

**IMPROVING RURAL LIVELIHOODS WITHIN THE CONTEXT OF
SUSTAINABLE DEVELOPMENT
*CASE STUDY OF GOASO FOREST DISTRICT***

October 2003

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GHANA



UNIVERSITEIT VAN AMSTERDAM

**Institute of Renewable
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This research has been done in the context of an interdisciplinary student project organized and financed by Tropenbos International Ghana (TBI-Ghana), using the educational model developed by the University of Amsterdam and supervised by lecturers of the Institute of Renewable Natural Resources and TBI-Ghana staff. The members of the research groups are mainly fresh graduates from different universities in Ghana and one from Surinam.



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Preface

This report recounts the activities of a project undertaken by an interdisciplinary team of eight fresh graduates from universities all over Ghana from the 14th of July 2003 – 17th October 2003. The project dubbed ‘Student Platform Project’ was under the auspices of Tropenbos International – Ghana. The team (frequently referred to as the *livelihood group*) was task with the responsibility of coming out with practical recommendations on how best improve the rural livelihoods (within the context of sustainable development) in the high forest zone of Ghana, using Goaso Forest District as a case study.

The group has as its facilitator, Ms. Anneke Wieman, the communication expert of Tropenbos International - Ghana. As her role, she guided the team in the group process.

Mr. Samuel Kwabena Nketiah, the programme team leader, Tropenbos International – Ghana, together with two senior staff members; Dr. Kyere Boateng and Dr. Steve Amissah all from the Institute of Renewable Natural Resources (IRNR) of Kwame Nkrumah University of Science and Technology (KNUST), Kumasi were also involved in look at the scientific quality of the project.

The group thanks all and sundry who in one way or the other contributed to the success of this project. We deem it necessary to thank the entire staff of the Asunafo District Assembly especially the District Chief Executive and the Developmental Officer, for their precious time, deep interest and willingness to help the team in diverse ways.

The various assemblymen (for Akrodie, Asumura, and Mim) are not left out. Your efforts were very significant and we are grateful. Again the team extends to all the citizenry of the Akrodie, Asumura, and Mim for their support, time and willingness to provide information vis-à-vis the project.

As a group, we wish to acknowledge each other’s contribution, concern, dedication and love that kept us together for all these fourteen (14) weeks.

Finally, and most importantly ‘To Him be glory, for great things He has done’. With oneness of heart we say ‘Glory to the Father, to the Son and to the Holy Spirit.

n

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ABSTRACT

While Ghana's population is growing at a faster rate, the resources needed to maintain the population is getting depleted, forest are becoming depleted through agricultural activities and bushfires, fuel wood is being over harvested, game stock is depleted in the forest and, water resources are being exhausted as demand increases, the time to call for sustainability can never be pushed forward any longer, hence the need for immediate intervention.

It is in the light of the above that the livelihood context of the fringe committees of the Goaso Forest District was being researched into by an interdisciplinary student project of Tropenbos International Ghana in order to

- identify the various livelihood options
- analyze the major identified livelihood strategies
- determine alternative livelihood options, and to
- recommend interventions that improve sustainable livelihood outcomes.

Prior to the fieldwork a reconnaissance survey was conducted to confirm, update, modify or/and deny the information obtain from the secondary data. In all two communities (Akrodie, Asumura) were selected. Questionnaire administration, observation, and informal interactions were the research methods used to obtain the entire data. In all 52 and 58 questionnaires were administered in Asumura and Akrodie, respectively. Individuals as well as focus group discussions were employed to solicit more information. NGOs (RUDEYA, RIMDA), the District Assembly, chiefs and community heads, assembly members and above all the inhabitants of the fore mentioned communities were focused. The data obtained within a period of four weeks were analysed using the Statistical Package for the Social Sciences (SPSS), descriptive statistics tools and chi-square.

