agriculture land is very important in the lives of household members. Surprisingly, land was not used primarily for food crop production but for the cultivation cash crop (cocoa). The medium income group household has the highest average land of 7, 72 hectares, followed by the less poor with 6, 95 hectares. The reason some chiefs and community members gave was that the wealthy groups inherited the land from parents and grandparents who could hire labour to clear family land in the olden days for agriculture activities when there was no competition for land in the communities. The poor has the highest percentage (12, 3%) of cleared forestland in the last 10 years and we could assume that they are finding ways of creating permanent agriculture land in forests. Furthermore, an average of 9% forestland has been cleared for agriculture activities and we could again assume that in 50 years, approximately 50% land would be cleared. Medium income households engage most in shifting cultivation, followed by the poor. It was observed that the medium group has large

families and need to maintain high farm income by shifting to fertile lands. On the other hand, the poor engaged in shifting cultivation could be lack of permanent agriculture lands.

**Table 6.5 Access to land for agriculture by location**

| Land clearing for | New Yakasi (n=30) | | Sewum (n=30) | | Adonikrom (n=30) | | Jensue (n=30) | | Boinso (n=30) | | Asantikrom (n=50) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **agriculture (Ha)** | Area | % | Area | % | Area | % | Area | % | Area | % | Area | % |
| Permanent agricultural land | 5,01 | 70,7 | 6,57 | 68,9 | 11,0 | 96,6 | 6,05 | 87,3 | 5,11 | 90,3 | 6,60 | 93,1 |
| Forest cleared last 10 years** | 1,31 | 18,5 | 1,11 | 11,6 | 0,2 | 2,0 | 0,80 | 11,5 | 0,51 | 9,0 | 0,43 | 6,0 |
| Shifting cultivation** | 0,76 | 10,7 | 1,85 | 19,4 | 0,2 | 1,4 | 0,08 | 1,2 | 0,00 | 0,0 | 0,06 | 0,9 |
| Others | 0,00 | 0,0 | 0,00 | 0,0 | 0,0 | 0,0 | 0,00 | 0,0 | 0,04 | 0,7 | 0,00 | 0,0 |
| **Total** | **7,08** | **100** | **9,53** | **100** | **11,35** | **100** | **6,93** | **100** | **5,65** | **100** | **7,09** | **100** |

*(N=200). * indicates significant difference across villages: *** at p < 0.01;** at p < 0.05; * at p < 0.1*

In terms of location, households in Adonikrom have the best access to permanent agriculture land (11,0 hectares). Perhaps this explains why Adonikrom is among the leading cocoa cultivation areas in the district. Households in New Yakasi had the least access (5,01 hectares) possibly because the village is a forest boundary and households find it difficult to expand their farmlands. However, they had the highest amount of land from forest clearing and households in Adonikrom had cleared the least since they already hold sizeable permanent agriculture lands. In the communities, we were informed that those who could not buy fertilizer engage in shifting cultivation on land that regenerated or gained fertility to maximize yield. Sewum has the highest percentage of 19,4% engaged in shifting cultivation, followed by 10,7% in New Yakasi and the least was 0,2% from Adonikrom. There was no shifting cultivation in Boinsu and that shows farmers could afford fertilizer and other input for their farms.

**Table 6.6 Dependence on forest resource by income groups**

| Sources of | Poor (n=67) | | Medium (n=67) | | Less poor (n=66) | | Total (n=200) | |
|---|---|---|---|---|---|---|---|---|
| **forest income(USD)** | Total | % | Total | % | Total | % | Total | % |
| Firewood*** | 568,0 | 91,8 | 844,0 | 75,0 | 1072,1 | 66,9 | 826,8 | 74,3 |
| Poles* | 24,4 | 3,9 | 145,6 | 12,9 | 288,0 | 18,0 | 152,0 | 13,7 |
| Charcoal | 20,1 | 3,2 | 132,9 | 11,8 | 167,5 | 10,5 | 106,5 | 9,6 |
| NTFP** | 6,3 | 1,0 | 3,0 | 0,3 | 74,2 | 4,6 | 27,6 | 2,5 |
| **Total** | **618,7** | **100,0** | **1125,6** | **100,0** | **1601,7** | **100,0** | **1112,9** | **100,0** |

*(N=200). * indicates significant difference across income groups: *** at p < 0.01;** at p < 0.05; * at p < 0.1*

All income groups use forest products as a source of environmental income, but the ability to collect them increases with wealth status (table 6.11). Fuel wood contributes the bulk of the environmental income of the poor households who are less able to get income from poles and charcoal. Poor households collect fuel wood for domestic use and occasionally for sale when they are in hardship. Only a few reported the sale of firewood on regular basis. However, wealthy people (medium and less poor) dominated in the use charcoal because they could afford to hire labour and provide chain saw machine for cutting poles and big trees. Some members among these income groups confirmed that they use charcoal and gas but prefer to use charcoal for the preparation of food that takes a longer time because it is cheaper and easily obtained or available at all times. Moreover, the collection of poles/timber was dominant among wealthy groups.

**Table 6.7 Dependence on different sources of forest income by location**

| **Sources of forest income (USD)** | **New Yakasi (N=30)** | | **Sewum (N=30)** | | **Adonikrom (N=30)** | | **Jensue (N=30)** | | **Boinso (N=30)** | | **Asantekrom (N=50)** | | **All sample (200)** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | % | Total | % | Total | % | Total | % | Total | % | Total | % | Total | % |
| Firewood* | 1228,1 | 72,2 | 754,5 | 69,3 | 971,0 | 70,3 | 714,0 | 70,6 | 856,8 | 70,8 | 592,6 | 96,1 | 826,8 | 74,3 |
| Poles** | 308,3 | 18,1 | 124,1 | 11,4 | 255,7 | 18,5 | 126,0 | 12,5 | 163,6 | 13,5 | 21,4 | 3,5 | 152,0 | 13,7 |
| Charcoal | 162,4 | 9,6 | 196,0 | 18,0 | 151,2 | 11,0 | 10,1 | 1,0 | 190,4 | 15,7 | 0,0 | 0,0 | 106,5 | 9,6 |
| NTFP** | 1,6 | 0,1 | 13,6 | 1,2 | 2,8 | 0,2 | 161,6 | 16,0 | 0,0 | 0,0 | 2,6 | 0,4 | 27,6 | 2,5 |
| **Total** | **1700,4** | 100,0 | **1088,1** | 100,0 | **1380,7** | 100,0 | **1011,6** | 100,0 | **1210,8** | 100,0 | **616,7** | 100,0 | **1112,9** | 100,0 |

*(N=200). * indicates significant difference across villages: *** at p < 0.01;** at p < 0.05; * at p < 0.1*

The people in the villages collect forest products regularly because majority lack alternatives and some resources are collected on regular basis for the support of livelihoods or as safety nets in time of hardship. The common product collected for use at home was fuel wood. However, it was not only used for domestic cooking and for heating food, but also used in small-scale industries such as local breweries, bakeries and soap making. Farmers in New Yakasi mentioned that they carry fuel wood home after each day's work because is it the major energy source. People in all villages confirmed regular use of firewood but poles/timber were used mostly on yearly basis either for reconstruction or maintenance of old structures. Charcoal was another energy source used by majority of the less poor in the villages. They further stressed that charcoal is more economical for cooking food that takes longer time. However, the people in the villages could buy gas for use from the district capital Enchi,

which was not regular and reliable source of gas. This implies that majority of wealth groups among the people in the villages often used charcoal. The collection of NTFPs was done by most people in the villages except in Boinso, where nobody reported the collection of NTFPs. The common products that were used in the communities include bush meat, mushrooms and other vegetables, wild fruits and medicinal plants. This is clear indication that forest products are very important to peoples' livelihoods.

**Table: 6.8 Annual income sources by wealth groups, Aowin Suaman District, 2010**

| Income Source | Sample | | Poor | | Medium | | Less poor | |
|---|---|---|---|---|---|---|---|---|
| | Income USD | % | Income USD | % | Income USD | % | Income USD | % |
| Forest income | | | | | | | | |
| Primary** | 1112,9 | 24,9 | 618,7 | 33,9 | 1125,6 | 27,2 | 1601,7 | 21,3 |
| Secondary | 0,3 | 0,0 | 0 | 0,0 | 0,9 | 0,0 | 0 | 0,0 |
| **sub-total forest income** | **1113,2** | **24,9** | **618,7** | **33,9** | **1126,5** | **27,2** | **1601,7** | **21,3** |
| Cash income | 27,9 | 0,6 | 6,3 | 0,3 | 3,9 | 0,1 | 74,2 | 1,0 |
| Subsistence income | 1085,3 | 24,2 | 612,5 | 33,6 | 1122,5 | 27,1 | 1527,6 | 20,3 |
| Forest/non-forest income | 4,8 | 0,1 | 3,8 | 0,2 | 5,6 | 0,1 | 5,1 | 0,1 |
| Cash income | 4,8 | 0,1 | 3,8 | 0,2 | 5,6 | 0,1 | 5,1 | 0,1 |
| Subsistence income | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| Non-forest income | | | | | | | | |
| *Primary* | | | | | | | | |
| Crop** | 2453,6 | 54,8 | 975,7 | 53,5 | 2533,2 | 61,2 | 3872,9 | 51,6 |
| Livestock | 15,5 | 0,3 | 0,2 | 0,0 | 35,7 | 0,9 | 10,6 | 0,1 |
| Fish | 6,0 | 0,1 | 0 | 0,0 | 17,9 | 0,4 | 0 | 0,0 |
| ***Sub-total primary*** | ***2475,1*** | **55,3** | ***975,9*** | **53,5** | ***2586,8*** | **62,5** | ***3883,6*** | **51,7** |
| Cash income | 2389,9 | **53,4** | 886,2 | **48,6** | 2529,3 | **61,1** | 3774,9 | **50,3** |
| Subsistence income | 85,2 | **1,9** | 89,7 | **4,9** | 57,5 | **1,4** | 108,6 | **1,4** |
| *Secondary* | | | | | | | | |
| Wage** | 862,4 | 19,3 | 184,7 | 10,1 | 406,0 | 9,8 | 2013,6 | 26,8 |
| Business | 6,0 | 0,1 | 4,8 | 0,3 | 7,0 | 0,2 | 6,2 | 0,1 |
| Remittances** | 14,5 | 0,3 | 37,1 | 2,0 | 6,3 | 0,2 | 0,0 | 0,0 |
| ***Sub-total secondary*** | ***882,9*** | **19,7** | ***226,6*** | **12,4** | ***419,3*** | **10,1** | ***2019,8*** | **26,9** |
| **Sub-total non-forest income** | **3358,0** | **75,0** | **1202,5** | **65,9** | **3006,1** | **72,6** | **5903,4** | **78,6** |
| Cash income | **3272,8** | **73,1** | **1112,8** | **61,0** | **2948,6** | **71,2** | **5794,7** | **77,2** |
| Subsistence income | 85,2 | 1,9 | 89,7 | 4,9 | 57,5 | 1,4 | 108,6 | 1,4 |
| **Grand total** | **4476,0** | **100,0** | **1825,0** | **100,0** | **4138,1** | **100,0** | **7510,2** | **100,0** |
| Cash income | 3305,5 | 73,8 | 1122,8 | 61,5 | 2958,1 | 71,4 | 5874,0 | 78,3 |
| Subsistence income | 1170,5 | 26,2 | 702,2 | 38,5 | 1180,1 | 28,5 | 1636,2 | 21,8 |

*(N=200). * indicates significant difference across income groups: *** at p < 0.01;** at p < 0.05; * at p < 0.1*

Income varies significantly between wealthy groups. In the communities, forest products such as charcoal, fuel wood and poles were not sold much in the markets. Charcoal and fuel wood were rather produced and used by households. The reason could be that every household easily produces charcoal in both forest and farms and may not like to buy. Moreover, it is regarded as a tradition for household members to carry a bundle of fuel wood from farm after

each day's work and therefore dry fuel wood is always in stock for use. The poor were most dependent on primary forest products, which provided 34% of their total income. The reason is that they depend much on forest for energy, food and poles for construction of houses. In comparison, a medium household derived only 27% of its income from primary forest sources, while the less poor derived the least (21%). Dependence on primary forest products decreased with wealthy status because of wealthier households had better access to alternative sources of energy such gas, kerosene and electricity as well as food. An average household will lose $1113/year or 25% of its total income, but the poor households will be hit the most since they are most dependent.

The poor households get significantly less crop income, but this contributes the most to their total income generally because of the poor households' access to other alternatives. Their production was mainly for subsistence, were observed to possess small plantation mixed with food crops such as cassava and plantain. The less poor have very high income from crops because they possess large cocoa plantations. In the focus group discussions people mentioned that cocoa fertilizer and insecticides to control pests and diseases are very expensive and thus the poor could not manage large plantations. Besides, cocoa cultivation is labour intensive and involves high labour costs, which favours wealthier households.

### 6.4.2 Constraints on livelihoods activities

This section deals with different livelihood activities that limit the people from increasing livelihood outcomes. The section relates to the vulnerability context of the livelihood framework. According to Ellis (2000), trend includes population migration, macro policy, relative prices economic government and technology, which affect people's livelihoods. In addition, shock which a limiting factor comprises of crops and livestock failure, human health, natural disasters (drought, floods, pests and diseases), loss of employment, civil wars, economic over which people have no absolute control. In the survey, people were asked to mention what was regarded as the most important limiting factors to increase their household conditions with stated resource.

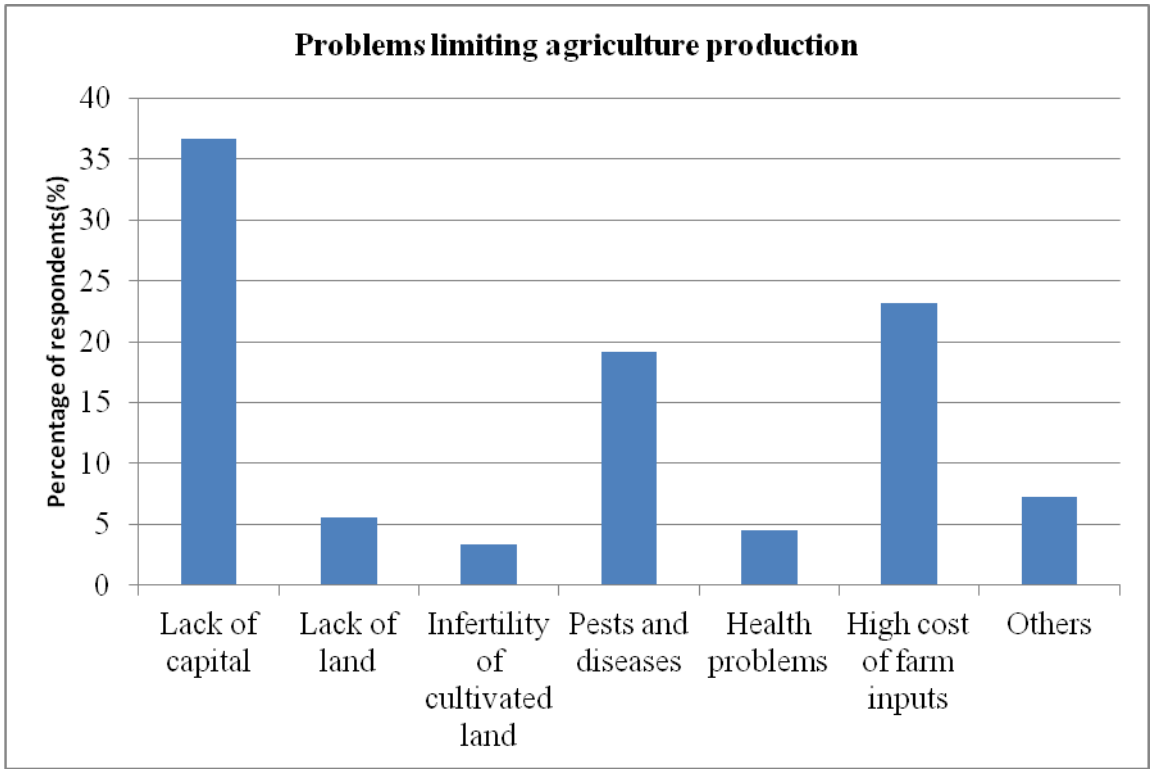


**Figure 6.3 Problems limiting households agriculture production**

In the study area, 36.7% of the respondents perceived lack of capital as the major factor limiting their agriculture production. The farmers do not have access to loans from the Banks because they do not have collateral security. The local money lenders put high interest on monies given to community members, which discouraged farmers to go in for such assistance. High cost of farm inputs was another important factor, reported by 19.2% of the sample households. Though the government has subsidized the prices for cocoa fertilizers, not every farmer can afford to buy at available prices. In addition, pests and disease destroy cocoa trees and pods. Fungal infections were reported as most common, and that these attack cocoa growing tissues (shoots, flowers and pods) which causes trees to produce branches without fruits. Additionally, nearly 6% of the sample households reported lack of land while 4.3% reported limitations from infertility of cultivated land. However, looking at the responses of these some people, they were answering in a strategic way because they did not want to state clearly that due to lack of land and fertile land they have encroached the forest. There were few respondents, who complained of health as a factor liming their agriculture production and that response was frequently coming from the old people representing household heads.

In terms of livestock production, the major factor limiting livestock production is pests and diseases. Up to 61% of the respondents reported loss of animals to uncontrolled diseases each

year and many reported loss of interest in livestock production. An extra 9.8% reported lack of space

**Table 6.9 Serious events household faced during the past 12 months**

| Serious events | Number of respondents | Percentage (%) |
|---|---|---|
| Serious crop failure | 44 | 22.0 |
| Serious illness/death | 65 | 32.5 |
| Loss of land | 4 | 2.0 |
| Major livestock loss | 17 | 8.5 |
| Loss of waged employment | 12 | 6.0 |
| Climate/drought/flood | 44 | 22.0 |
| Price changes (products/ consumer goods) | 16 | 8.0 |

The various events that were regarded as serious in households were deaths (occurring in 35.5% of the sample households). Community member mentioned there is the need for clinics for simple cares. There are instances they handle mild cases in their houses themselves, because they are far from hospitals, which finally result to complications. Another common cause for concern reported by 22% of the sample was climate change. Over the last, five years, communities in the study area experienced two major floods, as result of heavy rains. The incident caused the rivers to overflow and that caused havoc to lives of people and properties. The last one occurred in 2007, which destroyed large farms, houses, market stock and lives rendering the people incapacitated. According to Ghana News Agency report 2007, about 5,000 people were affected in Enchi town. The people engaged in livestock production said they have been losing animals seasonally because the forest area is not good for rearing of cattle. High food prices were also reported as problematic. The people depend on cultivation of cash crop (cocoa) and buy foodstuffs from different regions including the neighbouring country, La Cote d'Ivoire. Land conflicts were reported in only 2.0% of the sample households and all the cases were between family members. Besides, people were asked to rate their access to and use of forest products such as fuel wood, poles/timber and charcoal that support their livelihoods, out of 200 respondents, 29% confirmed much reduced, 23.5% said reduce and 47% confirmed their access is the same today as compared to five years.

### 6.4.3 Concepts of livelihood threats

In this section, I will begin by elaborating threat concepts stated to the livelihoods framework, specifically vulnerability and seasonality. In addition, I will relate the type of risk management and coping strategies available to the people in the study area.

#### 6.4.3.1 Vulnerability

Vulnerability refers to high degree of exposure to risk, shock and stress as well as households proneness to food insecurity (Ellis, 200). Vulnerability has external threat to livelihood security due to risk factors, which include climate, markets and sudden disaster. On the other hand, it has internal coping capabilities, which is determined by assets, food, support from community members, families and other relations (Ellis, 2000). It is important to note that the most vulnerable households are those that are highly challenged by external events and lack social support systems or assets to carry them through the period of adversity. In most social literature, vulnerability is related to resilience in natural resource managements where resilience is always refers to the ability of livelihood systems to "bounce back" from stress and shock.

#### 6.4.3.2 Seasonality in the study area

In the rural areas, seasonality is an inherent feature of livelihoods among households. In the communities farmers identity production cycle of crops and livestock productions which are determined by the onset of rains, rain duration, length of growing season, temperature variation and others. These seasonality factors have long chain effects to human beings and agriculture supplies as well as output services. This process is regarded as one form of seasonality that confronts households as an inherent feature of their livelihood (Ellis, 2000). Parallel to that, households are confronted by different forms of seasonality. In the study area, villages were confronted by series of floods, which destroyed crops, buildings, foods stuff in stores and loss of lives. The government of Ghana provided assistance to flood victims and arranged for relocation. In another area of confrontation were pests and diseases. In the communities, farmers mentioned that various pests and diseases affect cocoa production, which is their source of livelihoods. The only way to minimize the effect is by timely spraying cocoa farms with the required insecticides. Those who were engaged in livestock production also mentioned several factors limiting growth.