Craft making, farming, civil and public services, trading, timber industry were identified as the major livelihood options in the Goaso Forest District, with the farming (66.4%) been the highest followed by trading (32.2%). Cash crops (cocoa, oil palm), Vegetables (Tomato, pepper), and food crops of which plantain was the highest were observed. Some potential resources were also identified which upon further research can enhance the livelihoods outcomes of the people of the area.

Interventions and recommendations form a major part of the research. Since farming has become uninteresting especially to the youth, it has been recommended that other livelihood options such as grass cutter rearing, snail farming and some other cottage industries be set up in the area to supplement their income.

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CHAPTER 1 INTRODUCTION

The concept of livelihood has remained a subject of utmost importance to its inevitable role to human existence. A livelihood is much more than a job as it covers a whole range of things people do to make a living. Increase in population and technology have also brought about more variation in livelihood activities thereby further puzzling the livelihood concept.

Rural households in developing countries have three broad options to improve their livelihoods. These include natural resource based activities, non-natural resource based activities and migration to other agricultural areas or to urban areas (Carney 1998; Ellis 1998). These are not however separate, mutually exclusive paths. The vast majority of rural households or families in West Africa follow at least two of the three strategies simultaneously (Brycesson, 1999).

Most people especially in the rural areas obtain their means of livelihood from their immediate environment as discussed by Carney and Ellis. Judging from this premise, it is apparent that rural livelihood in forest fringe communities generally hinges around agricultural production and direct dependence on forestry resources and activities. There is therefore the need to maintain a balance between the competing demand for survival and sustainability. However, the inequity of the earth's resources (WCSD, 1987) coupled with the strenuous task of balancing the various aspect or dimensions (including ecological integrity, social justice and economic prosperity) of sustainable development have always been the most prominent challenge in this pursuit of redefining man's relationship with nature.

The recent intensification of agricultural production, overgrazing, and conversion of land to several uses due to population pressure has resulted in several undesirable changes in the environment with adverse effect on agriculture (Okigbo, 1997). For this reason it is important that priority is given to issues pertaining to sustainable agricultural production and rural livelihood development in general, as an instrument for minimizing the direct dependence of people on the forest they border.

To minimize the direct dependence of people on the forest they border also means providing for an alternative option and also helping them improve what they already have to make a better living. Some development efforts are being made to improve the opportunities

available to people in the rural areas. This is however beset with many problems since not much is known about various livelihood options in the rural areas. Even where efforts had been made to identify some of the options, not much analysis have been done to determine the sustainability of these options. Another problem is that most development plans just introduce new options to the people without considering their interest and their particular environment, therefore these plans eventually fails. It is to address this gab in knowledge that this research is being undertaken. To intervene is to first understand fully the various ways and means by which the local people make a living.

1.1 Objectives

The principal aim of the study was to critically assess the livelihood options in some selected rural communities in the Asunafo District in order to explore opportunities that improve sustainable livelihood outcomes.

The specific objectives of the study were to:

1. Identify the various livelihood options in the Asunafo district.
2. Analyse the major identified livelihood strategies.
3. Identify potential livelihood options.
4. Recommend interventions that improve sustainable livelihood outcomes.

1.2 Overview of the Report

This report is divided into five (5) chapters. Chapter one (1) which is this chapter introduces the work by giving setting of the study, which includes the justification, and objectives of the study.

Chapter two (2) gives the background of the study detailing out theoretical knowledge on the theme. It defines the three central elements of the team, which are livelihood, rural livelihood in Ghana and sustainable development and improving.

Chapter three (3) gives a description of the study area, field study process, and the approaches and tools used in collection and analysis of the data.

Presentation and discussion of the results are found in chapter four (4). Here both descriptive and inferential analysis is used to bring out a true picture of data collected on the field and this has been thoroughly discussed.

In chapter five (5), various recommendations have been made from the conclusion of the report. Interventions on critical issues on the study were discussed.

The last chapter, which is chapter six, gives practical interventions which when implemented will improve rural livelihood

CHAPTER 2 BACKGROUND OF THE STUDY

This chapter explains basically, the theme of the research, which is “improving rural livelihoods within the context of sustainable development in the Goaso Forest District.” The key elements of this research are **rural livelihoods, sustainable development and improving**. Each of the key elements is explained in the following paragraphs.

2.1 Livelihoods

Livelihood is much more than a job. It covers the wide and diverse range of things people do, comprising the capabilities, assets and activities required for a means of living. In most situations resources found within one’s immediate vicinity will provide a livelihood or the means of making a living, which is true of most rural dwellers in Ghana. A livelihood framework is the tool used to analyse and improve our understanding of livelihoods.

There are many livelihood frameworks that have been used over the years to explain the concept of livelihood, but, in the performance of this research, the DFID livelihood framework has been chosen to explain the basic elements of livelihood. The framework presents the main factors that affect people’s livelihoods, and typical relationship between them. In particular, the framework:

- Provide a check on important issues and sketches out the way these link to each other;
- Draws attention to core influence and processes; and
- Emphasizes the multiple interaction between the various factors which affect livelihoods as shown below;

From the framework, there are five basic capital assets upon which livelihoods are built; Financial, physical, human, social and natural.

Financial capital denotes the financial resources that people use to achieve their livelihood objectives. There are two main sources of financial capital; available stocks and regular inflows of money. Physical capital comprises the basic infrastructure and producer goods