#### 6.4.3.3 Risk management

The way rural communities handle risk is straightforward. Risk management is a deliberate household strategy to anticipate failures in individual income streams by maintaining a variety of activities to ameliorate threat. In addition, it refers planning ahead of time to spread risk across diverse set of activities in a form of degree of risk attached to each sources of income. In developing countries, rural livelihoods are such that income earning opportunities open to poor households involve own farm production and own labour. Besides, availability of assets and livelihood diversity would provide resilience of households.

In the study area, we identified large family sizes in households, which are sources of human capital or assets as stated in (Scoones, 1998). In addition, families also relied on natural capital such farm produce to prepare against anticipated threat against their welfare. Other family members were engaged in diversification activities during off farm period, which were meant to increase family income that could give households good financial base to hire more labour for agriculture production. It is important to note that insecurity wage employment in agriculture in the rural areas adds to livelihood risks and increase vulnerability. However, in many cases, vulnerability diversification activities include various income sources such as off farm activities, remittances and others.

### 6.5 Coping strategy

The concept of "coping comprises tactics for maintaining consumption when confronted by disaster, such as drawing down on savings, using up food stock, gifts from relative, community transfers, sales of livestock, other asset sales and so on" (Ellis, 2000:62). Comparatively, households respond various ways to crises in all parts in the world. However, in rural communities in developing countries, approaches to crises are similar.

It is observed that when households are faced with a collapse in their regularly sources of income or consumption, they ¨turn to follow a sequence of rules that will permit them to conserve assets and resume their livelihood strategy. As a result and to begin with, they might resort to new sources of income diversification. Secondly, draw on reciprocal obligations known as social capital. Thirdly, they may reduce household size through temporal migration. Fourthly, households will do selective sale of movable assets such as cattle, sheep, goats or farm implements. Last but not the least, there will be the sale or abandonment of fix assets, which include house, land, grain store and others (Ellis, 2000). Parallel to this, the coping strategies in the study area by households were the sale of farm produce, changing of work,

family assistance and depended on forest resources. Beside, most farmers mentioned that they usually experience erosion of assets when they respond to crisis like crop failure and after such event; it takes time to build up assets.

### 6.5.1 Credit market in the study area

In the rural areas, availability of credit is a motivation for livelihood diversification. Credit market refers to the availability of funds to carry out timely purchase of cash inputs into agricultural production as well as to buy capital equipments such as ploughs, water pumps and other farm implements which are regarded as critical constrains inhibiting increase productivity in small scale production (Ellis, 2000). In the study area, people mentioned that they have no access to credit facility. The small-scale farmers said they have no collateral to enable them obtain bank loan to expand their production. Others complained that during farming season they go to the cities several times arranging to access bank loans, but usually not successful.

According to Ellis, funds that are available for loans or credit market have difficulty in operating in the rural areas. The reasons include high cost in setting banking operations, cost of securing information on potential borrowers, high risk of default on loans and usually no collateral to put against loans to secure money going out from the bank. In the study area, some households lack tangible assets and houses are constructed with mud, roofed with grass and few zinc roofed buildings. Hence, it is difficult to determine the strength of such houses as collateral to secure payment of loan or property pledged as collateral. Beside, in the communities, there were local moneylenders who have lending agreement with borrowers with very high interest rates. In the survey, we were informed that people go for such money when they are in critical conditions. Otherwise collateral is the main way to secure bank financing.

### 6.5.2 Summary

In the study area, agriculture and forest resource extraction represent the foundation of the local people's subsistence and economic activities. Agriculture land is very important in the lives of household members because almost every household is a farmer household. However, land was not used primarily for food crop production but for the cultivation cash crop (cocoa). There has been continuous demand for land and forest resource exploitation due to population increase, and some households have been allowed to farm in some parts in the forest, especially in Boin river forest reserve. However, that seems not to be enough for farmers

because some are engaged in expanding farms into the forest and others involved in shifting cultivation. On an average, 9% of the agricultural land used by sample households is forestland cleared in the last 10years and it is assumed that in 50 years, large hectares of forests will be cleared. Furthermore, the poor group was much involved in clearing the forest for agriculture activities. This means that REDD strategies need to take into consideration that the strategy will disproportionately affect the poor group.

Moreover, forest income constituted an average of 25% household income, with a significantly higher contribution to the income of the poor households. The key constraints to people's livelihood were weather changes (e.g. floods), pests and diseases that affected crop production. These factors combined with external ones such as imperfect market of farm produce, bad roads affect incomes in the communities. Farm production was also constrained by inadequate access to credit facilities and technology to increase yields. The people in the communities managed risk by falling on assets to build resilience. Besides that, their coping strategies were varied but most people relied on relatives, drawing down savings and in extreme cases, they fall on household assets to maintain their livelihoods.

# 7. PERCEPTIONS AND ATTITUDES OF LOCAL PEOPLE TOWARDS FOREST MANAGEMENT IN THE STUDY AREA

In this chapter, I will look into local peoples' views on forest management. In relation to that, I will present the current policies and the attitudes of the people towards forest management and conservation in general. Finally, I will present the sentiment that remains the strongest in relation to protection, rules governing the state forest and local peoples' commitment levels.

## 7.1 Guidelines on forest management

In the study area, the forests are owned by the state. The management and use rights are under the control of the state through Forestry Division in the district, assisted by forest committees in the villages. Generally, the user rights to forest are formal and people could have access or rights to resources based on permission. Moreover, timber concessions are given to companies through a formalized procedure. Currently, the forest policies in Ghana are guiding principles based on both national convictions and international guidelines and convictions. The principles are embodied in the Constitution of the Fourth Republic, the Environment policies of the new parliament government, the Environment Action Plan as well as agreements emanating from existing projects in the Ghana.

The government recognizes and confirms the rights of people to have access to natural resource for maintaining basic standard of living and be responsible to ensure the sustainable use of such resources. In addition, as part of the integrated land use policy, the forest dependent people are to ensure wise use of the forest and wildlife resources because of economic and life sustaining processes of these resources. The forest policies objectives include management and enhancing Ghana's forest estate and wildlife resources, preservation of vital soil and water resources, conservation of biodiversity and environment, sustainable production of domestic and commercial produce.

Besides that, the policies aim at promoting public awareness and involvement of rural people in forestry and wildlife conservation in order to maintain life-sustaining systems. Policies are meant to develop effective capacities at the national, regional and district level for sustainable management of forest and wildlife resources. However, forest management issue on stool land could have different implications to forest dependent communities due to land tenure, management systems and perceptions. Therefore, the establishment of peoples' perceptions and attitudes toward forest management as well as their satisfaction levels with existing rules that govern forest resources are very important for REDD activities in the villages.

### 7.2 Locally develop conservation measures

We also wanted to know whether the community have any locally developed conservation measures, people said there were community based forest assistance and other volunteers who assist the forestry officials to guard, and control illegal use of forest but they could not execute their duties effectively in some communities because they lack motivation and government support. In the focus group discussions, local people emphasized that there were structures put in place but management functions are lacking and need to be strengthened for sustainable forest use. In the villages, most of the people affirmed they were satisfied with the current state forest management. In addition, they are willing to follow the rules provided there would be proper enforcement of rules in the communities and effective measures to exclude external users. Looking at their responses, we could deduce that the establishment of appropriate rules and regulatory procedures may not work well if the people assigned for management activities are not effective in executing their duties.

### 7.3 local peoples' perceptions

In the Villages, some of the forest committee members found in the focus group discussions told us that they have been reporting several cases of illegal activities, some cases are under investigation, some people are punished and other cases are ignored. In addition, the rights to economic trees on agriculture land seem to be a complex issue in the communities because local people own land but not the state. In the focus group discussions, farmers expressed their dissatisfaction of not having rights to economic trees on their farm lands. Moreover, concessionaires fell some trees, which destroy their crops without compensation. In focus group discussion in Boinso, some people emphasized that they will no longer suffer from that loss but they will rather cut the economic trees for their own benefit if there is no compensation. This tells us that, the government needs to address tenure to trees to retain them on farmlands.

In Adonokrom and Boinsu, the men groups stressed that, those economic trees on their farmlands should be owned by the traditional authority. The women groups also said individual landowners and land users should have rights to naturally occurring trees in agriculture lands. The rights will enable them to retain the trees or fell trees when preparing land for agriculture activities. Besides that, parts of trees could be used for poles, fuel wood and the heavy logs could be used for charcoal production. This could prevent people from cutting trees in the forests. Considering these statements, we could deduce that REDD implementation in Ghana need to address the issue of rights to economic trees on farm lands

in order to determine the right to carbon credit from carbon sequestration and carbon stock which might derive from ties to the land or rights to trees.

In Ghana, Customary Land Secretariats are offices established by local land owning communities with the support from the government to improve land management and administration. The office performs various functions but most of the people were emphazing the clarification of ownership and user rights in the communities. In addition, the office facilitates greater awareness of land rights and responsibilities among the vulnerable groups: poor landless families, women, tenant and physically changed. In the communities, the people that expressed dissatisfaction confirmed that the local elites pose challenge to the functions of the secretariat such that it cannot deal with land and forest issues. There were other power resources that the people mentioned, which were influencing the work of the secretariat and these included wealth, threat, political and traditional legitimacies. However, it does not mean that the secretariat performs badly in general. Generally, based on these views we asked people to respond to how they were satisfied with rules that govern use and management of state forest and the responses were as follows:

**Table 7.1 Satisfaction with rules that govern use and management of the state forest by location**

| Villages | Very dissatisfied | Somehow dissatisfied | Somewhat satisfied | Very satisfied | Total |
|---|---|---|---|---|---|
| Adonikrom | 3(10.0%) | 4(13.3%) | 10 (33.3%) | 13(43.3%) | 30 |
| Boinso | 3(10.0%) | 3(10.0%) | 8(26.7%) | 16(53.3%) | 30 |
| Jensue | 3(10.0%) | 2(6.7%) | 13(43.3%) | 12(40.0%) | 30 |
| New Yakasi | 5(16.7%) | 2(6.7%) | 5(16.7%) | 18(60.0%) | 30 |
| Sewum | 6(20.0%) | 5(16.7%) | 7(23.3%) | 12(40.0%) | 30 |
| Asantekrom | 0(0.0%) | 5(10.0%) | 15(30.0%) | 30(60.0%) | 50 |
| Total/percentage | 20(10.0%) | 21(10.5%) | 58(29.0%) | 101(50.5%) | 200 |

In the survey, about 51% respondents said they were very satisfied with the rules that govern use and management. In New Yakasi, we were told in the focus group discussions that they receive income from timber companies in the form of compensation, which is not shared among households but used to provide base infrastructure in the communities such as schools, health centres and to develop sources of regular water supply. Currently, there is improvement in community involvement in forest management in some villages because NGOs are

facilitating meetings and in previous meetings, forest related issues were discussed. In the villages, we were told that there were forest management committees selected by village leaders acting as legal entity as prescribed by the forest and wildlife policy in 1994 to assist forest officials in forest management. However, the selection of the forest committee members in the communities was not transparent because it is usually influenced by the elites in the communities to protect their interest. As a result, some members have easy access and over extract forest resources without caution. Moreover, there is no clarity in forest policy governing NTFPs. Implies that, there is a weak institutional framework regarding the collection. The NTFPs continue to be considered as marginal products that have not received desirable attention for intervention and management by the government. However, collection of NTFPs contributes significantly to household nutrition, food security, health and income especially during off farms season (Ahenkan and Boons, 2008). Furthermore, households in forest communities supply NFTPs to large markets without restrictions. It was observed that, the trade and use of plant products has assumed a wider dimension because plant medicine is used to treat various diseases and is being traded on local markets. In the focus group discussions, it was confirmed that most of the medicinal plants were obtained from the forests. In the focus group discussions, in both New Yakasi and Adonikrom it was revealed that the collection of these resources, easily lead to deforestation since some trees roots are needed and the trees that are uprooted are not replaced. In addition, traditionally people cut down tree to extract honey with the help of fire, which usually result to fire outbreak in the forests.

This tells us that REDD implementation may need consultation and collective action of the resource users for effective forest management regardless whether the resources are found in individual or communal land. Looking at organization of common property management at the village level seems to be complex than household level because there are more resource users who have wider range of interest and capabilities, but effective coordination may solve the complex issues related to management, which will eventually lead to sustainable use of resources.

### 7.4 The local people's views about forest policy

Forest issues are usually related to land, diverse livelihoods and different interest areas. These issues vary from place to place and even vary among people in the same community. Though the pattern of forest problems are common in many countries and these may include strict control, inequitable access to forest resources, ill informed public, inflexible forest institutions

and others. Concerning the framework for studying environmental governance systems in figure 3.2, economic actors can influence political actors to change institutions governing the policy process: constitutions and collective choice rule depending on state of the resource. Looking at the intension of protection forest, which is thought to be positive, one may support rules because of a reason. Based on that, we wanted to understand the reasons for people satisfaction with rules in the study area and to establish that points were raised regarding forest management to understand their reasons.

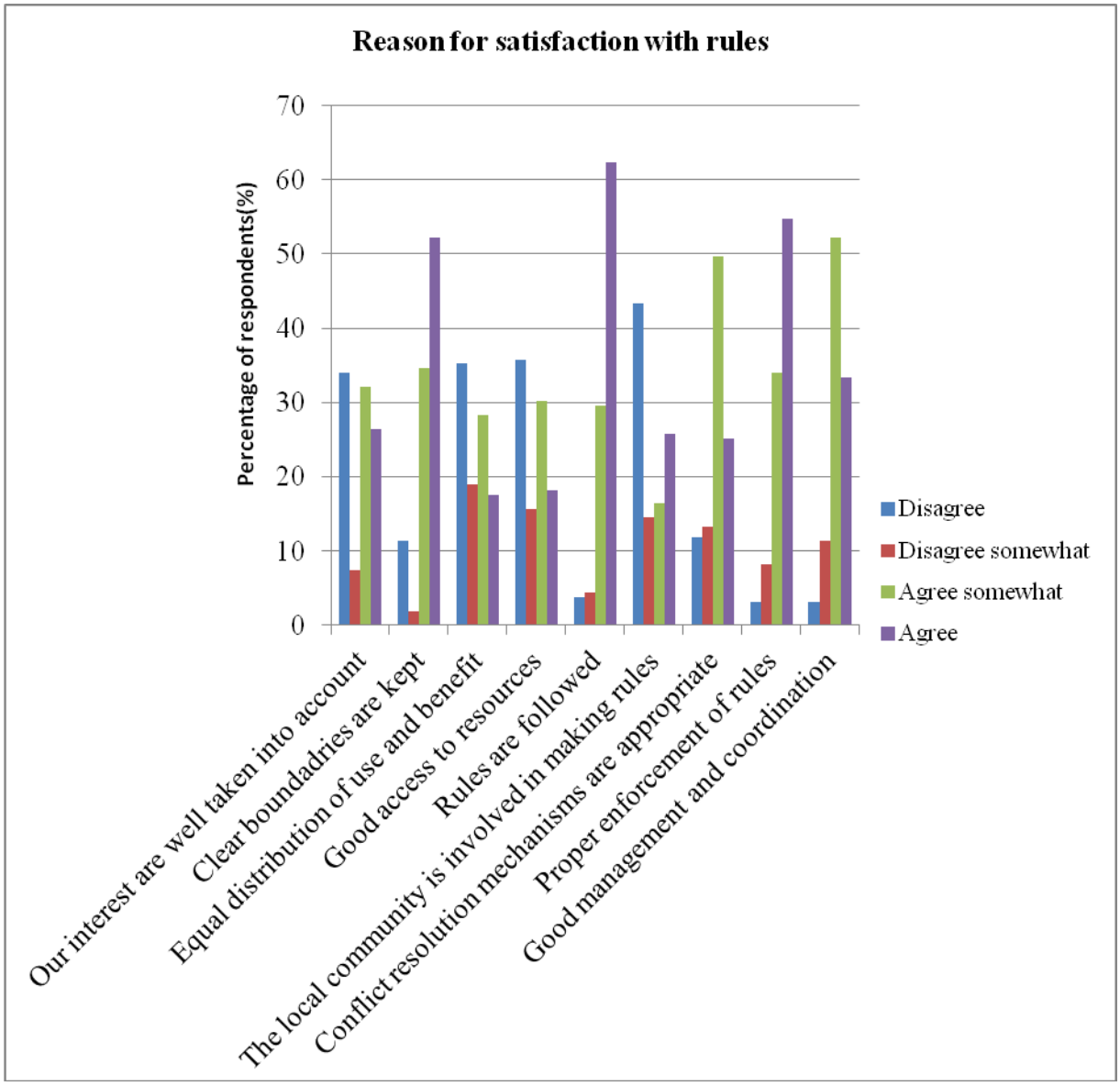


**Figure 7.1 Local people's responses on reasons for their satisfaction of forest rules in the study area.**

Considering the responses in the household survey, 62% confirmed they followed rules as presented in figure 7.2 but in the focus group discussions both men and women stressed that rules were not followed strictly because some people extract forest resources illegally and expand their farms into forests. We also realized that those who said they followed the rules were responding strategically by emphazing again that there was proper enforcement of rules. Furthermore, some people disagreed concerning good coordination and management. They said it seems there is hidden arrangement between encroacher and forest officials because several cases were reported but no legal action was taken against the people involved in such act. In the men's focus group discussion in Jensue, we were told that they see a lot of people felling timber tree without official permit or notice to the local chief. Some people go to the border between Ghana and Cote d'Ivoire for illegal resource extraction. There is no proper monitoring by forest officials to control the illegal activities. However, in the communities, people confirmed that clear boundaries are kept and there is less conflict over land issues. .

In the focus group discussion in Jensue, people expressed their feelings that their rights have been abused because they see external people illegally extracting forest resource without caution but they could not benefit from the trees on stool land. However, people confirmed that they get equal use and other benefits from land because they belong to the same stool. All members enjoy the social responsibility agreement contract signed by concessionaire to provide some services to the communities. In addition, proportions of timber stumpage fee given to the traditional council and district assembly are used for development of the communities.

In the focus group discussions, we were told that their interests are only taken into account when politicians need their votes but usually ignored them after elections. This tells us that political will is weak and must be strengthened and REDD implementation should also focus on strengthening political institutions both national and the local levels. The key political institutions in this case may include village chairman, elected village leaders and movement groups assisted by NGOs to increase local people participation in decision-making processes and involvement of forest management. The participation may influence their interests for proper planning of REDD activities in the communities.

### 7.5 Followed rules in the communities

Moreover, looking at the responses to satisfaction of rules, we realized respondents could have different feelings regarding guidelines, which were enforced to govern use and management of state forests. These could influence the way they follow rules in the villages

and to ascertain information regarding behavior towards rules, we asked people how they feel about the rules and the attitude towards the rules. The following was their response:

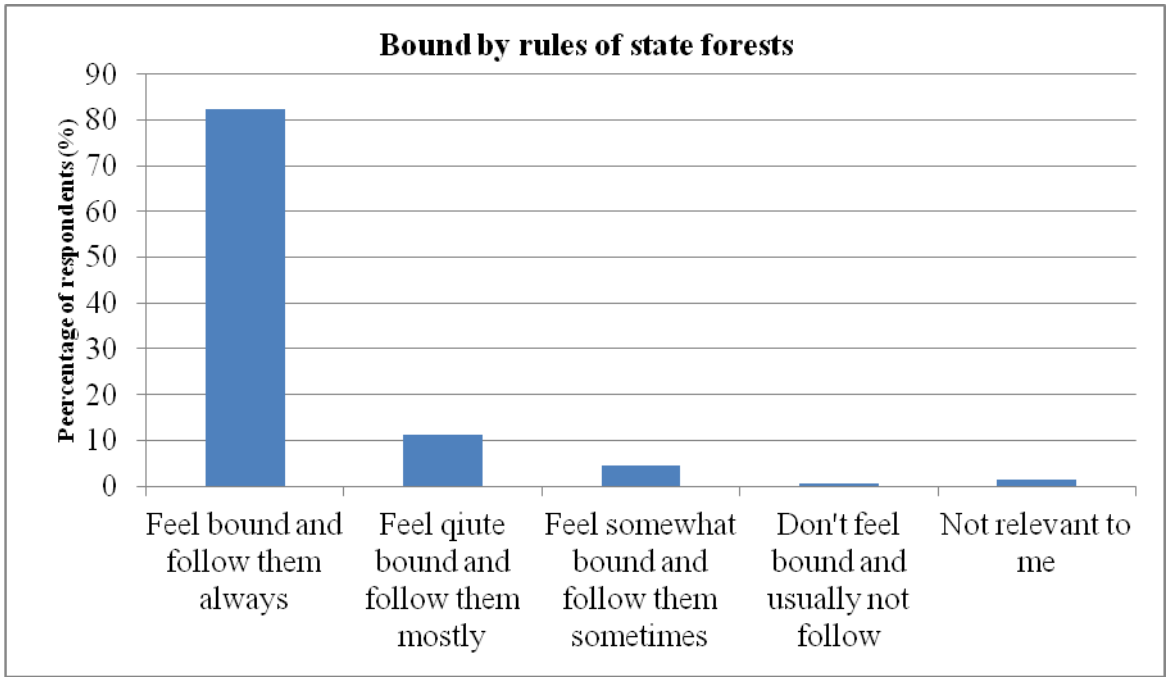


**Figure 7.2 Respondents feeling bound by the rules that govern use and management forests in the study area.**

A greater percentage of respondents as presented in 7.2 feel bound by the rules that govern use and management of the state forest and follow them always. Whereas, in the focus group discussions, it was revealed that there were no strict rules and community members were not mindful of illegal activities. We could deduce from their responses that some people did not know that they have no rights to forest resources for commercial purpose or access to resources in areas given to concessionaires. Whereas others could pretend they were not aware. Others feel somewhat bounded and follow them sometimes because they extract resources without written permit.

Some household heads said the rules were not relevant to them and we could see piles of forest products in their houses both in storerooms and outside their houses. Moreover, there were businessmen that were not engaged in farming or in forestry. This group said they do not feel bound and usually not follow the rules because they were not engaged in forest resource extraction but consume forest products such as bush meat, wild fruit, mushroom, charcoal and fuel wood. In relation to this response, change of attitude is very important to help reduce

over extraction of resource. The financial position of these people could influence the over extraction of forests resource because of higher consumption pattern.

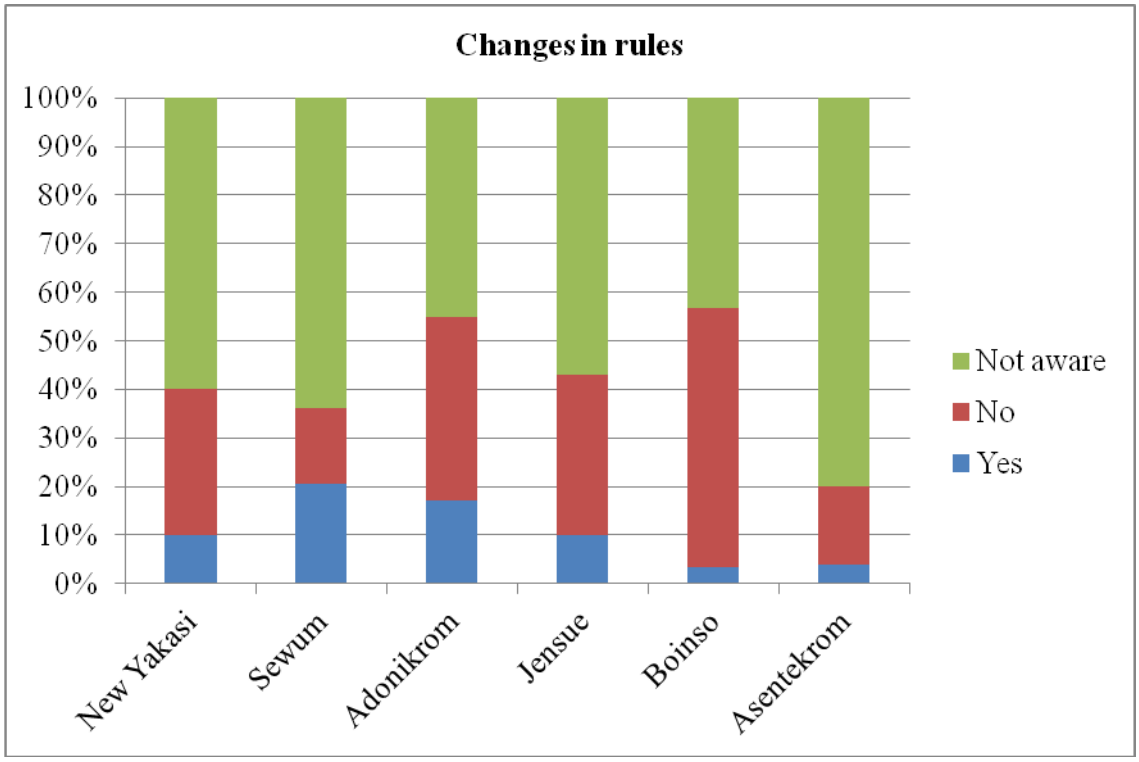


**Figure 7.3 Local peoples' response on changes in the rules that govern use and management of state forest.**

In the survey, it was revealed that, most people were not aware of any changes of rules that govern use and management of the state forest in the past 5 years. This could mean rules regarding forest were written or documented and not easily accessible to forest fringe communities. Besides that, it indicates community members' involvement in decision-making processes and dissemination of rules that govern the state forest was low. Furthermore, the people with no formal education had little information about changes in forest laws since they could not understand past policies and majority were not involved in forests related issues.

Small percentages of respondents claimed there were changes of rules as against higher percentages who said they were not aware in all the villages. In Sewum, 17% confirmed changes in rules and were aware of changes and 53% said no changes in rules. However, 60% in New Yakasi confirmed they were not aware of changes. In general, the percentage of respondents who were not aware and those said no changes in forest rules were high in all the Villages. This could mean the people were not involved in decision making on issue relation to forest or lack information concerning forest rules. This tells us that REDD activities require

the involvement of local stakeholders in decision-making processes to become familiar with REDD policies. There is the need to intensify consultation with the local people to map existing grievances to address institutional failure for easy flow of information.

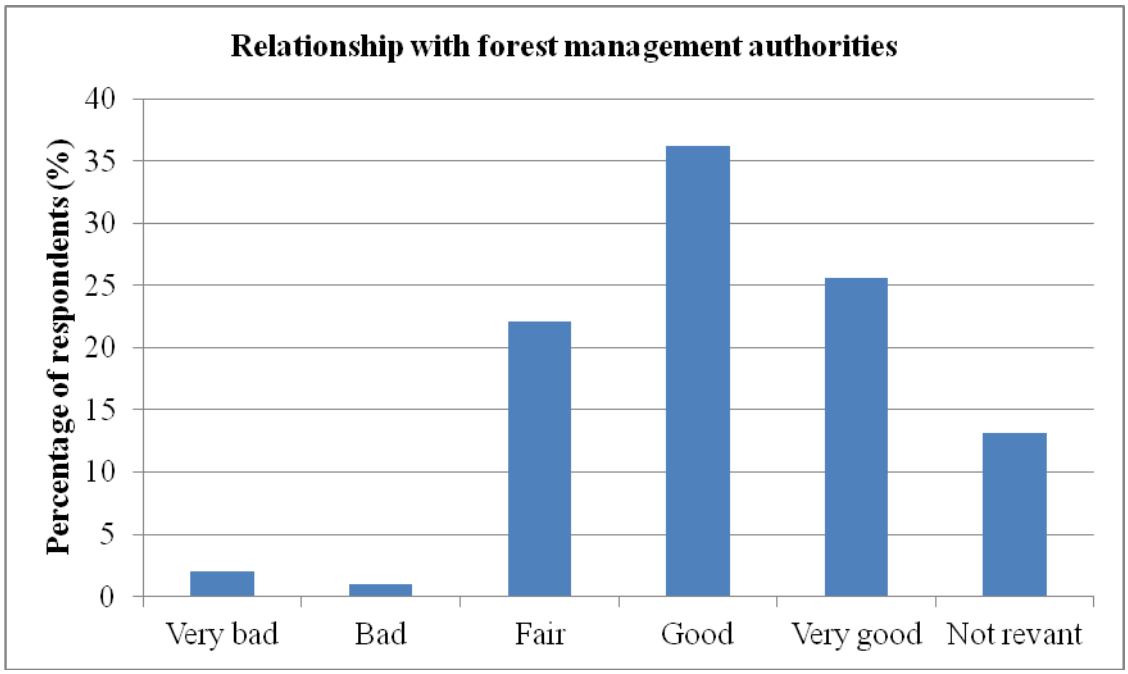


**Figure 7.4 Relationship with forest management authority**

The community members confirmed that there is no ill feeling towards forestry authorities. In the survey, 36% said their relationship was good and 26% confirmed a very good relationship. These positive responses show that there is less conflict between community members and forest authorities. Information from the focus group discussions clearly indicates that the local people have bad feelings towards timber companies that destroy their crops when felling timber trees and it seems forest authorities are behind them. They also stressed that the Government gives logging concessions permit without informing them and there is over logging and improper selection of timber tree without monitoring.

In Adonikrom and Sewum, the men focus groups said the customary laws of the local people recognize community user rights to land and forest resources but the rights are undermined by forest laws because the government only grants user rights to some forest resources. However, in all the villages, people agreed that forest should be protected and to show their interest in forest protection, they have selected various committees and groups to assist forest authorities in management. These groups include Community Based Forest Assistance (CBFA) and

Globally Significant Biodiversity Assistance (GSBA). These groups patrol, clear boundaries and report illegal activities to forest officials. We were also told that their efforts can only be realized when forest officials are ready to take legal actions against all illegal activities in the communities. This could mean that not all cases reported by the forest assistance are handled well or investigated.

### 7.6 Summary

In the villages trees designated as forest and economic trees (timber) on agriculture land are owned by the state. The management and rights are under the control of the state through the Forestry Division and assisted by village forest committees. The extraction forest resources in commercial quantity without permit, felling of trees and clearing forest for the expansion of farmland are illegal. In the villages, people's perception and attitude towards forest management were varied. In the survey, majority said they were satisfied with the rules that govern the state forest. They said the government ensures payment of loyalties to stool by timber companies and they again fulfil the social responsibility agreement.

Nevertheless, in the focus group discussion, people expressed their dissatisfaction concerning tenure on trees. They said, farmers should own timber trees on agriculture land because they take responsibility of those trees. They also stressed that some people engage in illegal activities in the forest, but no legal action has been taken against them and it could mean that those people have political backing. Moreover, committees have reported several cases, some are under investigation and others are ignored. We were also told that their interests were not taken into account, which make people to be involved in illegal activities. For instance, cutting trees for agriculture activities seems to be normal but cutting trees for immediate economic benefit is illegal. In the survey, people answered in a strategic manner when we asked whether they feel bound by the rules of the state forest, 80% said they feel bound and follow them always but in the focus groups discussion, it was revealed that people do not follow rules. Considering various responses from the focus groups, we could see that majority of the people were not following rules. In addition, some people in the survey could only mention past forest policies and were not familiar with the current forest rules or not aware of changes in the forest rules. This was clear indication of low community involvement in decision-making processes and issues related to forest management. However, some people were satisfied with good access to forest resources, no conflict regarding distribution of use

and benefit from forest. This could be a signal that REDD benefit sharing may not result to conflict in the communities.

# 8. EXPECTED EFFECTS OF INTRODUCING REDD–AOWIN SUAMAN DISTRICT, GHANA

This chapter presents insight about the type of REDD policies the local people would prefer. In line with that, I will look at the expected effects of introducing REDD in the communities, expressions of local people about getting compensation for loss income in relation to stop clearing forest for agriculture activities, stop harvest of wood resources from the forest, which include poles, fuel wood, timber and wood for charcoal. In addition, I will evaluate the local peoples' response in relation to effects of the compensation and who could be the managers of REDD as well as the associated issues that might arise with such a programme. Finally, how issues related to the programme could be best handled.

## 8.1 Awareness of the role forests play in climate change

In the household survey, about 88.5% respondents said they were aware that forests play very important role in climate change. The people mentioned many changes in relation to deforestation, which were categorized under poor quality of air, drying of water sources, change of biodiversity and irregular rainfall pattern. Specifically, 53% said deforestation is associated with irregular rain pattern, which affects agriculture production and 23.3% mentioned global warming. This could mean that the local people are sensing the effect of climate change notably agriculture vulnerability to climate change. The response of the people in the villages clearly showed they were aware that deforestation has negative impact on the environment, but depend largely on forest for their livelihoods.

**Table 8.1 Dependency on forest clearing for the expansion of agriculture production**

| Responses | Adonikrom N=29 | Asantekrom N=50 | Boinso N=30 | Jensue N=30 | New Yakasi N=30 | Sewum N=30 | Percentage (%) (N=199) |
|---|---|---|---|---|---|---|---|
| Not dependent | 13 | 29 | 18 | 22 | 13 | 10 | 55.4 |
| A bit dependent | 3 | 3 | 1 | 2 | 0 | 2 | 5.6 |
| Quite dependent | 6 | 12 | 1 | 4 | 8 | 8 | 20.0 |
| Very dependent | 7 | 5 | 10 | 2 | 9 | 4 | 19.0 |

In reference to table 8.1 above, we wanted to know how people would be depending on clearing forests if they intended to expand their agriculture production. In the survey, 55%

said they would not be depended on forest for agriculture production. This response could mean REDD will make situations in the communities better and in that sense they should respond positively to REDD. On the other hand, some were capable of improving their permanent agriculture land and the size could be enough for reasonable production. Some people said they would be very dependent on forest for agriculture production. In Asantekrom and Boinso, some people said, they would be depended on forest because they could not manage the agriculture land and they wish the government could allow them to use the adjacent forest for agriculture activities. Other said they would be dependent and still maintain the permanent agriculture. This response was coming from household heads with large family sizes. They emphasized that their agriculture land has lost fertility due to continuous cultivation for several years without allowing the land to fallow.

### 8.2 Possible ways of addressing farm expansion into forest

Moreover, the local people emphasized that majority could not improve the fertility of permanent agriculture lands and had to be engaged in shifting cultivation and this practice finally result to clearing the forest. In the focus group discussions, people suggested that REDD compensation in the form of cash could be used to improve the fertility or purchase farm inputs to increase production in permanent agriculture land. This might help to avoid expanding farms into the forest rather than looking for fertile land in the forest. In addition, fuel-efficient stove could be provided to reduce energy they need, people could also plant more tree in their farms for the supply of building materials and fuel wood.

In order to ensure the type of compensation local people might be satisfied to cover the loss of income from forest resources, we asked various type of payment that might motivate them to reduce their forest use and their response were as follows:

**Table 8.2 Communities' wishes of compensation for lost of income from forest resources**

| Response | Disagree | Disagree somewhat | Agree somewhat | Agree |
|---|---|---|---|---|
| By payment | 3.5% | 4.0% | 22.1% | 70.4% |
| Increase employment | 1.0% | 0% | 21.0% | 77.5% |
| Alternative sources of livelihoods | 5.0% | 3.5% | 30.5% | 61.3% |
| Better social service | 1.0% | 2.5% | 24.6% | 71.9% |

There was variation in response, but 70% agreed compensation in the form of cash payment could help to reduce dependency on forest resources for their cash income and subsistence. They stressed cash could be good substitute provided it can cover the loss of income from forest. Others were of the view that the income flow could be terminated in the near future compensation should rather be in the form of increasing employment opportunities and that will absorb the young people who engaged in farming and illegal logging for their sources income. Besides that, 61% agreed REDD compensation will be an alternative source of livelihood that would enable them to be engaged in meaningful off farm activities. In the focus group discussion, especially the women said REDD should provide alternative livelihood activities that they could be engaged in order to avoid the collection forest resource to increase family income.

Moreover, 72% agreed REDD should provide better social service as a way of compensating community members for lost of income from forest. We asked how could that benefit individual landowners and we were told that if land is generally regarded as stool land then there should be collective agreement. In addition to that, in the focus group, both men and women revealed that income obtained from the forest resources is used to pay children school fees and to increase savings as a security for emergencies such as rushing patient to far distant hospitals. Therefore, compensation should be provision of schools and hospitals in selected communities to ensure easy access to health services.

However, those who were reluctant to accept other forms of compensation said, REDD should focus on destructive farming activities by providing modern methods of farming and protect the remaining forest frontier in the communities. The compensation may not be adequate to satisfy beneficiaries. Modern methods of farming will make them better off than all the types of compensation mentioned in table 8.2 above. Moreover, in the focus group discussions, those with large cocoa farmers proposed the introduction of modern methods of farming practices would improve intensification of cocoa production on permanent farm lands.

It is important to note that the type of compensation that will be accepted in the Villages will depend on how REDD incentive mechanisms will cover the loss of income experience as result of stopping deforestation and forest degradation which is referred as opportunity cost. It is alternative forgone. "Opportunity costs are the foregone economic benefits from the best alternative (non-forest) land uses, e.g., the minimum amount a landowner must be paid to be willing to stop deforestation and forest degradation/DD (compensation payment)"(Angelsen,

2008:2 0). Furthermore, cooperation and consensus building are very crucial in the communities for the acceptance of compensation.

### 8.3 Institutional capacity and governance

The response of the people shows that the implementation of REDD in the villages depends on general accepted and well functioning management systems. The local management systems that are straggling with over-use of forest resources and declining of forest cover need empowerment or motivation. In Adonikrom, community forest based assistance was very active in assisting forest officials, but lack power to execute their duties. The people in the village emphasized that the group needed government agencies that deal with forest issues to collaborate with them to facilitate equitable forest conservation and management. The support that would be given to the local committees could be of great help to increase awareness and capacity to improve law enforcement in the communities. The people also said, chiefs have no power in issues related to forest regulations. The power to control forest activities comes from national level.

This makes it difficult for traditional authorities to legal control activities in the forest. This tells us that the willingness to reduce deforestation depends on what motivate individuals and the extent of government commitment to regulate forest use by strengthening policies. Concerning the framework for studying environmental governance systems, the REDD implementation will introduce new resource regimes- institutions that will govern access to resources and interactions between actors. This will further change pattern of economic actors' preferences and actions for outcomes. However, economic actors can influence political actors to change institutions governing access to policy process; constitutions and collective choice rule for resource use.