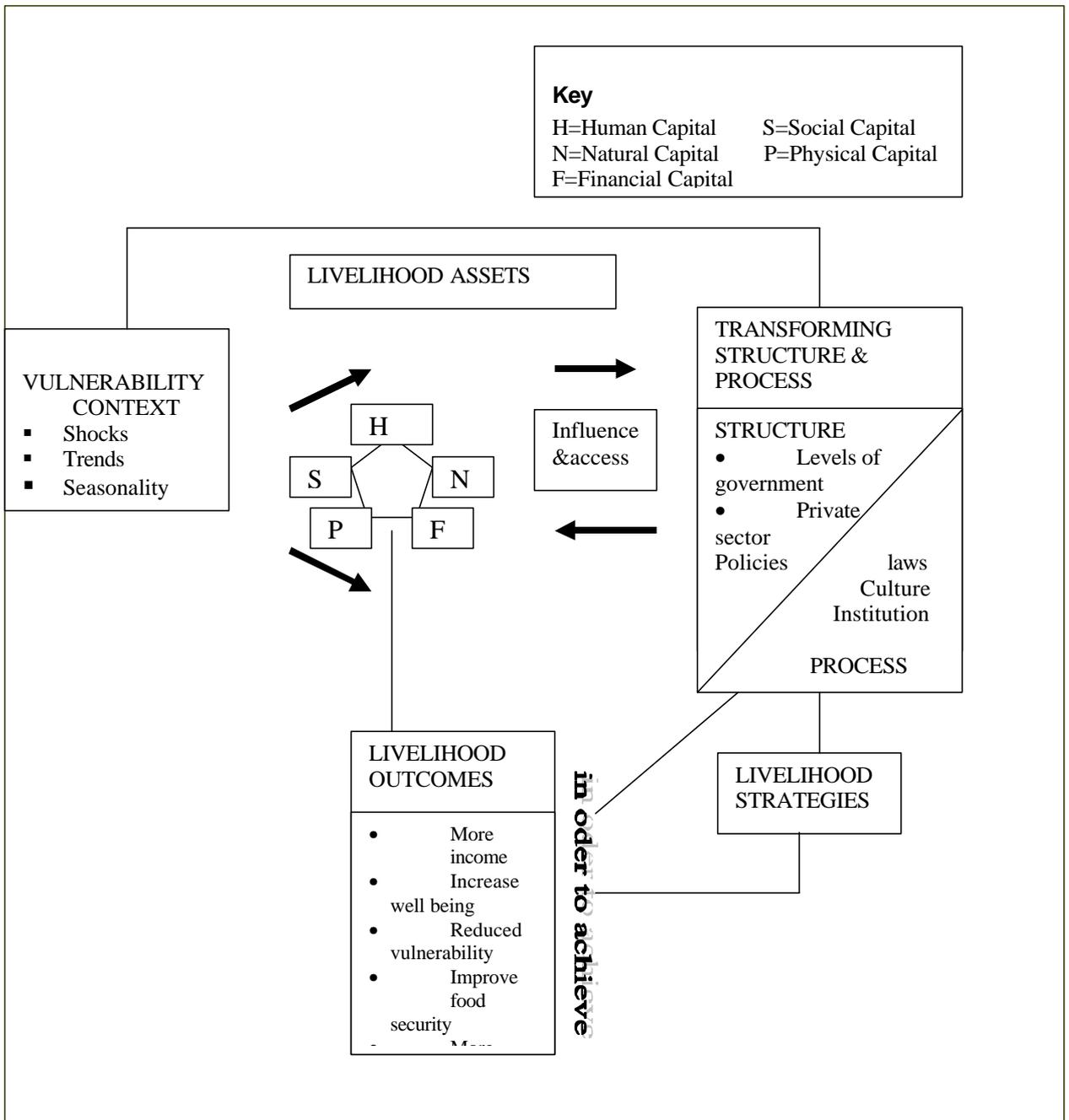


Figure 2.1. Sustainable Livelihoods framework (Source; DFID, 1999)

needed to support livelihoods. Infrastructure includes affordable transport, adequate water supply and sanitation, affordable energy, and access to communication. The human capital represents the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives. Social capital is taken to mean the social resources upon which people draw in pursuit of their livelihood

objectives. They are developed through networks and connection, membership of more formalised groups and relationships of trust. Natural capital is the term used for the natural resource stocks from which resource flows and services useful for livelihoods are derived. Clearly, natural capital is very important to those who derive all or part of their livelihoods from resource based activities such as farming, fishing, gathering and mineral extraction. (DFID, 1999)

Shocks, trends and seasonality are factors that people are vulnerable to in their choice of livelihood options. Various strategies are also adopted by people in response to threats and opportunities they face in society.

Transforming structures and processes within the livelihoods framework are the institutions, organisations, policies and legislations that shape livelihoods. They operate at all levels, from household to the wider communities.

Achievements or outputs of livelihoods strategies are important because they help us to understand the outcome of the current situation of factors within the livelihood framework.

2.2 Rural livelihoods in Ghana

Rural livelihood options found in Ghana include farming (crop production and animal rearing.), gathering, hunting, trading, craft making, and public or civil service.

Crop production has become uninteresting since marketing of the produce is a problem for the rural dweller. Animals are mainly reared on free range in the rural areas for subsistence, however, some people engage in it commercially. The main factor hindering commercial animal production is attributed to the high initial capital for putting up structures, acquisition of veterinary products and high cost of feed to maintain the animals. Fishing is an important source of livelihood for people who have water sources and ponds constructed to produce fish for subsistence and for cash. But fishing has become unsustainable since the various water sources are over exploited.

Gathering is a seasonal livelihood activity since most of the items collected do not appear throughout the year. These products are usually gathered in the forest and are called Non-

Timber Forest Products (NTFPs). Examples include snails, mushrooms, canes, raffia and leafy vegetables. They are particularly important among the rural poor who have access to few resources beyond the forest. Women, children, youth, and men engage in gathering depending on the product being gathered. Most of these NTFPs are however becoming extinct or unavailable due to bushfires and its continuous exploitation without any attempt to regenerate them.

Hunting is another form of livelihood, mainly practiced by males. Small rodents are hunted during the day and bigger animals hunted during the night. Women are normally not involved. This livelihood depends on the continued existence of suitable wildlife habitats.

With the introduction of commercialisation, trading has become very popular in most rural economies. Items traded in include food, crops, local and imported products. Women and the youth used to do most of the selling; however the trend is now changing since more men are getting involved.