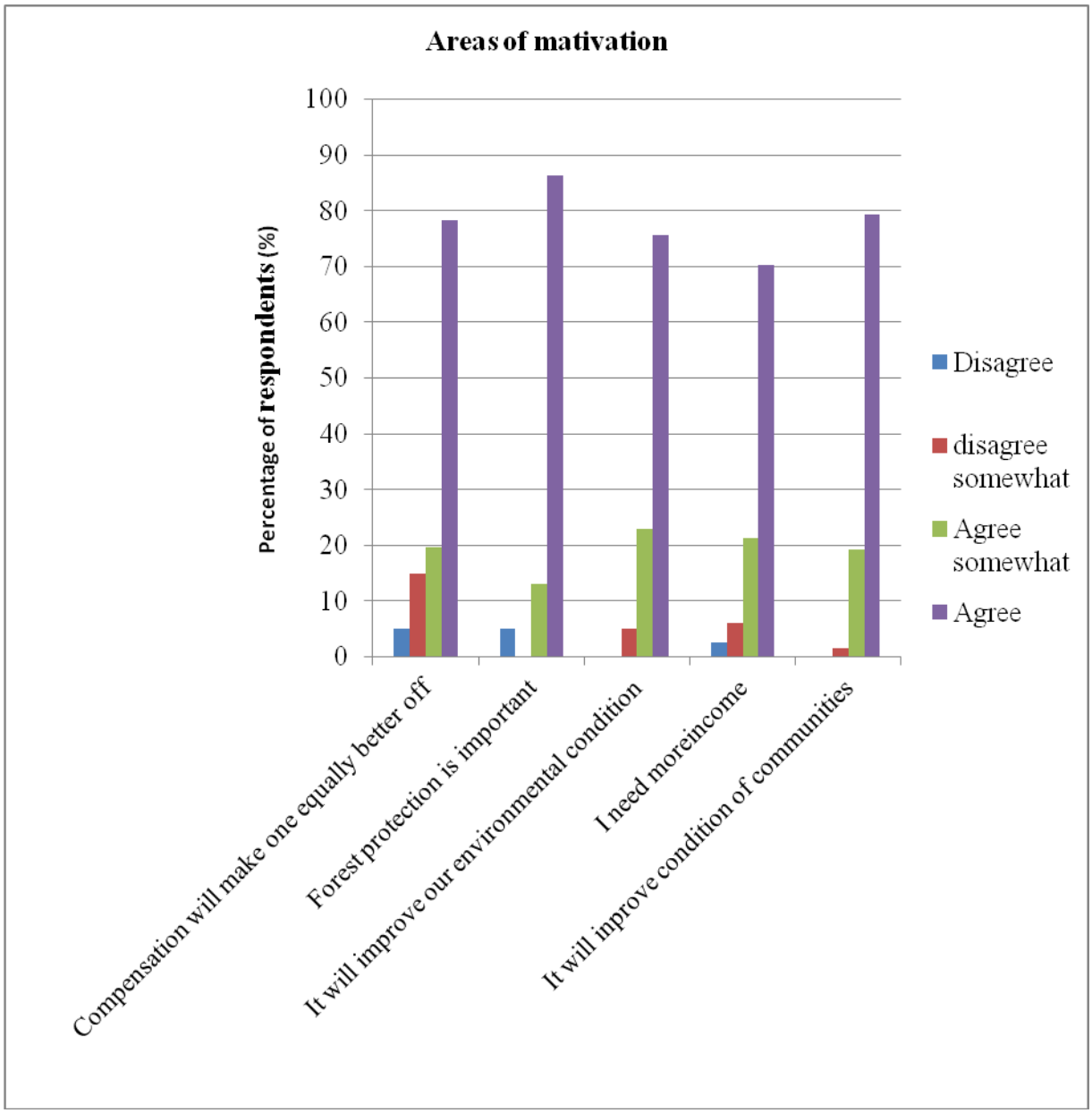


**Figure 8.1: Types of motivation to stop clearing forest/ stop harvesting wood resources**

In all the communities, people responded positively towards all areas of motivation. Overall, 88.5% respondents confirmed forest play very important role in climate change and that reflected in their reasons for motivation 86.3% agreed forest protection is important as against 15% disagreed forest protection. There were some farmers stressing that their family sizes were increasing and they would like to expand farm size to meet family consumption demand and income. However, 79.3% confirmed forest improves conditions in the communities and 76.3% agreed forests improve the environmental conditions. About 70% said they needed more income and could be motivated by REDD. Coincidentally, similar studies conducted in Tanzania reported that an average of 70% also said they needed income and could be

motivated by REDD (Dyngeland and Eriksson, 2010). This could mean compensation in the form of cash could be used for off farm activities to improve livelihoods. In the focus group discussion, most people said forests protect water sources and serves as windbreakers in the communities. Forest is the sources of foods and meditational plants. Hence, forests should be protected. Considering other findings, respondents were consistent with protecting the forest for their own lives. As much as people were positive towards forest protection in relation to REDD implementation, it was interesting to see the poor who depended much on forest resources expressing their doubt about REDD compensation concerning how much will be given to fuel wood, charcoal and other forest resources but were willing to accept compensation. Moreover, in focus group discussions in Adonikrom and Boinso, migrants who had no full ownership of land expressed their feeling that compensation is most likely to be diverted to individual landowners neglecting those that actually depend on trees and other forest resources for their livelihoods. They may only benefit from REDD incentives provided rights to carbon is based on trees but not on land because the trees found in agriculture land were planted by some of them and they also take care of trees on farm lands given to them through negotiations.

In general, the reasons for motivation could be related to REDD compensation as a win-win instrument, where stakeholders have variety of reasons. For developing countries, governments view REDD as an opening of new source of financing for national priorities. For donor countries, it could be a low cost option for carbon offsets. Environmental NGOs see REDD compensation as a powerful tool to generate additional resources for biodiversity.

The rural poor needed income means to improve their forest tenure rights and financial support for development. The private sector view REDD as additional sources of funding. The political elites see REDD as another income opportunity. Multilateral development banks are of the view that REDD can open up new ways of doing business to maintain global public goods. Whereas Intergovernmental organizations it offers new areas of intervention in technical assistance and new funding source (World Bank 2008). Narrowing to the types of motivation to reduced deforestation in the communities may need effective chain of coordination from the international to local level in order to achieve a common goal. Therefore, the efforts of tackling Climate change in relation to deforestation needs holistic approach.

### 8.4 Management authorities of REDD

In order to establish peoples' expectations and thoughts about REDD implementation in their villages, we asked which group of authority they thought could manage REDD project well in their villages. The response was varied. People were not much in favour of government official but were positive towards specific selected committees, as presented below:

**Table 8.3 Authorities that will responsible for REDD management**

| Programme management | Disagree | Disagree somewhat | Agree somewhat | Agree |
|---|---|---|---|---|
| Government officials | 10.1% | 7.6% | 36.9% | 45.5% |
| Village leaders | 12.1% | 11.1% | 24.2% | 52.5% |
| Specific selected committee | 7.6% | 9.6% | 25.3% | 58.1% |
| NGOs | 5.1% | 2.5% | 44.4% | 48.0% |

Looking at variations within the data showed how people were defending the authorities that could manage REDD in the villages. Within villages, 77% in Sewum stressed, they would prefer village leaders and 78% in Asantekrom said special selected village committees. On average 56% in all the villages mentioned NGOs. In focus group discussions, both men and women groups emphasized special selected committees. Others said, government officials special selected committee supported by NGOs. They had the feeling that transparency will be lacking if REDD is to be managed by only village leaders. In women groups, we were told that some of their husbands control their finances and might be selected as committee members or village leaders to manage REDD in the villages. Implies that, if they are to be left alone to manage REDD without the support of NGOs or government officials, the capacity of the programme to reduce poverty and secured sustainable development locally may not be realized.

In New Yakasi and Sewum, people said they preferred NGOs to the government officials because they believe NGOs will be neutral in certain issues and could take management issues and other related responsibilities in the communities. Village leaders could only support the NGOs in certain areas. Furthermore, they also emphasized that the village leaders could direct priority areas. It was also interesting to see group members debating about the inclusion of government officials. Some people expressed their feelings about the bureaucratic nature of the government officials may finally result to be something else but not the main objectives of REDD project. Besides that, the government officials will finally

consist of the district forest officials and the forest committees in their communities and their usual ways of dealing with forest issues. Others said REDD is about forest and government delegated agencies such Ministry of Land and Natural Resources and its sub-units should be involved. We could see that they needed representatives from the three areas to manage REDD activities. However, the management will depend on the government willingness to engage NGOs in REDD activities.

### 8.5 Commitment areas to avoid deforestation

Concerning resource use, local people have different interest in forest resources and over extraction of these resources leads to reduction in forest size. In addition, some depend on forest to the extent that they may need compensation to reduce activities that cause deforestation in the communities. In relation to that, we asked respondents about specific deforestation activities that they were willing to stop if provided with compensation and the responses were as follows:

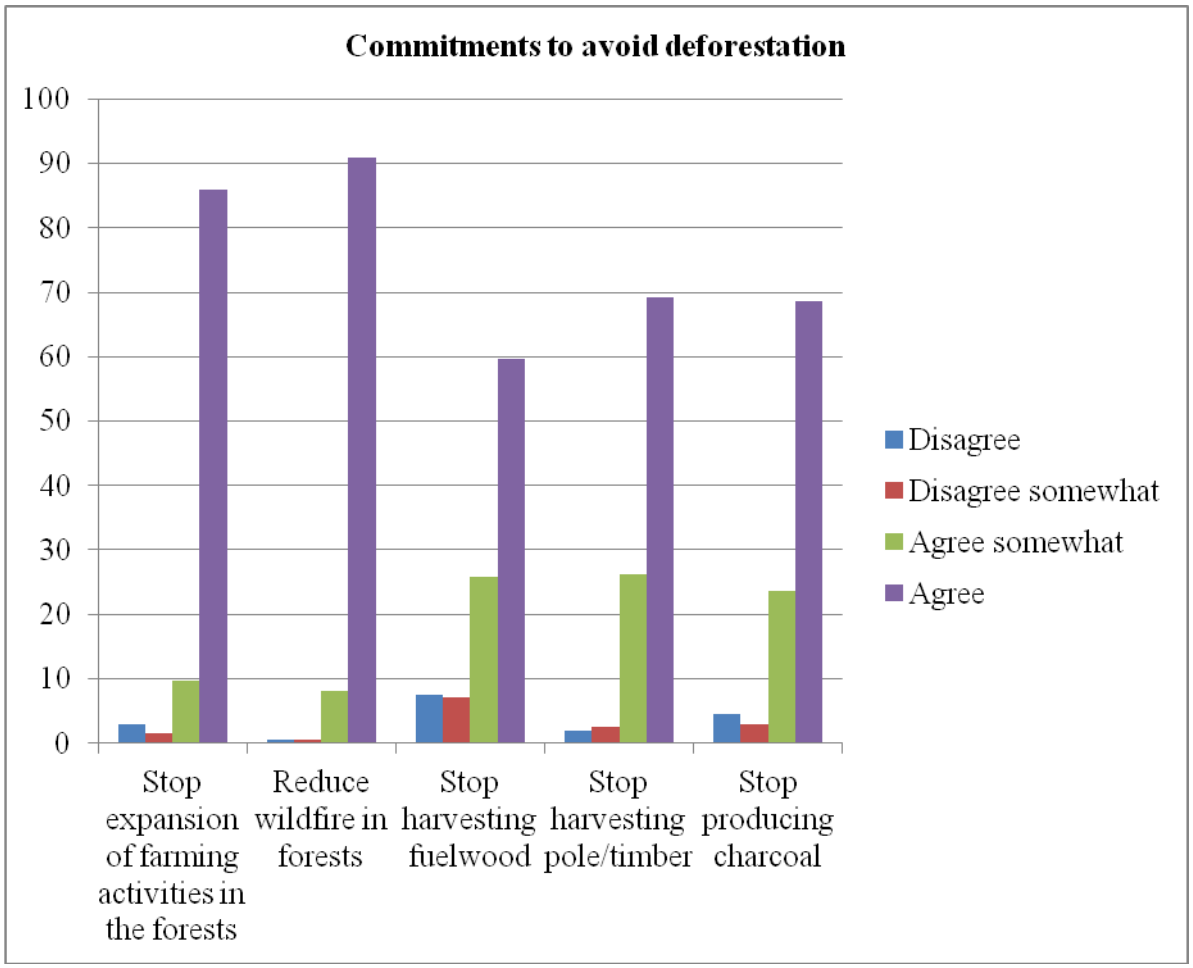


**Figure 8.2 Commitments to avoid deforestation in the communities if compensated.**

In the survey, greater percentage of the people positively responded that they would agree to reduce forest related activities mentioned above. According to our previous findings, fuel wood 92% was the largest energy, the poor depended on it as their main source of energy and 9% forestland was cleared for the last ten years. Considering these two major areas, 59% felt they could stop harvesting fuel wood on condition that there will be alternative source energy. In relation to clearing of forest about 86% greed, they would stop clearing the forest if compensated. The less poor groups felt they could afford alternative sources of energy such as stove, gas and electricity provided compensation could cover the loss of forest resources. In the villages, harvesting of poles and timber were dominant among the less poor who seem to be engaged in illegal chain saw operations. The poor usually cut poles for construction of houses, engaged in charcoal production and dominated in the collection of fuel wood.

However, the extraction pole and charcoal production were not much on sales but household use, which they believe they could stop if more trees are planted on farms. Those who were not willing to stop were in doubt whether REDD will be able to compete with opportunity cost. How much REDD compensation will cover farming activities in the forests especially cocoa production. However, majority agreed and emphasized that if compensation could cover what they are expected to take from the farms, it will be better off to be under REDD scheme. The poor said they could not afford cocoa fertilizer and labour to clear forest in large hectares and therefore compensation would be better off. Their responses tell us that extraction of wood resources was not their main concern but expansion of farm sizes into forestland. In Adonikrom, people emphasized in the focus groups that forest management is very important and they would like to avoid clearing the forest but have no alternative livelihood activities apart from farming. In Jensue, people said cocoa is the main cash crop in the villages and its production is labour intensive and REDD compensation will solve the problem of labour cost. Besides that, cocoa production requires many inputs and other factors may be combining to give a maximum yield.

**Table 8.4: Issues that could be associated with REDD programme in the study area**

| Issues associate with REDD programme | Disagree | Disagree somewhat | Agree somewhat | Agree |
|---|---|---|---|---|
| Overall income will be better | 0% | 1.0% | 23.7% | 75.3% |
| It will result in corruption | 19.2% | 17.2% | 31.3% | 23.3% |
| Unequal distribution of payment | 14.6% | 17.2% | 35.4% | 32.8% |
| Payments to land owners only | 22.7% | 19.7% | 34.3% | 23.2% |
| Less conflicts in the village | 6.6% | 5.6% | 40.4% | 47.5% |
| Increase privatization of land | 11.1% | 23.2% | 40.9% | 24.7% |

Moreover, concerning issues that could be associated to REDD programme, 75.3% as the highest agreed that the overall income in the communities would increase. The farmers asserted that there are farming seasons they experienced crop failures, which has a corresponding reduction in family incomes. With REDD scheme, what they will take as compensation will replace the of crop failure. In the survey, people affirmed that there are clear demarcations and land entitlement in the communities. Therefore, REDD programme might strengthen land ownership and rights for compensation. The people in all the villages said conflicts are less among family members and community levels. They have never experience conflict related to land because traditional land distribution and ownership are clear. There were some people who believe the compensation will result to corruption if REDD programme will be handled by community members alone. In Jensue and Adonikrom, focus groups revealed that corrupt practices is likely to creep into REDD scheme if mechanisms are not put in place to check those who are to manage REDD activities.

Looking at their responses, we could deduce that those who disagreed that payment will only go to land owners were of the view that REDD compensation in the form of investment to land owners could create job opportunities to those engaged in illegal activities in the forests. Those who agreed to compensation would only go to individuals, emphasized that there are some people that owned land in the communities and payment will eventually result to unequal distribution if payment will be going to the people alone. What will then happen to those without land but engage in illegal extraction of forest resources for their livelihood? REDD activities should involve that group people in the communities.

This was a major debate among groups in the villages. In some groups, they come to an agreement that REDD could provide social amenities in a form of compensation over stool land which could be benefited by all members just like the social responsibility agreement signed by concessionaires to provide some services to concession area adjacent to some villages. The men groups were also concerned about their livelihoods. They said alternative livelihood activities would help to avoid deforestation and the overall income situation will be better in the communities. In addition, some household heads expressed their worries about privatization in the sense that, land ownership in their families is based on inheritance and it starts from the senior most persons until it gets to the junior

ones. Hence, benefit from land is likely to go to the elderly, just as the senior members in their families have control over cocoa farms. Despite the inheritance based on matrilineal system.

## 8.6 Handling of foreseen problem

In the communities, people raise many issues related to foreseeing problems and the best ways they could be handled. In the survey, 172 household heads stressed that forest governance is likely to be a problem. The political actor and the economic actor interests are conflicting. Traditional authorities own the land and the state owns forests as well as economic tree on farmlands. There is the tendency that farmer may like to claim ownership of tree on farmlands in order to enjoy carbon credit. They said the best way to solve the problem could be that the government to give some percentage to land owners for taking care of the tree on farm lands.

There were others who emphasized that the existing forest policies may not favour REDD in the villages because local people are not much involved in decision making processes and there is no transparency in forest related issues. The consultation and involvement of the local people in decision-making processes need to be strengthened for REDD to successful in the villages. They also added that International organizations, the state and local leaders should be consistent in issue related to performance and verification. Cocoa farming will be an obstacle, but people emphasized that forest policies should be revised to include cocoa farming and forest related issues.

The government should be clear whether in favour of cocoa production or REDD activities. We could deduce from this statement that the government could be relaxed on clearing forest for cocoa production or the people have the feeling that the government could support them to get enough from REDD compensation to cover what they may be losing from the cultivation of cocoa. They also said there is the feeling that transparency will be lacking because financial allocation will be one-sided if management is under local leaders or the government alone. They can only trust selected community leaders, civil society and REDD programme policy board who will give directions to REDD payment scheme.

## 8.7 Summary

This first phase gave an insight about the type of REDD policies that local people would prefer. In the villages, there was high level of participation. Despite a variation in responses, people were positively towards REDD and gave various suggestions on how REDD payment could be handled. People who could handle REDD activities in the communities were also identified and majority agreed that the introduction of REDD incomes in the community would improve livelihood whether compensation targets individual landowners or the entire community. Most people who agreed to REDD gave promising expressions to avoid cutting trees and expanding farms if compensation will actually cover income they will be losing from these activities.

However, some people felt reluctant and were not certain about the legitimacy of the project but accepted the implementation and others felt they did not depend on forest in the focus group discussions but still agreed to REDD activities in the communities. Above all, the chiefs, clan heads and other opinion leaders expressed their negative sentiments about the continuous reduction in forests size and associated problems such as floods, drying of water sources, and rapid change of biodiversity among others. These traditional leaders were much interested in the introduction of REDD in the villages.

# 9. CONCLUSION AND RECOMMENDATION

## 9.1 Conclusion

The main theme of this research was to examine whether the introduction of REDD could ensure reduced deforestation, alleviate poverty and secure more sustainable development in a high forest zone, Aowin Suaman District, Ghana. In relation to that, I wanted to look at the following research questions: What are the main organization and institutions involved in management of land and forest resources and how they deal with land issues? How important are forests for peoples' livelihoods and how does that vary across social economic groups? What are the perceptions and attitudes of the local population towards forest management? Last but not the least, what will be the expected effects of introducing REDD in the study area.

To begin with, we found that in Ghana, traditional authorities own land, which is administered in an environment of legal pluralism. However, traditional land ownership is based on allodial title from which all other interests are derived. Specifically, the chiefs or other traditional leaders who act on behalf of that community legally hold the actual title to that land. Their aim is to ensure land security for the benefit of community members. Besides that, chiefs facilitate the distribution of land and try to settle land disputes in the communities. Forests are owned by the state and at the state level, agencies are delegated to deal with land and forest issues. These include Ministry of Land and Natural Resources and its two major divisions: (a) Land Commission and Office of the Administrator of Stool Lands, specifically dealing with land issues. (b) Natural Resource Commission with its units: Forestry Commission and Forest Service Division in the districts deal with forest issues.

The Forestry Commission was established with reference to Article 269(1) of 1992 Constitution, which empowered Parliament to establish Forestry Commission to regulate and manage the use of forestry resources and to co-ordinate related forestry policies. Currently, the commission coordinates with local people and NGOs such as Care International, Katoomba, Forest Trends and others in dealing with land and forest issues in the communities. Furthermore, the Forestry Commission is the REDD implementing agency in Ghana. The NGOs serve as intermediaries between local communities and the government. Despite this coordination in the communities, we found that there is weakness in the enforcement of forest sector rules and forest officials are inefficient to exercise their power to protect the forests, which is causing non-compliance and accelerating deforestation.

Moreover, the traditional authorities are not powerful enough to deal with forest issues because forests are owned and controlled by the state, but they assist in the selection of forest committees in the villages to help in forest management. Besides that, there are traditional norms that regulate the extraction of forest resources. For instance, there are specific days in a week that people are not allowed to go to the forests and collect any product due to traditional belief, but that cannot reduce deforestation. In addition, we found that there are unclear property rights regarding state forests on stool land. It seems "semi legal" for farmers/ landowners to expand cocoa farms into forests but regarded as illegal when farmers fell trees for economic benefit. Despite these challenges, economic and political actors interact in various ways for the use and management of forest resources, which are regulated by both formal and informal rules.

However, we found that forests continue to be under pressure due to population increase and dependency. The government has started a policy review through the Ministry of Land and Natural Resource to protect the remaining resources. This is regarded as the first step to meet REDD institutional requirements after Ghana REDD readiness preparatory proposal (R-PP) was approved in March 2010 at a Conference on the Protection of Forest (CPF) fifth participants' meeting held in Gabon by the World Bank and donor countries.

Furthermore, we found that, forest is very important in the lives of the people. The livelihood for the people includes agriculture activities, dependency on forest resources and non-farm activities. The dominant crop was cocoa and in order to expand farm sizes for cocoa cultivation forests are cut. It seems the cultivation of cocoa is very dependent on clearing of forest because there is no fallow land. Besides that, the search for fertile land for agriculture activities leads to encroachment. As a result, about 9% of forest land has been cleared for agriculture activities in the last 10years and it is assumed that in 50year, large hectares of forest land would be cleared. Looking at the income grouping according to ascending order as poor, medium and less poor based on per capita income, the poorer farmers were much involved in clearing of forest for agriculture activities because they had less capacity to improve the fertility of permanent agriculture land and they were observed having fewer parcels of land. In addition, farmers were not much engaged in food crop production. Rather they depended largely on cash crop (cocoa) production. This is reflected in 1.9% subsistence income and 53.4% cash income from non-forest primary income source, which included crops, livestock and fish. We found that the poorer group depended largely on fuel wood for their source of energy whereas the less poor depended on exploitation of poles/timber because they

had available resource such as labour and chain saw machines. We found that fuel wood and charcoal were the major sources of energy, but fuel wood was largely used because it is not only used for domestic cooking and for heating food but used in small-scale industries such as local breweries, bakeries and soap making. In terms of location, New Yakasi had the highest income obtained from fuel wood but much was for subsistence.

In addition, the poor use pole for construction of houses whereas the less poor were much involved in the harvest of timber. All the income groups depended on forest but varied in terms of the types of forest resource and dependency levels. On an average 34% of the poor income comes from primary forest source and that could be the amount they might be losing if REDD is introduced. In comparison, a medium household derived only 27% of its income from primary forest sources whereas the less poor derived the least of 21% from the same sources. The dependency on the primary forest products decreased with wealthy status because the wealthiest household could afford alternative sources of energy such as kerosene, gas and electricity as well as food sources. We found that an average household would lose $ 1113 per year, which is 25% of income obtained from both forest primary and secondary sources if REDD is introduced in the communities.

Following the responses in the survey, people were satisfied with forest management and benefit sharing, but in the focus groups discussions people emphasized that the royalties paid by timber companies and the social responsibility agreement were not realized and they were doubting whether REDD payment mechanism will ensure fair distribution. We found that though there are institutional arrangements for benefit obtained from logging companies but landowners were not satisfied with the share given to them. The same way they are sensing that policies and institutional arrangements may clarify or define landowners or farmers rights, but there is the tendency that those who will govern the distribution mechanisms for REDD payment may give them the lowest share which can easily lead to bridge of contract. We found that the poorest farmers and people with no formal education were not actively involved in forest management issues. They consider forest issues to be reserved for elites and wealth groups in the communities. Based on this response there is clear indication of weak forest governance, which does not involve various stakeholders and key actors in forest management. We found that people were interested in the protection of forest because what motivated majority of the people was improvement of environmental conditions. They also agreed that REDD compensation will improve condition of communities hence, gave a positive response toward the REDD agenda. In addition, looking at the people responses

indicated that whether REDD payments will go to individual landowners or the whole community will certainly improve village conditions. However, the poor who were much depending on forests for their daily energy source and agriculture activities were a bit sceptical about the legitimacy of the REDD payment mechanism. The group willingness to accept REDD will depend on how much compensation they would receive from loss of income from forest. The same group expressed the fear of elite capture, which may lead to unfair distribution of money.

Moreover, concerning which authorities should be responsible for REDD management; people were positive to using specially selected committees in the villages, which could be supported by NGOs and Government officials but not one authority group. In the focus group discussions, people were positive towards special selected committees. We realized they were afraid of corruption and this could mean that the success of REDD implementation will depend on strict monitoring for transparency and accountability at the local level. In New Yakasi participants in the men's group discussion emphasized that REDD activities should involve the participation of NGOs as neutral entities because they have been experiencing their efforts in relation to environmental protection. The some women groups were positive to better social services. Besides the high percentage of people in the survey accepting increase employment, in the focus groups both men and women emphasized that compensation could be in the form of increased employment. However, the varied responses did not mean they were objecting the introduction of REDD but to accept compensation will largely depend on collective agreement based on legitimacy of REDD activities in the area.

In terms of REDD agenda of reducing carbon emission as a way of dealing with climate change and securing sustainable development through a pilot project in Ghana, we are a bit sceptical about the success of REDD if attention is not given to cocoa production, property rights and review of forest policies. However, these should not be seen as a complete barrier to REDD initiatives. Base on our findings, cocoa cultivation is the major agriculture activity putting pressure on the remaining forest frontier in Ghana. The funding agencies can only achieve their aim of conserving forest, store carbon and reduce poverty concurrently, provided the government will be committed to protect forest and promote sustainable cocoa production in the local communities. We believe there will be high returns of net carbon stored and low opportunity costs if critical look is given to agriculture activities in the high forest zone in Ghana.

## 9.2 Recommendation

Considering land and forests ownership in Ghana, we realized it is important to establish clearly defined and secured property rights to land and trees regarding all tenure to secure reduced forest use. There should be a distinction between forest land ownership and stool land. This could give a clear picture of who actually owns forests land and can have absolute control over forest land and other forest resources. There could be recognition of customary and informal rights at the national level by capturing that in policymaking processes or adjustment of customary land law to conform with the national constitution. This could clearly define land tenure and address overlapping interest for fair treatment.

The local people depend on forests for fuel wood, charcoal, poles/timber and agriculture activities for their livelihoods. The introduction of REDD will mean people should stop the extraction of these resources and there will be great danger because people will lose their livelihoods, hence poverty sets in, which is against the REDD international agenda of poverty alleviation and securing development locally. In relation to compensating farmers to reduce deforestation raises the following questions: Will there be compensation to the local people? Could REDD money go to the state alone? The issue of compensation could be addressed by the state in two ways: (a) granting rights and (b) changing rights situation for the use of forests but this could be political difficult. The state could grant the local people *de facto* rights to the resources for the loss of income from forests.

In relation to the issue of REDD money going to the state alone, this could be addressed by establish compensation programmes and that could be considered in various forms. Cocoa being the dominant cultivated cash crop, if the nation is benefiting from cocoa production, the government could improve agriculture sector policies to develop higher yielding cocoa variety and encourage cocoa farmers to intensify cocoa existing areas rather than expanding farms into forests. Besides that, farmers could be awarded for environmental friendly cocoa plantation management in a form of technical assistance to encourage them to avoid extending farms into forests. On the part of energy use, the energy ministry could provide energy efficient stoves to be used by forest fringe communities. Cocoa agro-forestry should be encouraged on agriculture land to provide timber and pole for construction of houses. The community members participation in REDD activities could also be strengthened by intensive consultation processes and education. This could improve people involvement in decision-making regarding REDD activities in the communities.

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## APPENDICES

### Appendix 1: Questionnaire for the household survey

### Questionnaire for household survey of the baseline study

| | | | |
|---|---|---|---|
| 01. | Country: | 04. Questionnaire number: | |
| 02. | Village: | 05. Name of respondent: | |
| 03. area: | Pilot/study | 06. Street address of respondent: | |
| | | 07. Name of interviewer: | |
| | | Date: | |
| | | Starting time: | Finishing time: |

### SECTION A: Household structure and livelihood assessment

The aim of this section is to map out household characteristics, assets and ownership.

### I. HOUSEHOLD CHARACTERISTICS AND COMPOSITION

| | | A1[1)] | A2[2)] | A3 | A4a[3)] | A4b[4)] | A5[5)] | A6 |
|---|---|---|---|---|---|---|---|---|
| ID | Position in HH | Sex | Marital status | Age (yrs.) | Education | Other skills training | Main occupation | How long have you lived here (no of yrs.) |
| 1 | Head of HH | | | | | | | |
| 2 | Spouse | | | | | | | |

*1) Codes: 1=male; 2=female*

*2) Codes: 1= single; 2=married; 3=divorced; 4=separated; 5=widowed; 6=cohabiting*

*3) Codes: 1= no formal education; 2=primary; 3=secondary; 4=higher education (college, university or similar)*

*4) Codes= 1=agricultural management skills; 2=forest management skills; 3=other*

*5) Codes: 1=agriculture; 2=forestry/forest use (NTFPs); 3=hunting; 4=fishing; 5=other*

A7. Please indicate the number of permanent household members in each group:

| | Sex | Age group | | | |
|---|---|---|---|---|---|
| | | 0 to 15 | 16 to 45 | 46 to 60 | Above 60 |
| 1 | Male | | | | |
| 2 | Female | | | | |

A8. What ethnic group or tribe to do you belong to?_____

*Note: The local team should define the different ethnic groups or tribes in the pilot area with code*

A9. What religion do you practice?_____

*Code: 1= Christian; 2=Muslim; 3=Buddhist; 4=Traditional animism; 5= other (specify):*

*6= No religion*

## II. LAND

A10. Please indicate the size of farmland (in hectares) that currently has been in **use** (last 12 months). If type of ownership, rental status and land conversion is the same for all land, please treat as one 'parcel'. If there are different tenure arrangements for different part of the farmland, please specify accordingly.

| | Area used (ha) | Ownership (tenure)[1)] | Rented[2)] | Land conversion type[3)] |
|---|---|---|---|---|
| 'Parcel 1' | | | | |
| 'Parcel 2' | | | | |
| 'Parcel 3' | | | | |
| 'Parcel 4' | | | | |
| 'Parcel 5' | | | | |
| 'Parcel 6' | | | | |
| Total | | | | |

*1) Codes: 1= private; 2= state (ordinary); 3= state (JFM); 4= state (CBFM); 5= state (individual); 6=common property;7= open access*

*2) Codes:1=not rented; 2= rented from state; 3=rented from non-state, e.g. community or individuals,*

*3) Codes: 1= permanent agriculture land (cleared more than 10 years ago); 2= land cleared in shifting cultivation areas; 3= cleared forest last 10 years to become permanent agricultural land; 4= other.*

## II. ASSETS AND SAVINGS

| **Habitation** | | |
|---|---|---|
| A11 | Housing contract<br><br>*Code: 1=owner; 2=tenant; 3=free; 4=not owner; but exclusive use rights* | |
| A12 | Material used in construction of walls of the main house?<br><br>*Code: 1= cement bricks 2= mud bricks; 3= wood; 4=sticks with mud plastering ; 5=mat/leaves; 6=other. If 'other', please specify here:* | |
| A13 | Material used for roofing the main house<br>*Code: 1= tiles; 2=iron sheet;3=thatch/mat/leaves; 4= other*<br>*If 'other', please specify here:* | |
| A14 | Number of sleeping rooms? | |
| A15 | What is the main source of potable water used by the household<br>*Code: 1=personal tap; 2=public tap; 3=improved well/spring; 4=traditional well*<br><br>*5=surface water (river/lake/pond, etc.); 6= other*<br><br>*If 'other', please specify here:* | |

| A16 | What is the most important source(s) of energy for cooking?[1)] Please rank your answer in the order of importance[2)] | Rank 1[2)] | Rank 2 | Rank 3 |
|---|---|---|---|---|
| | | | | |

1) *Code: 1=electricity; 2=gas; 3=kerosene; 4=charcoal; 5=bought fuelwood; 6=fuelwood collected from area that will become REDD pilot forest; 7=fuelwood collected from other forested landscapes; 8= other*

*2) Please rank (1, 2,...) if more than one type of energy is used. (If 'fuelwood collected from area that will become REDD pilot forest'' is most important, write '6' in the column for 'Rank 1'. If 'bought fuel wood' is the second most important, write '5' in the column for 'Rank 2' etc.).*

A17. Please indicate the number of implements and other large household items that are owned or rented by the household.

| No | Assets | Quantity[1)] | Owned[2)] | Rented[3)] |
|---|---|---|---|---|
| 1 | House(s) (for living in) | | | |
| 2 | TV | | | |
| 3 | Radio | | | |
| 4 | Telephone | | | |
| 5 | Bicycle | | | |
| 6 | Motorbike | | | |
| 7 | Car, jeep, pickup, truck etc | | | |
| 8 | Boat, canoe | | | |
| 9 | Generator | | | |
| 10 | Rice/wheat/corn mill | | | |
| | **Agricultural implements and draft animals** | | | |
| 11 | Hoes | | | |
| 12 | Cutlass | | | |
| 13 | Pangas | | | |
| 14 | Axes | | | |
| 15 | Buffalo | | | |
| 16 | Horse | | | |
| 17 | Tractor | | | |

*1) Measure in number. If the HH does not have access to the item, write 0.*
*2) Code: 1=owned; 2= not owned*
*3) Code: 1=rented; 2=not rented*

## II. SOCIAL ASSETS.

A18. Do you consider your village/community a good place to live?

*Code: 1=Yes; 2=It is OK; 3=No*

A19. What is your level of trust in people in your village/community?

| 1 Very low | 2 Low | 3 Fair | 4 High | 5 Very high |
|---|---|---|---|---|
| | | | | |

A20. How do you rate your household's relationship with the following?

| No | | 1 Very bad | 2 Bad | 3 Fair | 4 Good | 5 Very good |
|---|---|---|---|---|---|---|
| 1 | Neighbours | | | | | |
| 2 | People from other communities | | | | | |
| 3 | NGO workers | | | | | |
| 4 | Village council | | | | | |
| 5 | Local government officials | | | | | |

A21**.** Does any member of your household belong to the following groups?

| No | Groups | Member[1)] | Function in the group[2)] |
|---|---|---|---|
| 1 | Farm groups | | |
| 2 | Village committee | | |
| 3 | Local NGOs | | |
| 4 | Traditional council | | |
| 5 | Local political group | | |
| 6 | Religious group | | |
| 7 | Credit union | | |
| 8. | Savings group | | |

1) *Code: 1=belong; 2=do not belong: 9=does not exist*

2) *Code: 1= leader; 2=ordinary member*

A22. Has the household's income over the past 12 months been sufficient to cover what you consider to be the needs of your household? ☐

*Codes: 1=yes; 2=reasonably; 3=no*

A23. How well-off is your household compared to other households in the village/community ☐

*Codes: 1=worse-off; 2=about average; 3=better-off*

A24. How well-off is your household today compared to the situation 5 years ago? ☐

*Codes: 1=less well-off now; 2=about the same; 3=better off now*

A25. Has your household faced any major income shortfalls or unexpectedly large expenditures during the past 12 months? ☐

*Codes: 1=Yes; 2=No (If 'no', go to Section B)*

A25a. If ‘yes’, please complete the table

| No | Serious event | How severe[1)]? | How did you cope with the income loss or costs? *Please indicate the most important strategy* |
|---|---|---|---|
| 1 | Serious crop failure | | |
| 2 | Death/serious illness in family (productive age-group/adult) | | |
| 3 | Loss of land | | |
| 4 | Major livestock loss (drought, disease, etc.) | | |
| 5 | Loss of waged employment | | |
| 6 | Climate/drought/floods | | |
| 7 | Price changes on products and consumer goods | | |
| 8 | Protected area establishment | | |

*1) Codes: 1=somewhat severe; 2= severe; 3= very severe; 9= not relevant*

**SECTION B: Resource use, income and constraints**

The main aim of this section is to map out the livelihood activities and strategies of the household in the pilot areas. The household's use of land resources includes both forests and agriculture. We will also map livelihood outcomes, constraints and major changes in the use of land resources over time. This data will form the basis for assessing the local livelihood outcomes and offer information for the opportunity cost analysis of forest land in the different pilot areas.

## I. AGRICULTURAL PRODUCTION FOR THE PAST 12 MONTHS

B1. List the most important crops that your household has produced, consumed and/or sold the **last 12 months.**

| No | Crop type[1)] | Area (ha) | Labour[2)] | Total output (kg)[3)] | Sold (kg) [3)] |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |

*1) Codes: The local team must define and code the main crop types in the pilot areas.*

*2) Codes: 1= household; 2= hired; 3=both. Please use the number for the dominant category. If one category clearly dominates, do not use 'both'.*

*3) Please convert local units (e.g. bushels of corn, sacks of potatoes, etc.) into kg when entering data to database.*

B2. Do you have any problem(s) that limit your agricultural production? ☐

*Codes: 1=Yes; 2 =No (If 'no', go to B3)*

B2a. If 'yes', what do you consider to be the most important problem limiting your agricultural production?_____

B3. If you were to expand your agricultural production, how dependent would you be on clearing forests?

| 1. Not dependent at all | 2. A bit dependent | 3. Quite dependent | 4. Very dependent |
|---|---|---|---|
| | | | |

B4. Is it easier to get new land for agriculture today than five years ago?

| 1. By inheritance | 2. By buying | 3. By renting | 4. By clearing forest |
|---|---|---|---|
| | | | |

*Codes: 1=easier; 2=as before; 3=more difficult*

B4a. If you have marked 'more difficult' (3) in any of the above categories, why is it so? Please state the most important reason:

_____

B5. Have you had any conflicts over access to land for agriculture in the last five years? ☐

*Codes: 1=Yes; 2=No (If 'no', go to B6)*

B5a. If 'yes', how would you describe the seriousness of these conflicts?

| 1 Very low | 2 Low | 3 Intermediate | 4 High | 5 Very high |
|---|---|---|---|---|
| | | | | |

## II. LIVESTOCK PRODUCTION FOR THE PAST 12 MONTHS

B6. What is the number of livestock and livestock products that your household has sold, bought, slaughtered or lost during **the last 12 months**? What is the present number of livestock?

| No | Livestock | No | Product produced | Sold (incl. barter)[1)] | For own use | Total number owned |
|---|---|---|---|---|---|---|
| 1 | Cattle | 1 | Live animal (no) | | | |
| | | 2 | Meat (kg) | | | |
| | | 3 | Milk (litres) | | | |
| | | 4 | Dung (kg) | | | |
| | | 5 | Hide (kg) | | | |
| 2 | Buffalo | 6 | Live animal (no) | | | |
| | | 7 | Meat (kg) | | | |
| | | 8 | Milk (litres) | | | |
| | | 9 | Dung (kg) | | | |
| 3 | Goat | 10 | Live animal (no) | | | |
| | | 11 | Meat (kg) | | | |
| | | 12 | Milk (litres) | | | |
| 4 | Sheep | 13 | Live animal (no) | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 14 | Meat (kg) | | | |
| | | 15 | Milk (litres) | | | |
| 5 | Pig | 16 | Live animal (no) | | | |
| | | 17 | Meat (kg) | | | |
| 6 | Poultry | 18 | Live animal (no) | | | |
| | | 19 | Egg (kg) | | | |
| | | 20 | Meat (kg) | | | |

*1) Please indicate sold live animals in numbers and sold meat from slaughtered animals in kg – please convert local measuring units into kilos and litres as appropriate when entering into database.*

B7. Do you have any problem(s) that limit your livestock production? ☐

*Codes: 1=Yes; 2=No (If 'no', go to B9)*

B7a. If 'yes', what do you consider to be the most important problem limiting your livestock production?_____

B8. What do you consider to be the most important suggestion to improve your livestock production?_____

B9. How do you feed your livestock[1)]?

| No | Type of animals | A. Forest land (grazing and/ or collected fodder) | B. Non-forest land (grazing and/or collected fodder) | C. Using crop residues | D. Other (specify) |
|---|---|---|---|---|---|
| 1 | Cattle | | | | |
| 2 | Buffalo | | | | |
| 3 | Goat | | | | |
| 4 | Sheep | | | | |
| 5 | Pig | | | | |
| 6 | Poultry | | | | |
| 7 | Other animal<br>Specify type: | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 8 | Other animal<br><br>Specify type: | | | | |

*1) Please rank (1, 2, 3, ..) if more than one type is used for any of the animal categories. (So if 'crop residues' is most important for feeding e.g., cattle, write '1' in the column for 'using crop residues' and '2' in the column for 'forest land' if that is the second most important etc.).*

## III. FOREST RESOURCE USE

B10. How far is it in minutes (walking) from your house to the edge of the nearest forest that you often use? ☐

B11. What is the importance of the following forest products that the members of your household have collected from the forest both for own use and sale over the last month? Where and how is it collected?

| | Main forest products | Collected where | | Collected by whom | | Own use (kg) | For sale (kg) |
|---|---|---|---|---|---|---|---|
| | | Forest type[1)] | Owner-ship[2)] | Labour[3)] | Sex/age group[4)] | | |
| 1 | Fuelwood | | | | | | |
| 2 | Poles & timber | | | | | | |
| 3 | Charcoal | | | | | | |

When coding, use the number for the dominant category. Hence, if one category clearly dominates, do not use 'mix'/'both'.