In some villages and towns cottage industries such as pottery, woodcarving, soap making, basket weaving, cloth making, wood industry, palm oil extraction and food processing e.g. corn or rice mill are found. Some rural dwellers that have some form of formal training are employed in the public services such as teaching, nursing, or in providing services to the public. These people may be few due to lower levels of education in the rural areas.

2.3 Sustainable Development

The concept of sustainable development has been widely used in the past ten years (Daane, 2002). The most commonly used definition for sustainable development is; “Development that meets the needs for the present without compromising the ability of future generations to meet their own needs” (WCED, 1987).

Sustainability is a key indicator of success. Not only was it the theme of the World Summit on Sustainable Development (WSSD), of the United Nations, it also becomes a more critical theme in governmental policies and the private sector, in social development and in health sciences. It is widely acknowledged that sustainable development is a multidimensional

concept. There are many dimensions to sustainability; however, the following dimensions of sustainable development are distinguished:

- The ecological dimension; preserving or restoring resources for use by future generation.
- The social dimension; the way one household or community makes its livelihoods must not disrupt options for other to make theirs.
- The economic rather than wasteful, in its use of resources.
- The political-institutional dimension and the resilience; able to cope with, and recover shocks and stresses.

For development to be sustainable, it must take into account of social, ecological, and economic factors of the living and non-living resource base, and of the long-term as well as the short-term advantages and disadvantages of alternative action as discussed above.

In striving for sustainable development, the objective is not to exclusively strengthen one dimension, without taking into account the other dimensions but continuously searching for a balance between them. Sustainable development implies a continues effort within a dynamic Process of ever-changing variables, as most of the dimensions will constantly change; an active effort to look for a balance between the different factors is the main challenge. On the other hand sustainable development cannot be reached in the present and sustained forever, much more it is a goal laid down in the future, which already in the present should be aimed at.

Sustainable development aims to prevent any negative impacts on one of its dimensions and deals with ‘here and how’ as much as with ‘there and later’. Apart from that, it is important to take into account; the different dimensions of sustainable development, the equity principle- “we and they” and interdisciplinary apart from a disciplinary approach. To ensure human health now and future, care for social, economic and ecological dimensions of society is a prerequisite. The concept of sustainable development offers a useful contextual framework and approach for that. (Dankelman, 2002)

2.4 Improving

Rural livelihoods need to be improved constantly since most rural livelihood options basically depend solely on the forest and thereby leading to depletion of the forests and natural resources. A sustainable rural livelihood, which is the essential element at the root of all human development and economic growth, must be introduced so that the needs of future generations can be met without undermining the natural resource base. A livelihood becomes sustainable when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.

In an attempt to improve the rural livelihood strategies with the context of sustainability, defined indicators are used. Criteria including the value of the economic returns, whether the option is seasonal or not (continuity), renewable natural resource base available for the option (ecological) availability of markets, the skills and technology needed for such a livelihood option (economic), effect of the livelihood strategy on the environment and people (social) With these basic criteria sustainability can be assessed to some extent.

CHAPTER 3 STUDY AREA AND RESEARCH METHODOLOGY

This chapter describes the research approach that the group adopted and used for this study and the tools used in gathering information from the field. A description of the study area is also given in this chapter.

3.1 Study Area Description

The study was carried in the Goaso Forest District (GFD), Tropenbos International-Ghana research site. The Goaso forest is one of the richest forest districts in Ghana. It harbors many of the important economic timbers in Ghana. This therefore makes it a hotspot for timber logging. This forest district, found in the tropical high forest of southern Ghana, encompasses six contiguous forest reserves; Ayum, Bonkoni, Bia-Tano, Subim, Bosampepo and Goa Shelterbelt, all totalling a land area of 768.7 km². These forest reserves have been extensively logged but still remain productive and diversified in resources. Available record indicates that all the productive areas in these forests reserves have run their first felling cycle, with only few of the existing economic timber species being above 130-cm dbh.