*1) Codes: 1= primary forest; 2= secondary forest; 3= mix*
*2) Codes: 1= private; 2= state (ordinary); 3= state (JFM); 4= state (CBFM); 5=state (individual); 6= common property; 7= open access; 8= mix*
*3) Codes: 1= household; 2= hired; 3= both*
*4) Codes: 1= men; 2= women; 3= children; 4= mix*

B12. How would you rate your access to and use of forest products (fuelwood, poles & timber, charcoal) today compared to five years ago?

| 1 Much reduced | 2 Reduced | 3 The same | 4 Increased | 5 Much increased |
|---|---|---|---|---|
| | | | | |

B12a. If 'much reduced' or 'reduced', what do you consider to be the most important factor(s) limiting your access to and use of these forest products today? If more than one, please rank up to the three most important factors.

| | |
|---|---|
| 1 | |
| 2 | |
| 3 | |

B12b. If 'increased' or 'much increased', what do you consider the most important factor(s) for increasing your access to and use of these forest products today? If more than one, please rank up to the three most important factors.

| | |
|---|---|
| 1 | |
| 2 | |
| 3 | |

B13. How important are the other forest products, i. e. non-timber forest products (NTPF) that the members of your household collect from the forest both for own use and sale?

| No | Other forest products | 1 Do not collect | 2 Somewhat important | 3 Important | 4 Very important |
|---|---|---|---|---|---|
| 1 | Fodder (collected or grazed) | | | | |
| 2 | Bamboo | | | | |
| 3 | Rattan | | | | |
| 4 | Medicinal plants | | | | |
| 5 | Wild fruits and leaves | | | | |
| 6 | Nuts | | | | |
| 7 | Bush meat | | | | |
| 8 | Mushroom | | | | |

B14. If you sell any of the above products (question B13), how much income does your household make on average in a month (in $): _____

B15. How satisfied are you with how the forests of your community are managed?

| 1 Very dissatisfied | 2 Somewhat dissatisfied | 4 Somewhat satisfied | 4 Very satisfied |
|---|---|---|---|
| | | | |

B16. How would you rank your relationship with other forest users in terms of access to and use of forest resources (fuelwood, poles & timber, charcoal)?

| 1Very bad | 2 Bad | 3 Fair | 4 Good | 5 Very good |
|---|---|---|---|---|
| | | | | |

*If 'Fair', 'Good' or 'Very good, go to B17*B16a. If 'bad' or 'very bad', why is it so? Please rank

| No | Response | 1 Disagree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | No cooperation | | | | |
| 2 | Poor communication and dialogue | | | | |
| 3 | Ethnic conflicts | | | | |
| 4 | Unequal distribution of rights | | | | |
| 5 | Others (specify) | | | | |

B17. Has your household planted any woodlots or trees on the farm over the past 5 years?

*Codes: 1=Yes; 2=No (If 'no', go to B18)*

B17a. If 'yes', what are the main purpose(s) of the trees planted? You may emphasize more than one purpose

| | Purpose | Ranking[1)] |
|---|---|---|
| 1 | For own use | |
| 2 | For commercial use | |
| 3 | Carbon sequestration | |
| 4 | Other environmental services<br>If 'other', please specify here: | |

*1) Indicate importance by ranking the purpose(s): 1,2,3…*

B18. Did your household clear any forest during the past five years? ☐

*Codes: 1=Yes; 2=No* *(If 'no', go to B19)*

B18a. If 'yes' to B18, how much forest was cleared on average per year: _____ (ha)

B18b. If 'yes' to B18, answer also the following questions concerning cleared forests over the last five years

| | | Rank 1[1)] | Rank 2 | Rank 3 |
|---|---|---|---|---|
| 1 | What was the cleared forest (land) used for?<br>*Codes: 1=cropping; 2=tree plantation; 3=pasture; 4=other* | | | |
| 2 | What type of forest did you clear?<br>*Codes: 1= primary forest; 2=secondary forest; 3=mix* | | | |
| 3 | What was the ownership status of the forest cleared<br>*Codes: 1=private; 2= state (ordinary); 3= state (JFM); 4= state (CBFM); 5= state (individual); 6=common property; 7= open access* | | | |

*1) Ranking using row 1 as example: If e.g., 'pasture' is the most important use of cleared forests, write '3' in the column 'Rank 1'. Similarly, if 'cropping' is the second most important use of cleared forests, write '1' in column 'Rank 2', etc. Do similar for rows 2 and 3*

B19. How much land used by your household has been abandoned on average over the last 5 years? (Left to fallow or converted to natural re-vegetation). Please denote as ha per year ☐

**(NB: READ THE MANUAL ON INCOME CAREFULLY (End of Section 5.3.2))**

B20. How much fish did your household catch in the streams, rivers and small lakes of the forest both for own use and sale over the last month?

| No | Main fish species (common names)[1)] | Ownership[2)] where caught | Caught by whom[3)] | Own use (kg) | For sale (kg) | Unit price ($/kg) |
|---|---|---|---|---|---|---|
| 1 | | | | | | |
| 2 | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |

*1) Codes: The local team must identify the main fish species. Please use common names*
*2) Codes: 1= private; 2= state (ordinary); 3= state (JFM); 4= state (CBFM); 5= state (individual)l; 6=common property; 7= open access. Use the code for the dominant category*
*3) Codes: 1= men; 2= women; 3= children; 4=mix*

B21. Has the household received any cash or in kind payment or compensation related to the following forest services over the past 12 months?

| No | Principal purpose | Received[1)] | If 'yes', please indicate the amount received ($) |
|---|---|---|---|
| 1 | Tourism | | |
| 2 | Carbon projects | | |
| 3 | Water catchment projects | | |
| 4 | Tree planting | | |
| 5 | Benefits from logging companies | | |
| 6 | Other, please specify here: | | |

*1) Code: 1=Yes; 2=No*

B22. What is the average income from paid work that the household members together receive in a month (in $): _____

*NOTE: Payments already covered in B21 must not be included here*

B23. Are you or any other member(s) of the household involved in any type of business, and if so, what is the **net income** related to that business **per month?**

*NOTE: Income directly from crops (B1), livestock (B6), forest products (B11, B14) or income covered above in questions B20; B21 and B22 must not be included here*

*NOTE: If the household is involved in different types of business fill in one column for each business.*

| | Business 1 | Business 2 | Business 3 |
|---|---|---|---|
| 1. What is your type of business?[1)] | | | |
| 2. Net income (in $) | | | |

*1) Codes: 1=shop/trade; 2=agricultural processing; 3=handicraft; 4=carpentry; 5=other forest based; 6=transport (car, boat,…); 7=lodging/restaurant; 8=brewing; 9=brick making; 10=landlord/real estate; 13=herbalist/traditional healer; 12=quarrying; 13=fishing outside of the forest; 14: Other*

B24. What is the average income received from income transfers (state support; remittances etc.) the household members together receive in a month (in $): _____
*NOTE: Must not overlap any income already covered in questions B21-B23.*

**SECTION C: Property rights, use rights and management**

The main issue here is to map out ownership, management and use rights to forests land and forest resources. We also want to map people's views on management systems and the rules defined for use rights. A more detailed examination of the rules regulating access and use of forest and forest resources in the different pilot areas will be dealt with in the PRA interviews. **(NB: READ THE MANUAL ON PROPERTY/USE RIGHTS CAREFULLY (Section 4.8))**

C1. Do any members of your household belong to any forest management group in your community?

*Codes: 1=Yes; 2=No (If 'no', go to C2)* ☐

C1a. If 'yes', please indicate the name of the group:_____

## I. PRIVATE FOREST (PRIVATELY OWNED FORESTS)

C2. Do you own any forest? ☐

*Codes: 1=Yes; 2=No* ***(If 'no', please go to sub-section II)***

C3. What is the total area of your forest: _____ (ha)

C4: What is the overall status of your forest? ☐

*Codes: 1= Very degraded; 2= Degraded; 3= Acceptable; 4= Good state;*

*5= Very good state*

C5: Do you have user rights over all resources in the forest? ☐

*Codes: 1=Yes; 2=No (If 'yes', go to C6)*

C5a. If 'no', which resources are you not allowed to use? _____

C6. Do you accept other people accessing and using resources in your forest? ☐

*Codes: 1=Yes; 2=No (If 'no', go to C7)*

C6a. If 'yes', which resources?_____

C7. Do you lease out part of your forest for agriculture, grazing or collection of NTFPs? ☐

*Codes: 1=Yes; 2=No*

C8. Are your rights to transfer your forest to others restricted in any way? ☐

*Codes: 1=Yes; 2=No*

C9. Do you face any difficulties in managing your forest? ☐

*Codes: 1=Yes; 2=No (If 'no', go to C10)*

C9a. If 'yes', please rank up till three most important problems

| | |
|---|---|
| 1 | |
| 2 | |
| 3 | |

## II. STATE FORESTS (FORESTS UNDER STATE PROPERTY)

C10. Please tick the box which most closely resembles the property and management arrangements present in part of the pilot/study area where the respondent lives (tick more than one if applicable). Then go on to answer the questions corresponding to the choice(s).

**IIa State forests (Ordinary)** ☐

**IIb State forests (Joint Forest Management)** ☐

**IIc State forests (Community-Based Forest Management)** ☐

**IId State forests (Individual Use Rights - leases, permits, etc)** ☐

***(If none of these categories apply, please go to sub-section III)***

You may want to use locally adapted words instead of e.g., state forest (ordinary). Be 100% sure that there is no misunderstanding regarding which forests you are talking about.

## IIa. STATE FORESTS (ORDINARY)

C11 What is the operational form of management?

*Codes: 1=regular state; 2=state company; 3=non-state owned national company;*

*4=joint stock; 5=multinational company* ☐

C12. Do you have user rights to resources in state forests (ordinary) in your community? ☐

*Codes: 1=Yes; 2=No*

C12a. Are your user rights to state forest (ordinary) formal or informal? ☐

*Codes: 1=Formal; 2=Informal; 3=Both*

*Use the number for the dominant category. If one category clearly dominates, do not use 'both'*

C12b. Do you have individual or common use rights to state forest (ordinary)? ☐

*Codes: 1=Individual; 2=Common (as member of community); 3=Both*

*Use the number for the dominant category. If one category clearly dominates, do not use 'both'*

C12c. Are your user rights limited to particular resources in the state forest (ordinary)? ☐

*Codes: 1=Yes; 2=No* *(If 'no', go to C13)*

C12d. If 'yes', which are the most important forest resources you can use?

_____

C13. How satisfied are you with the rules that govern use and management of the state forest (ordinary)?

| 1 Very dissatisfied | 2 Somewhat dissatisfied | 3 Somewhat satisfied | 4 Very satisfied |
|---|---|---|---|
| | | | |

*(Note: Dependent on responses to C13, you proceed by going to C13a or C13b)*

C13a. If 'somewhat dissatisfied' or 'very dissatisfied' with the rules, why is it so?

| No | | 1 Dis-agree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | My/our interests are not taken into account | | | | |
| 2 | Unclear boundaries/outsiders are intruding | | | | |
| 3 | Unequal distribution of use and benefits | | | | |
| 4 | Too strong limitation on access to resources | | | | |
| 5 | Rules are not followed | | | | |
| 6 | The local community is not enough involved in making rules | | | | |
| 7 | Conflict resolution mechanisms are inappropriate | | | | |
| 8 | Too weak enforcement of rules/sanctions | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 9 | Creates opportunities for corruption | | | | |
| 10 | Bad management/lack of coordination | | | | |
| 11 | Other (please specify) | | | | |

C13b. If 'somewhat satisfied' or 'very satisfied' with the rules, why is it so?

| No | | 1 Dis-agree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | My/our interests are well taken into account | | | | |
| 2 | Clear boundaries/outsiders are kept out | | | | |
| 3 | Equal distribution of use and benefits | | | | |
| 4 | Good access to resources | | | | |
| 5 | Rules are followed | | | | |
| 6 | The local community is involved in making rules | | | | |
| 7 | Conflict resolution mechanisms are appropriate | | | | |
| 8 | Proper enforcement of rules/sanctions | | | | |
| 9 | Good management and coordination | | | | |
| 10 | Other (please specify) | | | | |

C14. Do you feel bound by the rules governing use and management of state forests (ordinary)?

| 1 I feel bound by them and follow them always | 2 I feel quite bound by them and follow them mostly | 3 I feel somewhat bound by them and follow them sometimes | 4 I don't feel bound by them and do usually not follow them | 5 Not relevant to me |
|---|---|---|---|---|
| | | | | |

C15. Have there been any changes in the rules that govern use and management of the state forest (ordinary) in the last five years? *Codes: 1=Yes; 2=No; 3=Not aware* ☐

C15a. If 'yes', have the changes influenced your use of state forests (ordinary)?

| 1 It has worsened my livelihood a lot | 2 It has worsened my livelihood to some extent | 3 It did not have any effect on my livelihood | 4 It has improved my livelihood to some extent | 5 It has improved my livelihood a lot |
|---|---|---|---|---|
| | | | | |

C16. How is your relationship with those authorized to manage the state forests (ordinary)?

| 1Very bad | 2 Bad | 3 Fair | 4 Good | 5 Very good | 6. Not relevant |
|---|---|---|---|---|---|
| | | | | | |

**II b. STATE FORESTS (JOINT FOREST MANAGEMENT)**

C17. Do you have user rights to resources in state forests (JFM) in your community? ☐

*Codes: 1=Yes; 2=No*

C17a. Are your user rights to state forest (JFM) formal or informal? ☐

*Codes: 1=Formal; 2=Informal; 3=Both*

*Use the number for the dominant category. If one category clearly dominates, do not use 'both'.*

C17b. Do you have individual or common use rights to state forest (JFM)? ☐

*Codes: 1=Individual; 2=Common (as member of community); 3=Both*

*Use the number for the dominant category. If one category clearly dominates, do not use 'both'.*

C17c. Are your user rights limited to particular resources in the state forest (JFM)? ☐

*Codes: 1=Yes; 2=No* *(If 'no', go to C18)*

C17d. If 'yes', which are the most important forest resources you can use?

_____

C18. Do you have any influence on the rules that govern use and management of the state forests (JFM)? You may tick more than one option.

| 1 Yes, during village assembly meetings | 2 Yes, during other meetings | 3 Yes, through general discussions in my community | 4 No, we have not taken part at all | 5 I do not know |
|---|---|---|---|---|
| | | | | |

C19. How satisfied are you with the rules that govern use and management of the state forest (JFM)?

| 1 Very dissatisfied | 2 Somewhat dissatisfied | 3 Somewhat satisfied | 4 Very satisfied |
|---|---|---|---|
| | | | |

*(Note: Dependent on responses to C19, you proceed by going to C19a or C19b)*

C19a. If 'somewhat dissatisfied' or 'very dissatisfied' with the rules, why is it so?

| No | | 1 Dis-agree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | My/our interests are not taken into account | | | | |
| 2 | Unclear boundaries/outsiders are intruding | | | | |
| 3 | Unequal distribution of use and benefits | | | | |
| 4 | Too strong limitation on access to resources | | | | |
| 5 | Rules are not followed | | | | |
| 6 | The local community is not enough involved in making rules | | | | |
| 7 | Conflict resolution mechanisms are inappropriate | | | | |
| 8 | Too weak enforcement of rules/sanctions | | | | |
| 9 | Creates opportunities for corruption | | | | |
| 10 | Bad management/lack of coordination | | | | |
| 11 | Other (specify) | | | | |

C19b. If 'somewhat satisfied' or 'very satisfied' with the rules, why is it so?

| No | | 1 Dis-agree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | My/our interests are well taken into account | | | | |
| 2 | Clear boundaries/outsiders are kept out | | | | |
| 3 | Equal distribution of use and benefits | | | | |
| 4 | Good access to resources | | | | |
| 5 | Rules are followed | | | | |
| 6 | The local community is involved in making rules | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 7 | Conflict resolution mechanisms are appropriate | | | | |
| 8 | Proper enforcement of rules/sanctions | | | | |
| 9 | Good management and coordination | | | | |
| 10 | Other (specify) | | | | |

C20. Do you feel bound by the rules that govern use and management in the state forests (JFM)?

| 1 I feel bound by them and follow them always | 2 I feel quite bound by them and follow them mostly | 3 I feel somewhat bound by them and follow them sometimes | 4 I don't feel bound by them and do usually not follow them | 5 Not relevant to me |
|---|---|---|---|---|
| | | | | |

C21. Have there been any changes in the rules that govern use and management of the state forest (JFM) in the last five years? ☐

*Codes: 1=Yes; 2=No; 3=Not aware* *(If 'no' or 'not aware', go to C22)*

C21a. If 'yes', have the changes influenced your use of state forests (JFM)?

| 1 It has worsened my livelihood a lot | 2 It has worsened my livelihood to some extent | 3 It did not have any effect on my livelihood | 4 It has improved my livelihood to some extent | 5 It has improved my livelihood a lot |
|---|---|---|---|---|
| | | | | |

C22. How is your relationship with the forest management committee under the JFM arrangement?

| 1 Very bad | 2 Bad | 3 Fair | 4 Good | 5 Very good | 6. Not relevant |
|---|---|---|---|---|---|
| | | | | | |

## IIc. STATE FORESTS (COMMUNITY-BASED FOREST MANAGEMENT)

C23. Do you have user rights to resources in state forests (CBFM) in your community? ☐

*Codes: 1=Yes; 2=No*

C23a. Are your user rights to state forest (CBFM) formal or informal? ☐

*Codes: 1=Formal; 2=Informal; 3=Both*

*Use the number for the dominant category. If one category clearly dominates, do not use 'both'.*

C23b. Do you have individual or common use rights to state forest (CBFM)? ☐

*Codes: 1=Individual; 2=Common (as member of community); 3=Both*

*Use the number for the dominant category. If one category clearly dominates, do not use 'both'.*

C23c. Are your user rights limited to particular resources in the state forest (CBFM)? ☐

*Codes: 1=Yes; 2=No* *(If 'no', go to C24)*

C23d. If 'yes', which are the most important forest resources you can use?

_____

C24. Do you have any influence on the rules that govern use and management of the state forests (CBFM)? You may tick more than one.

| 1 Yes, during village assembly meetings | 2 Yes, during other meetings | 3 Yes, through general discussions in my community | 4 No, we have not taken part at all | 5 I do not know |
|---|---|---|---|---|
| | | | | |

C25. How satisfied are you with the rules that govern use and management of the state forest (CBFM)?

| 1 Very dissatisfied | 2 Somewhat dissatisfied | 3 Somewhat satisfied | 4 Very satisfied |
|---|---|---|---|
| | | | |

*(Note: Dependent on responses to C25, you proceed by going to C25a or C25b)*

C25a. If ‘somewhat dissatisfied’ or ‘very dissatisfied’ with the rules, why is it so?

| No | | 1 Dis-agree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | My/our interests are not taken into account | | | | |
| 2 | Unclear boundaries/outsiders are intruding | | | | |
| 3 | Unequal distribution of use and benefits | | | | |
| 4 | Too strong limitation on access to resources | | | | |
| 5 | Rules are not followed | | | | |
| 6 | The local community is not enough involved in making rules | | | | |
| 7 | Conflict resolution mechanisms are inappropriate | | | | |
| 8 | Too weak enforcement of rules/sanctions | | | | |
| 9 | Creates opportunities for corruption | | | | |
| 10 | Bad management/lack of coordination | | | | |
| 11 | Other (specify) | | | | |

C25b. If ‘somewhat satisfied’ or ‘very satisfied’ with the rules, why is it so?

| No | | 1 Dis-agree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | My/our interests are well taken into account | | | | |
| 2 | Clear boundaries/outsiders are kept out | | | | |
| 3 | Equal distribution of use and benefits | | | | |
| 4 | Good access to resources | | | | |
| 5 | Rules are followed | | | | |
| 6 | The local community is involved in making rules | | | | |
| 7 | Conflict resolution mechanisms are appropriate | | | | |
| 8 | Proper enforcement of rules/sanctions | | | | |
| 9 | Good management and coordination | | | | |
| 10 | Other (please specify) | | | | |

C26. Do you feel bound by the rules that govern use and management in the state forests (CBFM)?

| 1 I feel bound by them and follow them always | 2 I feel quite bound by them and follow them mostly | 3 I feel somewhat bound by them and follow them sometimes | 4 I don't feel bound by them and do usually not follow them | 5 Not relevant to me |
|---|---|---|---|---|
| | | | | |

C27. Have there been any changes in the rules that govern use and management of the state forest (CBFM) in the last five years? ☐

*Codes: 1=Yes; 2=No; 3=Not aware (If 'no' or 'not aware', go to C28)*

C27a. If 'yes', have the changes influenced your use of state forests (CBFM)?

| 1 It has worsened my livelihood a lot | 2 It has worsened my livelihood to some extent | 3 It did not have any effect on my livelihood | 4 It has improved my livelihood to some extent | 5 It has improved my livelihood a lot |
|---|---|---|---|---|
| | | | | |

C28. How is your relationship with the forest management committee of state forest under CBFM?

| 1 Very bad | 2 Bad | 3 Fair | 4 Good | 5 Very good | 6. Not relevant |
|---|---|---|---|---|---|
| | | | | | |

**IId. STATE FORESTS (INDIVIDUAL USE RIGHTS)**

C29. What is the nature of tenure arrangement for your part of the state forest (individual)?