Politically GFD lies largely in the Asunafo District with a relatively smaller part being in the Asutifi District, all in the Brong Ahafo Region (figure 3.1). Specifically it lies between latitudes 6° 23"N and 7° 00"N; and longitudes 2° 23" W and 2° 52" W. GFD also has one of the richest off-reserve forest resources in Ghana.

All forest in the GFD belongs to the Moist Semi-deciduous North-west (MSDNW) sub-type and subsequently receives an annual rainfall of between 1200-1500mm. The area also receives mean monthly maximum and minimum temperatures of 31 – 33 °C and 19 – 21°C respectively.

As very typical of forest fringe communities, majority of the people in the Goaso Forest District are farmers. The forest provides a lot of opportunities for the dwellers in these communities. The inhabitants of these communities have access to Non-Timber Forest

products (NTFPs) such as game, mushroom and snails, so far as they respect the rules regarding the reserve (BIRD, 2001). Owing to the relatively good nature of the soil in this district, cocoa and food crops like plantain (mainly), cassava, maize and vegetables are cultivated in the area in large quantities.

3.2 Research Methodology

3.2.1 Preparatory Phase

This phase comprised series of training programmes and workshops to acquaint the team with concepts and methods that will enable a practical application of these tools. This period also saw the development of the working rules and the identification of individual strengths and preferences, which was used as a basis for drawing up a team contract.

To gain a common understanding of the task at hand, the given terms of reference was thoroughly discussed. Additional literature was obtained and an extensive study of the available secondary data was done. This enabled the team to form its perception of the situation. During this period, the team developed a study field plan before leaving for the field. Likewise research questions and appropriate tools and procedures that were used.

3.2.2 Target Group

The target groups were farmers, chiefs and community heads, opinion leaders, District Assembly officials, Assemblymen, Community members and NGOs operating in the area. The N.G.Os were specifically RUDEYA and RIMDA who are playing important roles in improving livelihood and sanitation in the district. These were selected as the target group because of their vital role in the planning and implementation of the recommendations. Also the community members invariably become the beneficiaries of the project.

3.2.3 Reconnaissance Survey

A brief reconnaissance survey of six communities was conducted immediately after arrival in Goaso. All the team members visited the six communities initially selected; Anyimaye, Akrodie, Asumura, Nyamebekyere, Ayumso, Fawohoyeden, and Mim. The aim of this survey was to: familiarize the team with the communities and reconcile reality with

impressions gathered from secondary data. However, available resources in terms of time and transport facilities did not make it possible to cover all the communities in the district. Two communities were finally settled on, these were Akrodie and Asumura.

3.2.4 Mode of Data Collection

Data was obtained from both primary and secondary sources. The primary data was obtained by means of a structured questionnaire administered to the community members. The sample sizes for Asumura and Akrodie were 52, 58 respectively. The respondents were selected based a stratified random sampling. Six people in groups of two administered the questionnaires on the field whiles the other two processed the collected data.

Focus group discussions were also organized at Asumura and Akrodie to obtain more information that was not captured in the questionnaire, as well as individual interviews with chiefs, community heads, opinion leaders and District Assembly officials. It also served as a to cross check the already collected data. At Asumura, sixteen (16) people were present for the focus group discussion (community heads and members) but in Akrodie eighty-six (86) people were present, which also included the community heads and members. The crowd was divided into the youth and adult groups after a general discussion. The adult group as shown in plate 1 was made up of sixteen (16) people whiles the youth group (plate 2) was subdivided into smaller groups of twenty (20) to enable an effective discussion. The focus group discussion was carried out by means of a semi-structured questionnaire.

Observation was also used to identify potential resources. A transit walk was taken through the town to identify their physical assets as well as some potential resources that were made known during the focus group discussion. Secondary data was obtained from already existing publications by other researchers, journals and other sources such as the internet.



Plate 1. Some team members (Eric, Harriet and Betty) interacting with the opinion leaders in Akrodie.



Plate 2. Some team members (Kwaku, Eric and Nyantakyi) interacting with the youth in Akrodie.

3.2.5 Validation of Results

The team met with the Development Officer of the District Assembly to discuss the findings of the focus group discussions to know how much of the information gathered is in consonance with what they already knew. This also aided in bringing out new findings that could be considered in their development plan.

Preliminary results from the analyzed data were presented to representatives of Asumura and Akrodie and some District Assembly Officials in a meeting during which uncertainties in the results were cleared. During this meeting, recommendations made based on the results were also incorporated into the final report.

3.2.6 Monitoring and Evaluation

The effectiveness of projects and research including those directed at livelihood improvement is achieved by monitoring objectively verifiable indicators. Monitoring and evaluation was therefore carried out on a daily and weekly basis respectively.

For the monitoring, the group appointed two leaders weekly that saw to the day-to-day activities of the group. Their main responsibilities were to make sure the group had all the necessary materials needed for the week's activities as well as organizing for meetings. Other duties were also assigned to members to ensure efficiency.

There was a weekly evaluation with facilitators to review the week's activities. During this meeting, difficulties encountered during the week were discussed and plans were also made for the coming week.

3.2.7 Data Analysis

The data was processed using Statistical Package for the Social Scientist (SPSS), employing both descriptive and (such as frequencies, means, percentages and proportions) and inferential statistical tools the processed data were analyzed. Chi-square was used for the significant in dependency of certain parameters on others

CHAPTER 4 RESULTS AND DISCUSSION

This chapter carries out an analysis of the major livelihood options that were identified in the surveyed communities. It integrates the results with the discussion and derives its strength from the various observations, interviews and focus group discussion that was carried out.

4.1 Livelihood Options Identified in the Communities

Different livelihood options were identified in the surveyed communities. Some of the identified livelihood options were significantly represented whilst other were marginally represented. Table 1 and 2 below, show that the most prominent livelihood options in the two surveyed rural communities were farming and trading with farming being the highest followed by trading. Considering the fact that most people derive their livelihood from their immediate environment, farming inevitably, becomes the immediate livelihood option that is invariably adopted by the rural folks. This factor contributes to/accounts for the high number of people involved in farming.

Table 1: Main Occupation and Other Livelihood Options Cross-tabulation

<i>Main Occupation</i>	<i>Other Livelihood Options</i>						<i>Total</i>
	<i>Craft Making</i>	<i>Farming</i>	<i>No other work</i>	<i>Others</i>	<i>Trading</i>	<i>No Response</i>	
Civil and Public Servants		10	2	1			13
Craft Making		2					2
Dress Making		2	4		1		7
Farming	2		14	4	15	4	39
Others		5	6			1	12
Student		4	1		1	1	7
Trading		10	7	3		3	23
Timber Industry		1	2		1		4
Unemployed			1				1
Missing Data						2	2
Total	2	34	37	8	18	11	110

Table 2: Percentage of respondents involved in the various livelihood options.

<i>Main Occupation</i>	<i>No of respondents involved</i>	<i>Percentage (%)</i>
Civil and Public Servants	13	11.8
Craft Making	4	03.4
Dress Making	7	06.4
Farming	73	66.4
Others	20	18.2
Student	7	06.4
Trading	41	37.3
Timber Industry	4	03.4
Unemployed	1	0.9

Other livelihood options marginally represented were teaching, dressmaking, timber industry, craft making and hairdressing.

In the rural communities individuals engage in a broad range of activities (Brycesson, 1999). This fact was evident in the results, which revealed that approximately 66.4 percent of the people, in the two surveyed communities interviewed, adopted livelihood strategies that involved more than one livelihood option or job. This figure is relatively higher than those that exist in the urban areas. Apparently, the result suggests that rural livelihood strategies are more complex than those in the urban areas, which often involve one livelihood option or job at a particular point in time. A fact resolutely emphasized by the earlier authors on this theme.