*Codes: 1=allocated use right, 2=assigned use right, 3=other* ☐

C30. What is the total area of this forest to which you have a use right? _____ (ha)

C30a: Are there any restrictions on your use rights with respect to resource use? ☐

*Codes: 1=Yes; 2=No* *(If 'no', go to C31)*

C30b. If 'yes', which resources are you not allowed to use? _____

C31. Do you accept other people accessing and using resources in this forest? ☐

*Codes: 1=Yes; 2=No* *(If 'no', go to C32)*

C31a. If 'yes', which resources?_____

C32 Do you lease out part of your use rights to others for the purpose of agriculture, grazing or collection of NTFPs? ☐

*Codes: 1=Yes; 2=No*

C33 Are your use rights transferable or sellable? ☐

*Codes: 1=transferable; 2=sellable; 3=neither*

C33a Are there any restrictions on the transfer or sale of your use rights? ☐

*Codes: 1=Yes; 2=No*

C34. Do you face any difficulties in managing your part of the state forest (individual)? ☐

*Codes: 1=Yes; 2=No* *(If 'no', go to C35)*

C34a. If 'yes', please rank up till three most important problems

| | |
|---|---|
| 1 | |
| 2 | |
| 3 | |

C35. How satisfied are you with the rules that the state has established for the management and use of the state forest (individual) to which you have use rights?

| 1 Very dissatisfied | 2 Somewhat dissatisfied | 3 Somewhat satisfied | 4 Very satisfied |
|---|---|---|---|
| | | | |

*(Note: Dependent on responses to C35, you proceed by going to C35a or C35b)*

C35a. If 'somewhat dissatisfied' or 'very dissatisfied' with the rules, why is it so?

| No | | 1 Dis-agree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | My/our interests are not taken into account | | | | |
| 2 | Unclear boundaries/outsiders are intruding | | | | |
| 3 | Unequal distribution of use and benefits | | | | |
| 4 | Too strong limitation on access to resources | | | | |
| 5 | Rules are not followed | | | | |
| 6 | The local community is not enough involved in making rules | | | | |
| 7 | Conflict resolution mechanisms are inappropriate | | | | |
| 8 | Too weak enforcement of rules/sanctions | | | | |
| 9 | Creates opportunities for corruption | | | | |
| 10 | Bad management/lack of coordination | | | | |
| 11 | Other (please specify) | | | | |

C35b. If 'somewhat satisfied' or 'very satisfied' with the rules, why is it so?

| No | | 1 Dis-agree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | My/our interests are well taken into account | | | | |
| 2 | Clear boundaries/outsiders are kept out | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 3 | Equal distribution of use and benefits | | | | |
| 4 | Good access to resources | | | | |
| 5 | Rules are followed | | | | |
| 6 | The local community is involved in making rules | | | | |
| 7 | Conflict resolution mechanisms are appropriate | | | | |
| 8 | Proper enforcement of rules/sanctions | | | | |
| 9 | Good management and coordination | | | | |
| 10 | Other (please specify) | | | | |

C36. Do you feel bound by the rules that the state has established for the management and use of the state forest (individual)?

| 1 I feel bound by them and follow them always | 2 I feel quite bound by them and follow them mostly | 3 I feel somewhat bound by them and follow them sometimes | 4 I don't feel bound by them and do usually not follow them | 5 Not relevant to me |
|---|---|---|---|---|
| | | | | |

C37. Have there been any changes in the rules the state has established for the management and use of the state forest (individual) in the last five years? ☐

*Codes: 1=Yes; 2=No; 3=Not aware* *(If 'no' or 'not aware', go to C34)*

C37a. If 'yes', have the changes influenced your use of the state forests (individual)?

| 1 It has worsened my livelihood a lot | 2 It has worsened my livelihood to some extent | 3 It did not have any effect on my livelihood | 4 It has improved my livelihood to some extent | 5 It has improved my livelihood a lot |
|---|---|---|---|---|
| | | | | |

C37b. How is your relationship with those authorized to manage the state forests (e.g. forest management committee)?

| 1Very bad | 2 Bad | 3 Fair | 4 Good | 5 Very good | 6. Not relevant |
|---|---|---|---|---|---|
| | | | | | |

## III. COMMUNITY FORESTS (FORESTS UNDER COMMON PROPERTY)

C38. Are there any community forest(s) in your village/community? ☐

*Codes: 1=Yes; 2=No* ***(If 'no', go to Section D)***

C39. Do you have access to resources in the community forest(s)? ☐

*Codes: 1=Yes; 2=No* ***(If 'no', go to Section D)***

C39a. Are your user rights in the community forests formal or informal? ☐

*Codes: 1=Formal; 2=Informal; 3=Both*

*Use the number for the dominant category. If one category clearly dominates, do not use 'both'.*

C39b. Do you have individual use rights or use rights in common? ☐

*Codes: 1=Individual; 2=Common; 3=Both*

*Use the number for the dominant category. If one category clearly dominates, do not use 'both'.*

C39c. Are your user rights limited to particular resources in the community forest(s)? ☐
*Codes: 1=Yes; 2=No* *(If 'no', go to C40)*

C39d. If 'yes', which are the most important forest resources you can use?

_____

C40. Do you have any influence on the rules that govern use and management of the community forest(s)? You may tick more than one alternative.

| 1 Yes, during village assembly meetings | 2 Yes, during other meetings | 3 Yes, through general discussions in my community | 4 No, we have not taken part at all | 5 I do not know |
|---|---|---|---|---|
| | | | | |

C41. How satisfied are you with the rules that govern use and management of the community forest(s)?

| 1 Very dissatisfied | 2 Somewhat dissatisfied | 3 Somewhat satisfied | 4 Very satisfied |
|---|---|---|---|
| | | | |

*(Note: Dependent on responses to C41, you proceed by going to C41a or C41b)*

C41a. If 'somewhat dissatisfied' or 'very dissatisfied' with the rules, why is it so?

| No | | 1 Dis-agree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | My/our interests are not taken into account | | | | |
| 2 | Unclear boundaries/outsiders are intruding | | | | |
| 3 | Unequal distribution of use and benefits | | | | |
| 4 | Too strong limitation on access to resources | | | | |
| 5 | Rules are not followed | | | | |
| 6 | The local community is not enough involved in making rules | | | | |
| 7 | Conflict resolution mechanisms are inappropriate | | | | |
| 8 | Too weak enforcement of rules/sanctions | | | | |
| 9 | Creates opportunities for corruption | | | | |
| 10 | Bad management/lack of coordination | | | | |
| 11 | Other (specify) | | | | |

C41b. If 'somewhat satisfied' or 'very satisfied' with the rules, why is it so?

| No | | 1 Dis-agree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | My/our interests are well taken into account | | | | |
| 2 | Clear boundaries/outsiders are kept out | | | | |
| 3 | Equal distribution of use and benefits | | | | |
| 4 | Good access to resources | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 5 | Rules are followed | | | | |
| 6 | The local community is involved in making rules | | | | |
| 7 | Conflict resolution mechanisms are appropriate | | | | |
| 8 | Proper enforcement of rules/sanctions | | | | |
| 9 | Good management and coordination | | | | |
| 10 | Other (specify) | | | | |

C42. Do you feel bound by the rules that govern use and management of the community forest(s)?

| 1 I feel bound by them and follow them always | 2 I feel quite bound by them and follow them mostly | 3 I feel somewhat bound by them and follow them sometimes | 4 I don't feel bound by them and do usually not follow them | 5 Not relevant to me |
|---|---|---|---|---|
| | | | | |

C43. Have there been any changes in the rules that govern use and management of the community forest(s) in the last five years? *Codes: 1=Yes; 2=No; 3=Not aware* ☐

C43a. If 'yes', have the changes influenced your use of community owned forest(s)?

| 1 It has worsened my livelihood a lot | 2 It has worsened my livelihood to some extent | 3 It did not have any effect on my livelihood | 4 It has improved my livelihood to some extent | 5 It has improved my livelihood a lot |
|---|---|---|---|---|
| | | | | |

C44 How is your relationship with the local committee managing the community forest(s)?

| 1 Very bad | 2 Bad | 3 Fair | 4 Good | 5 Very good | 6 Not relevant |
|---|---|---|---|---|---|
| | | | | | |

**SECTION D: Perceptions, attitudes and norms concerning resource conservation**

This section of the baseline study concerns the mapping of local peoples' perceptions, attitudes and norms about forest conservation. This section highlights the importance of forest conservation within the REDD pilot areas before REDD takes place and will potentially provide important information that will influence the REDD policy measures in these areas.

D1. Are there any forests in your community that are protected by the state/public authorities?

*Codes: 1=Yes; 2=No* *(If 'no', go to question D3)*

D2. If 'yes', how do you feel about this protection?

| 1 Against | 2 Somewhat against | 3 Somewhat supportive | 4 Supportive |
|---|---|---|---|
| | | | |

D2a. If 'against' or 'somewhat against', why is it so?

| No | Response | 1 Disagree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | It restricts my access to forests | | | | |
| 2 | No compensation for losses | | | | |
| 3 | No access to benefits from tourists | | | | |
| 4 | Other (please specify) | | | | |

D2b. If 'supportive' or 'somewhat supportive', why is it so?

| No | Response | 1 Disagree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | Protection is important | | | | |
| 2 | Protection increases long-term access to forests resources | | | | |
| 3 | Receive compensation for reduced use | | | | |
| 4 | Secures access to income from tourists | | | | |
| 5 | Other (please specify) | | | | |

D3. Does your community have any locally developed conservation measures for the forest?

*Codes: 1=Yes; 2=No* *(If 'no', go to D6)*

D3a. If 'yes', what are these measures?

| No | | Response[1)] |
|---|---|---|
| 1 | Controlling harvest of forest products | |
| 2 | Limiting farm land in the forest | |
| 3 | Protecting some areas in the forest | |
| 4 | Placing guards to control illegal use of the forest | |
| 5 | Other (please specify): | |

*1) Codes: 1=Yes; 2=No*

D4. How satisfied are you with these locally developed conservation measures?

| 1 Very dissatisfied | 2 Somewhat dissatisfied | 3 Somewhat satisfied | 4 Very satisfied |
|---|---|---|---|
| | | | |

D4a. If 'very dissatisfied' or 'somewhat dissatisfied', why is it so?

| No | | 1 Disagree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | It restricts my access to the forest | | | | |
| 2 | Unequal distribution of benefits | | | | |
| 3 | Increased illegal use of forests | | | | |
| 4 | Other (please specify) | | | | |

D4b. If 'somewhat satisfied' or 'very satisfied', why is it so?

| No | | 1 Disagree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | Increases long-term access to forests resources | | | | |
| 2 | Equal distribution of benefits | | | | |
| 3 | Reduced illegal use of forests | | | | |
| 4 | Other (please specify) | | | | |

D5. Have these conservation measures affected the way you use forests resources?

| 1 Not at all | 2 Not so much | 3 Quite a lot | 4 Very much |
|---|---|---|---|
| | | | |

D6. Are there any sacred forest(s) in your community? ☐

*Codes: 1=Yes; 2=No (If 'no', go to Section E)*

D7. Are the sacred forests sacred to you as well? ☐

*Codes: 1=Yes; 2=No (If 'no', go to Section E)*

D8. In what ways is this/are these forest(s) important to you?

_____

D9. Does the fact that some forest(s) are sacred to you influence your view about forests in general? ☐

*Codes: 1=Yes; 2=No (If 'no', go to Section E)*

D9a. If 'yes', explain in what ways this influences your views about forests more generally.

_____

**SECTION E: Pre-REDD Analysis**

The aim of this section is to gain insights about what type of REDD policies local residents would prefer. The interviewer must evaluate if the below questions are of any relevance to the respondent. The interview might in a few instances stop here. In the case of a person who does not depend on land for agriculture or does not harvest any forest wood resources (see question B11), the below questions will be irrelevant.

E1. Are you aware of the role forests play in climate change? ☐

*Codes: 1=Yes; 2=No* *(If 'no', go to E2)*

E1a. If 'yes', what relationships between deforestation and climate change do you find especially important?_____

_____

E2. Do you think you would stop clearing forest land for agriculture/stop harvesting wood resources from the forest (fuelwood, poles/timber and/or wood for charcoal production) if you get compensation for your loss of income? Please evaluate the below options.

| No | Types of compensation | 1 Disagree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | By payments | | | | |
| 2 | By increased employment opportunities | | | | |
| 3 | By alternative sources of livelihoods | | | | |
| 4 | By better social services in my community | | | | |
| 5 | Other (specify) | | | | |

*(Note: Dependent on the responses to E2, please proceed to E2a, E2b or E3)*

E2a. If you cannot be motivated by the above options to stop clearing forests/stop harvesting wood resources from the forest (the respondent has answered 'disagree' or 'somewhat disagree' **to all options** 1-4 in question E2), why is it so?

| No | | 1 Disagree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | My livelihood depends too much on the forest | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 2 | The forest has a strong cultural value to me and it is wrong to accept compensation to stop present use | | | | |
| 3 | Money cannot compensate for reduced use of the forest | | | | |
| 4 | I do not think I will be compensated enough | | | | |
| 5 | Other (please specify): | | | | |

E2b. If you can be motivated by some of the above options to stop clearing forests/stop harvesting wood resources (the respondent has answered 'strongly agree' or 'agree' to **at least one** of the options in question E2), why is it so?

| No | Response | 1 Disagree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | The compensation will make me equally well or better off | | | | |
| 2 | Forest protection is important | | | | |
| 3 | It will improve our environmental conditions | | | | |
| 4 | I need more income | | | | |
| 5 | It will improve the conditions of our village/community | | | | |
| 6 | Other (please specify) | | | | |

E2c. What commitments could you make to avoid deforestation in your community if compensated for that specific activity? (This question is only relevant for those answering question E2b)

| No | Response | 1 Disagree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | Stop expansion of farming activity in forests | | | | |
| 2 | Reduce wildfires in forest | | | | |
| 3 | Stop harvesting fuel wood | | | | |
| 4 | Stop harvesting poles/timber | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 5 | Stop producing charcoal | | | | |
| 6 | Other (please specify) | | | | |

E3. Could the following manage a programme against deforestation in your community well?

| No | Response | 1 Disagree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | Government officials | | | | |
| 2 | The village leader(s) | | | | |
| 3 | Specially elected village committee | | | | |
| 4 | NGOs | | | | |
| 5 | Other (please specify) | | | | |

E4. What kind of issues do you think could be associated with such a programme?

| No | Response | 1 Disagree | 2 Disagree somewhat | 3 Agree somewhat | 4 Agree |
|---|---|---|---|---|---|
| 1 | The overall income situation in the village/community will be better | | | | |
| 2 | It will result in corruption | | | | |
| 3 | Unequal distribution of payments | | | | |
| 4 | Payments will go only to land owners | | | | |
| 5 | There will be less conflicts in the village/ community | | | | |
| 6 | It will increase privatization of land | | | | |
| 7 | Other (specify) | | | | |

E5. If you foresee any problems, how do you think they could be best handled?

_____

## Appendix 2: Participatory rural appraisal guide for focus group discussion

The purpose of this project component is to provide an insight into how local people see and express their general livelihood situation, how they evaluate local governance and power structures, and local informal and formal tenure rights. We also want to probe into their general attitudes, values and norms in relation to forest resource management and use and what kind of ideas and suggestions they would have for possible REDD schemes in their local community.

More specifically, the guide includes questions concerning:

- General livelihood conditions – outcome changes (income, food security, health, education.)
- Institutional, organizational and policy changes (local actors, policies and governance, social relations, donors)
- Property rights and tenure
- Local peoples' attitudes, values and norms
- Pre-REDD analysis, opportunities and expected problems

The local research team decides how many focus groups to establish, where to do these and how to recruit participants, see also the Manual (Section 7). The aim is to cover the pilot area – or the chosen sub-section of the pilot area[4] – as well as possible. The size of the pilot area,– including number of inhabitants, and the form of dwellings – villages or scattered houses – will influence this choice. Also the homogeneity of the area is important concerning e.g., livelihoods, property rights and ethnicity. Certainly, important variations should be covered. The basis for selecting members of the group should be geographical, i.e., each focus group should include people from the same village/sub-section of the pilot area. If different ethnic groups live in the same area/village, separate focus groups should be established for these. We also advise having separate meetings with women and men.

In the following, we will systematically refer to 'the village' as the place where people live and are recruited to form the focus group. This is thought to be the geographical reference point for the questions. Certainly, this delimitation also includes the land that the members of the village use/own. In areas where people do not live in villages, other forms of community borders need to be drawn by the research team and the members of the focus groups must be informed about what 'municipality' they are going to talk about.

**Note:** The interviewer should write down all the answers on separate sheets including the questions number. It should be clear where the focus group discussion is undertaken and who participated.

### A. General livelihood conditions

This section is structured to address the vulnerability context of the village as in the livelihood framework. The main issues here will be:

1. Livelihood security
2. Technological change
3. Shocks and coping strategies

[4] If the pilot area is large, it may be that only a sub-section of the area will be covered – the study area.

4. Prices and price changes
5. Gender division of labour
6. Environmental conditions

A1. How do you consider the general livelihood conditions of the village today (income, food security, health, access to natural resources, social infrastructures (such as health centres, schools, piped water, electricity etc.)?

A2. Have these livelihood conditions (income, food security, health, access to resources, social infrastructures) changed over the last 5 years? What has worsened, respectively improved? Discuss the coping strategies of any livelihood conditions that have become worse.

Are there more or less poor people today than 5 years ago?

A3. Have there been any major changes occurring with regard to e.g. the adoption of new technologies and innovations over the last 5 years? How has this impacted upon the way people make their livelihoods in the village?

A4. What major shocks (droughts, floods, pests, diseases, bush fires, political unrest, war, large-scale migration or land expropriation) has the village experienced over the last 5 years? Discuss the coping strategies and livelihood outcome effects of these shocks.

A5. Describe the most important changes in prices for agricultural inputs and outputs, labour, and land over the last 5 years? How have these changes had an impact on peoples' livelihood conditions (income, food security and access to resources)?

A6. Describe the general market conditions and credit arrangements of the village. Please raise issues here such as access to external market, credit institutions including saving groups.

A7. What are the dominant divisions of labour between men and women concerning resource use (land clearing, planting, harvesting, collection of fuel wood, collection of NTFPs, production of charcoal, off-farm activity).

A7. Are there activities that women do now that they did not do before? Are there activities that they are not permitted to do?

A8. Do you observe any recent changes in the climate conditions of the village?

**B. Actors, power relations and institutional structure of the village**

This section addresses issues related to the policy and institutional context of peoples' livelihoods. The main issues here will include:

1. Key formal and informal actors, organizations and institutional structures in the village
2. The power positions, functions and impacts in the village
3. The villagers interactions with different organizations and institutional structures

B1. What are the most important positions in terms of the governance of the village? What are the most important actors with respect to land allocation and forest management?

B2. How does the leadership of the village function? We are interested in issues especially concerning land allocation, forest management and deforestation.

B3. Have there been any major changes in this leadership recently? If so, what are the changes? How have these changes affected the functioning of this leadership on land allocation and forest management?

B4. Describe the interactions and relationships between villagers and the village leadership.

B5. How do different social groups (ethnic, wealth, religious, local opposition groups) engage in the processes in the village concerning land allocation and forest management? Please, emphasize here both formal and informal structures when relevant.

B6. Are there people in the village who are particularly disadvantaged or favoured by the way resources are distributed and controlled?

B7. How would you describe the conflict level related to distribution, acquisition and use of land in the village (very low, low, fair, high, very high)? What are the main conflicting issues?

B8. What important external actors (NGOs, extension service, state officials, and donor agents) are engaged in the management of village business? How do they interact and relate to the village leadership specifically concerning land allocation and management of forest?

**Rules for resource access and management. Forest status**

This section address issues related common property resource management. The main issues here include:

1. The rules and regulation of access and use
2. The participation of local people in the formulation of rules and regulations
3. The governance structure
4. Enforcement of rules and sanctions
5. Conflict resolution mechanisms
6. Status of forest resources

This section will be divided in three, covering separately state forests, community forests and forests under open access.

**C. State forest(s) (if any).**

We have separated state forests into four sub-categories, which reflect the degree of management responsibility:

- State forest (ordinary)
- State forest (JFM)
- State forest (CBFM)
- State forest (individual)

If more than one type exist in the pilot/study area, please go through the below questions C1-C12 separately for each type. Most probably you would like to do these interviews yourself. If, however, you hire somebody to do them, you might want to duplicate the interview guide on this issue and add a letter to the question C1-C12 to clarify which

ownership type it refers to – e.g., C1(Ord) of 'State forest ordinary' and C1(JFM) if 'State forest (JFM)'. You may also want to specify the questions differently – e.g., say 'ordinary state owned forests' or 'state owned forests under JFM' instead of just 'state owned forests' or 'state forests' as are the terms used below. Whatever way you choose to do this, please **make clear** in the report which type of state forest the data concerns.

C1. What is the status of state owned forests in the village area – level of degradation? Has the level of degradation changed over the last 5 years?

C2. What is the operational form of management, how is the forest managed, and what are the main activities of the management entity?

C3. If the village is involved in the management of state forest(s), please describe how it is involved.

C4 Describe the rules concerning to what extent you are allowed to engage in productive activities in the forest, and how much is allowed to harvest, when and by whom in state owned forests in the pilot/study area. Please distinguish between timber resources/wood on the one hand and NTFPs on the other.

C5. Do the villagers feel bound by the management rules and tend to follow them?

C6. How are access and use of resources monitored?

C7. How are the rules concerning access and use of resources being enforced?

C8. Please identify and describe the sanctions associated with breaking the rules of access and use of state forest(s) (effectiveness, graduation of sanctions).

C9. How do the villagers view the enforcement and sanctioning of the rules? Has this affected their use of the forest?

C10. Is the system to resolve conflicts over use of state forest resources well formulated (both internal and external conflicts)? What are the rules for this system? Are you satisfied with them? Please describe how such conflicts are resolved? If there is no system to resolve conflicts, why is it so?

C11. Are there any major changes in the rules governing access to state forest(s) over the last 5 years? If yes, what are these changes and how have they affected the general livelihood conditions (income and food security) of the village?

C12. Please describe the relationship between the villagers and the management entity of the state forest(s)?

**Community forest(s) (if any)**

C13. What is the status of community owned forest(s) in the village area – level of degradation? Has the level of degradation changed over the last 5 years?

C14. How is this forest managed, and what are the main activities of the management system in place?

C15. Are the extent of the community forest(s) well defined (physical boundary)?

C16. Describe the rules concerning how much is allowed to harvest, when and by whom in community forest(s) in the pilot/study area. Please distinguish between timber resources/wood on the one hand and NTFPs on the other.

C17. Do the villagers feel bound by the management rules and tend to follow them?

C18. How are access and use of resources monitored?

C19. How are the rules concerning access and use of resources being enforced?

C20. Please identify and describe the sanctions associated with breaking the rules of access and use of resources in the community forest(s) (effectiveness, graduation of sanctions).

C21. How do the villagers view the enforcement and sanctioning of the rules? Has this affected their use of the forest?

C22. Is the system to resolve conflicts over use of state forest resources well formulated (both internal and external conflicts)? What are the rules for this system? Are you satisfied with them? Please describe how such conflicts are resolved? If there is no system to resolve conflicts, why is it so?

C23. Are there any major changes in the rules governing community forest(s) over the last 5 years? If yes, what are these changes and how have they affected the general livelihood conditions (income and food security) of the village?

C24. Please describe the relationship between the villagers and the management committee of the community forest(s)?

C25. How would describe the relationship between the management committee and the leadership of the village and relevant external actors?

**Open access forest(s) (if any)**

C26. Are there any forest areas in the village that people are allowed to access and use without any control?

C27. Please describe the area of the village regarded as open access.

C28. What is the status of this area – level of degradation? Has the level of degradation changed over the last 5 years?

C29. What are the main resources that are extracted in the open access areas? Are they important for the livelihood of the villagers/community?

C30. Do people from other villages access these forests?

**D. Local peoples' attitudes, values and norms related to forest resources use, conservation measures and conflicts**

The main focus in this section will be on

1. Local peoples' attitudes towards the forest
2. Their relationships with the forest
3. Local practices of forest resource use

D1. What does your community think about the forest of the village/community? What is the importance of the forest concerning?

- livelihoods/income,
- life mode,
- safety net,
- cultural and spiritual values

D2. Has the importance of the forest along the above dimensions changed over the past 5 years? If there are changes, what has caused these?

D3. Are there any norms concerning what is considered proper forest use and management? How do these influence access to and use of forest resources? Are there any important changes over the last 5 years in these norms?

D4. How would you describe the villagers' knowledge about the forest today compared to 10 years ago?

D5. Please list and describe the main conflicts over forest resources in the village (if any) over the last 5 years (e.g., access, use, conservation). Have any of them been resolved? How do the villagers handle unresolved conflicts?

## E. Pre-REDD analysis, opportunities and expected problems

This section covers issues concerning:

1. Risk perception
2. Willingness to accept payment
3. Alternative payment formats

You will need to briefly introduce that there is a REDD project that will be started soon and explain the aim of reducing deforestation/less use of forest resources – especially wood and timber.

E1. What do you think would be the best form of compensation for reduced access to forest resources – e.g., individual payments in cash or investment in the community or a combination? If in kind payments are of any relevance, which form(s) would be best?

E2. If payments in cash, how do you think the villagers will use these payments?

E3. How do you think you could compensate for reduced access to forest resources like land for agriculture, fuel wood, timber, wood for charcoal production etc? (Please see Section 7.3.5 in the manual for guidance on this question).

E4. How should such a payment scheme be managed – e.g., by local leaders, by local government, by local NGOs, or by some external actors (foreign NGO)? Who would you trust the most and why?

E5. Please identify and describe any problem you think could be associated to these types of payments (e.g., security of payment, ability to deliver, corrupt practice and misuse).

E6. Are there any aspects of the institutional and organizational structures of the village that could impact the way the payment scheme could work? (Discuss issues like elite capture, corruption, unequal distribution and marginalization).

## Appendix 3: Participatory rural appraisal guide for local resource person(s)

NOTE: A **manual** is developed for the project. It is important to read the manual before interviewing (**Sections 1-4 and Section 6** is most relevant for this part of the data collection).

The purpose of this project component is to provide general **factual** information about the situation in the pilot/study area. The note covers the following issues:

- Demographics and general livelihood conditions in the pilot/study area
- Property rights/tenure and management rules
- Market for land

We expect interviews with local resource persons to be the most important source of information. The interviewer should, however, feel free to use whatever sources of information necessary to establish the best basis for the data demanded by this note – i.e., also written sources, maps etc. when that is suitable/available – see also Manual (Section 6). It is important that the sources used are well documented. This is of importance both for reporting reasons and in case we need to go back and check data.

**Note:** The interviewer should write down all the answers/data on separate sheets (except tables), including the question numbers and how data was obtained. When interviewing, using a **recorder** is recommended to facilitate easy flow of the interview sessions and also to improve the quality of the information. But please do take notes as well to avoid any loss of data resulting from recorder failure, etc.

The choice of person(s) to be interviewed is very important. For this reason, the local team must make this choice based on their experience with the pilot/study areas. The data required in this note must cover the situation in the entire pilot, or if a subsection of this area is chosen for our study, it must cover the whole of that sub-section. When the note later refers to 'the pilot/study area', it is this entity that we have in mind.

If there are important variations in the pilot/study area – as defined above – for some of the issues covered by this note, you might have to divide the area into sub-areas for these issues. This is fine, as long as the whole pilot/study area is covered and you have made clear which subarea the data covers.

## A. Demographics and general livelihood conditions in the pilot/study area

This section focuses on providing general information at the level of the pilot/study area. important trends in changes of conditions over the last 5 years and major shocks that impact on general livelihoods conditions of local people:

- Demography and demographic changes
- Technological changes
- Changes in economic frame conditions (input and output prices)
- Shocks (climate, drought, floods, pests, diseases, civil unrest, war)
- Livelihood outcome changes (income, food security, health, education)

A1. How many villages does the pilot/study area contain?

A2. What are the population and number of households in the pilot/study area today and 5 years ago?

A3. What are dominant in- and out-migration trends of the pilot/study area today? Are there any major changes in this pattern over the last 5 years?

A4. Has the pilot/study area experienced any particular innovations of importance for livelihood outcomes over the last 5 years?

A5. Describe – if any – major shocks (drought, floods, cyclones, pests, diseases, civil unrest, war, etc.) that have occurred in the pilot/study area in the last 5 years. How have these affected the livelihood conditions for the people living in the area (income and food security)? If there is any important variation across different ethnic groups, classes, gender and other relevant categories, it is important to note these.

A6. Describe briefly the general livelihood conditions (income, food security, health, education and social infrastructures) of the households in the pilot/study area today and the main changes over the last 5 years. If there is any important variation across different ethnic groups, classes, gender and other relevant categories, it is important to note these.

A7. Detailed list of input and output prices. The national research team must define the most important crops in the study area – must be the same as those covered by the household questionnaire. We will use this information in calculating the gross income for the household, so crops that generate income of significant importance, even if it is for just few households, should be included.

| **Categories** | **Prices ($)** | |
|---|---|---|
| | Local market (village level) | External market (non-village; nearest town) |
| **Outputs** | | |
| ***Crop types (prices per kg)*** | | |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| ***Main Forest products*** | | |
| Fuelwood | | |
| Poles & timber | | |
| Charcoal | | |
| **Inputs (prices per unit)** | | |
| Tractor<br>- hire (per day)[1]<br>- purchase | | |
| Hand hoe and cutlass | | |
| Ox plough<br>- hire (per day)[1]<br>- purchase | | |
| Other inputs (specify):<br>-<br>- | | |
| Credit market (interest rates) | | |
| ***Labour market*** | | |
| - Permanent paid (per hour) | | |
| - Hire periodic (per hour) | | |
| ***Land for agriculture*** *(per ha)*<br>- Buy | | |
| - Rent | | |
| | | |

| | | |
|---|---|---|
| - | | |
| - | | |
| - | | |

1) If this is not the local custom,, recalculate per hour

A7a. What is the 'typical distance' from a village to the nearest main marketplace beyond that of the villages?

A8. Are there any types of exchange in the pilot/study area that does not involve monetary transfer such as barter (reciprocity or in-kind payment) and how do the communities engage in this type of exchange?

A9. How have the changes in input and output prices affected people's livelihood conditions (income, food security) over the last 5 years?

A10. Has there been any change in relative profitability between agriculture, livestock, forest and off-farm opportunities over the last 5 years? Which of these activities has become relatively more profitable?

A11. Describe the present job market (off-farm jobs) situation and 5 years ago

A12. Describe the poverty situation of the pilot/study area. Are there more poor people today than 5 years ago? If there is any important variation across different ethnic groups, classes, gender and other relevant categories, it is important to note these.

## B. Property rights, rules and forest status

This section focuses on

- Ownership classification of land and forest
- Rules concerning use
- Level of degradation of forests

B1. How would you classify the land in the pilot/study area?

| Land cat. (code land) | Total area (ha) | Private property (ha) | State property (ordinary) (ha) | State property (JFM) (ha) | State property (CBFM) (ha) | State property (individ.) (ha) | Common property (ha) | Open access (ha) |
|---|---|---|---|---|---|---|---|---|
| | **Forest:** | | | | | | | |
| Primary | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Secondary | | | | | | | | |
| Plantations | | | | | | | | |
| Protected [1)] | | | | | | | | |
| Scattered | | | | | | | | |

1) This category will cover sub-sections of the other three forest categories – especially primary and secondary forests

B1 (cont.)

| Land category (code-land) | Total area (ha) | Private property (ha) | State property (ha) | Common property (ha) | Open access (ha) |
|---|---|---|---|---|---|
| **Agricultural land:** | | | | | |
| Cropland | | | | | |
| Pasture | | | | | |
| Agro-forestry | | | | | |
| Fallow | | | | | |
| Waste land | | | | | |
| **Other land categories:** | | | | | |
| Shrubs | | | | | |
| Grassland | | | | | |
| Wetland | | | | | |

B2. Describe if there have been any major shifts in land distribution between the above ownership categories over the last 5 years.

B3. Give a description of the ecology of the forest types (primary, secondary and plantations).

B4. Categorize the use rights to resources in **state owned forests** (if any such forests in the pilot/study area). Clarify the dominant form of both categories below. Use ‘mix’ only if no

category clearly dominates. (You may want to add a description of what resources are governed by which category, if e.g., type of formalization is both formal and informal).

| Degree of formalization | | | Degree of collectivity | | |
|---|---|---|---|---|---|
| Formal | Informal | Mix | Collective | Individual | Mix |
| | | | | | |

B4a Also, please include a description of the **operational forms** of state-owned forests:

| Ordinary State | State Company (wholly state funded) | State Company (joint-stock) | Non-state company (national) | Multinational company | Other |
|---|---|---|---|---|---|
| | | | | | |

B5. Categorize the use rights to resources in **community forests (common property)** (if any such forests in the pilot/study area). Clarify the dominant form of both categories below. Use 'mix' only if no category clearly dominates. (You may want to add a description of what resources are governed by which category, if e.g., type of formalization is both formal and informal

| Degree of formalization | | | Degree of collectivity | | |
|---|---|---|---|---|---|
| Formal | Informal | Mix | Collective | Individual | Mix |
| | | | | | |

B6. Describe the rules concerning how much is allowed to harvest, when and by whom in **state owned forests** in the pilot/study area. Distinguish between timber resources/wood and NTFPs. Has there been any major changes in these rules over the last 5 years?

B7. Describe the rules concerning how much is allowed to harvest, when and by whom in **community forests (common property)** in the pilot/study area. Distinguish between timber resources/wood and NTFPs. Are there any major changes in these rules over the last 5 years?

B8. How are the rules enforced (monitored and controlled) and what are the associated sanctions if broken? Please, distinguish between state owned and community owned forests if relevant.

B9. What are the impacts of the rules on the general livelihood conditions (income and food security) in the village? Please, distinguish between state owned and community owned forests if relevant.

B10. How would you characterize the status of the forests in the different forest ownership categories in your community?

| Forest ownership types | Status | | | | |
|---|---|---|---|---|---|
| | 1Very degraded | 2 Degraded | 3 Fair | 4 Good status | 5 Very good status |
| Private forests | | | | | |
| State property (ordinary) | | | | | |
| State property (JFM) | | | | | |
| State property (CBFM) | | | | | |
| State property (individual) | | | | | |
| Common property | | | | | |
| Open access | | | | | |

B11. In your opinion, which of the following do you think is the most important source of forest degradation in the different forest ownership types? Please rank if more than one source apply. So if 'timber extraction' is dominant source for private forests, write 1 in that square. Next if 'clearing for agriculture' is the second most important, write 2 in the relevant square.

| No | Ownership types | Source of forest degradation | | | |
|---|---|---|---|---|---|
| | | 1 Over use of forest products | 2 Clearing for agriculture | 3 Encroachments on forest land | 4 Timber extraction |
| 1 | Private forests | | | | |
| 2 | State property (ordinary) | | | | |
| 3 | State property (JFM) | | | | |
| 4 | State property (CBFM) | | | | |
| 5 | State property (individual) | | | | |
| 6 | Common property | | | | |
| 7 | Open access | | | | |

B12. How would you expect the status of the different forest types in your community to be in 5 years from now compared to to-days status concerning degradation?

| Forest ownership types | Status | | | | |
|---|---|---|---|---|---|
| | 1Much worse | 2 Somewhat worse | 3 As to-day | 4 Somewhat better | 5 Much better |
| Private forests | | | | | |
| State property (ordinary) | | | | | |
| State property (JFM) | | | | | |
| State property (CBFM) | | | | | |
| State property (individual) | | | | | |
| Common property | | | | | |
| Open access | | | | | |

B13. How is the distribution of land between the households in the pilot/study area? Note both owned land and land where the households have use rights. Note also if there are any important variation across different ethnic groups, classes, gender and other relevant categories.

## C. Markets for land

The issues here include;

- Land prices and changes over time
- Cost of establishing a title deed or a permit to land and property
- Land acquisition by external agents
- Alienation rules for different types of property rights

C1. How is land typically distributed across households in the pilot/study area? Does the distributional pattern have any major impact on the general livelihood conditions (income and food security) of the pilot/study area and different groups of people?

C2. What are the current prices per ha – for purchasing and for renting – average quality land of the following categories?

- Primary forest (average deforestation) – purchase; renting
- Secondary forest (average deforestation) – purchase; renting
- Crop land – purchase; renting
- Pasture – purchase; renting

You might need to split into sub-categories if these categories are too coarse to give a reasonable picture of the prices

C3. Describe the rules that regulate the purchase of land in the pilot/study area today. Have there been any important changes over the last 5 years?

C4. Have there been any important changes in the price of land over the last 5 years. How have these changes affected the livelihood conditions (income and food security) in the pilot/study area?

C5. What is the cost of acquiring a title or permit/sub-lease for a piece of land from the authorities? How does this cost affect peoples' access and use of land in the pilot/study area?

C6. Do inhabitants in the pilot/study area have the right to sell land within and out of the villages they live in?

C7. Is there available land for the establishment of new households in the pilot/study area?

C8. How would you describe the rules regarding transfer of ownership of:

a) privately owned land,
b) land allocated by the State,
c) land assigned by a State company or similar, and
d) community-owned land in the pilot/study area

C9. How would you describe the rules regarding transfer of user rights in the pilot/study area concerning

a) privately-owned land,
b) state-owned land,
c) land allocated by the state,
d) land assigned by state company or similar,
e) community-owned land

C9a What is the extent of informal land sales in the study area (black market) – is it a big issue?

C10. Describe if the pilot/study area has experienced any form of land acquisition (buying or leasing) by external agents over the last 5 years. How has this affected the livelihood conditions (income and food security)?

**Appendix 4: Forest income, Forest/Non forest income and forest income by location**

| FOREST INCOME | New Yakasi | Sewum | Adonikrom | Jensue | Boinso | Asantekrom |
|---|---|---|---|---|---|---|
| ***Primary*** | | | | | | |
| Forest products | | | | | | |
| Subsistence | 1698,8 | 1074,54 | 1377,92 | 850,04 | 1210,76 | 614,052 |
| Cash | 0 | 0 | 0 | 0 | 0 | 0 |
| *Sub-total* | *1698,8* | *1074,54* | *1377,92* | *850,04* | *1210,76* | *614,052* |
| NTFP | | | | | | |
| Subsistence | 0 | 0 | 0 | 0 | 0 | 0 |
| Cash | 1,6 | 13,6 | 2,8 | 161,6 | 0 | 2,64 |
| *Sub-total* | *1,6* | *13,6* | *2,8* | *161,6* | *0* | *2,64* |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| *Sub-total* | | | | | | |
| Total primary income | **1700,4** | **1088,14** | **1380,72** | **1011,64** | **1210,76** | **616,692** |
| ***Secondary*** | | | | | | |
| Forest services | 0 | 0 | 0 | 0 | 0 | 0 |
| Forest business | 0 | 2 | 0 | 0 | 0 | 0 |
| | | | | | | |
| Total secondary income | **0** | **2** | **0** | **0** | **0** | **0** |
| Total forest income | 1700,4 | 1090,14 | 1380,72 | 1011,64 | 1210,76 | 616,692 |
| ***Total income*** | ***5834,8*** | ***3426,5323*** | ***5099,796663*** | ***4813,8137*** | ***4536,115*** | ***3677,5208*** |

| FOREST/NON-FOREST | New Yakasi | Sewum | Adonokrom | Jensue | Boinso | Asantekrom |
|---|---|---|---|---|---|---|
| | | | | | | |
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| | | | | | | |
| Services | 0 | 0 | 0 | 0 | 0 | 0 |
| Business | 0 | 1,6 | 1,2 | 0 | 0 | 17,52 |
| | | | | | | |
| | **0** | **1,6** | **1,2** | **0** | **0** | **17,52** |
| | **0** | **1,6** | **1,2** | **0** | **0** | **17,52** |
| | | | | | | |

| NON-FOREST INCOME | New Yakasi | Sewum | Adonikrom | Jensue | Boinso | Asantekrom |
|---|---|---|---|---|---|---|
| | | | | | | |
| Crops | | | | | | |
| Subsistence | 80,6 | 123,7383 | 78,27333 | 148,1467 | 66,22 | 17,55 |
| Cash | 2862,5 | 1589,762 | 2548,267 | 2825,227 | 2849,375 | 1893,534 |
| *Sub-total* | *2943,1* | *1713,5003* | *2626,54033* | *2973,3737* | *2915,595* | *1911,084* |
| Livestock | | | | | | |
| Subsistence | 15,2 | 0,132 | 0,572 | 0 | 1,76 | 0 |
| Cash | 29,3 | 49,96 | 3,164333 | 0 | 0 | 2,0648 |
| *Sub-total* | *44,5* | *50,092* | *3,736333* | *0* | *1,76* | *2,0648* |
| Fish | | | | | | |
| Subsistence | 0 | 0 | 0 | 24 | 0 | 0 |
| Cash | 0 | 0 | 0 | 16 | 0 | 0 |
| *Sub-total* | *0* | *0* | *0* | *40* | *0* | *0* |
| | **2987,6** | **1763,5923** | **2630,276663** | **3013,3737** | **2917,355** | **1913,1488** |
| | | | | | | |
| Wage | 1140 | 568,4 | 1021,6 | 768 | 377,6 | 1124,16 |
| Business | 6,8 | 2,8 | 10,8 | 6,8 | 2,8 | 6 |
| Remittances | 0 | 0 | 55,2 | 14 | 27,6 | 0 |
| | **1146,8** | **571,2** | **1087,6** | **788,8** | **408** | **1130,16** |
| | **4134,4** | **2334,7923** | **3717,876663** | **3802,1737** | **3325,355** | **3043,3088** |