From the results it could also be realized that, trading and farming share the greatest complementarities than any pair-wise with almost 40 percent of farmers adopting trading as the other livelihood option as a livelihood strategy. Ten (10) out of 23, representing a percentage of about 44 of traders were also involved in farming.

4.2 Employment Situation

The survey revealed that agriculture employed the largest number of people with a percentage of 66.4%. Trading was the next highest employer with a percentage of 37.3%. Others were however employed in other sectors such as Civil service (11.8%), artisans including dressmakers and craft makers, (9.8%) and Timber industry (3.4%).

Unemployment, however, was at the barest minimal (0.9%) and imperatively an insignificant element in the rural communities. This is in consonance with earlier work (GLSS 4, 2000) that concluded that unemployment is an urban phenomenon. However, putting together this upshot and results from the focus group discussion, it could be deduced that most of the rural folks especially the younger economic class (mostly between 18-35) do not regard or acknowledge farming as an occupation. This deduction stems from the fact, although most people (especially the youth) complain that they have no jobs, technically they were not unemployed; they were mostly farmers. Although, this was not critically assessed, it is suspected that this misnomer could affect the general input of the youth in farming. A fact that could partly be attributed to the recent decline in farming as an occupation in Ghana in general and the rural area in particular.

Underemployment however, which is the extent to which people may be employed but not as fully as may be desirable (GLSS 4, 2000) appears to be more pronounced in the communities.

Generally factors like age, education and gender did affect the choice of certain livelihood options by an individual in the surveyed communities. The relationship became more apparent when the individual identified livelihood options were analyzed separately.

4.3 Analysis of the Major Livelihoods Identified

As revealed from the results, the major livelihood option identified were farming and trading. An analysis is carried out on these options in the subsequent sections

4.3.1 Farming

Farming, among the identified livelihood options in the surveyed communities, is the most prominent, practiced by far more than half of the people. This suggests that farming still remains an important source of livelihood for the rural people. The common types of farming identified were crop production and animal rearing with more people involved in the growing of crops than in animal rearing.

4.3.1.1 Crop and Animal Production

Farmers in the surveyed communities grew crops such as cocoa, oil palm vegetables, occasionally and intercropped/mixed with food crops such as cassava, maize, plantain and cocoyam.

Table 3: Main Crop Cultivated and Other Crop Cultivated Cross-tabulation

<i>Main Crop Cultivated</i>	<i>Other Crop Cultivated</i>					<i>Total</i>
	<i>No Response</i>	<i>Cocoa</i>	<i>Cash crop</i>	<i>Food Crops</i>	<i>Vegetables</i>	
Cocoa	1		6	30	1	38
Food Crops	4	1		12	1	18
Oil Palm				4		4
Vegetables				1		1
Missing Data	12					12
Total	17	1	6	47	2	73

Table 3 is a frequency table that shows the various crop types grown by the farmers in two surveyed communities. Food crops which include mostly plantain, maize, cassava, coco yam in that order of incidence were the most cultivated crop type, almost all the farmers interviewed (90%) cultivate food crops either as a main crop (mostly) or otherwise. Nonetheless, it is worth mentioning that most of these food crops are produced on subsistence basis with very little usually considered excess sold in the local markets. Cocoa came second with an encouraging percentage of 53.4% interviewed farmers involved. These two farming systems are old practices with some being practice continuously for 20+ years. It was realized that oil palm is a relatively new farming practice in the surveyed area. The comparatively few farmers involved this new but promising farming venture started in about 3-4 years on the average.

Animal rearing was the other farming practice/type that was identified. Only 30% of the farmers interviewed practiced some form of animal rearing with virtually all of them practicing it on subsistence basis. This obviously implies that none of them took it up as a primary occupation or livelihood option. The common animals reared included poultry, sheep and goats. Others like cattle and snails were being practiced at a minimal level. The rearing of small ruminants was not a common practice. More farmers (57%) were involved in the rearing of sheep and goats than any other animal. It is worth noting that animals were kept on

free range and were fed using household leftovers and produce from the farms. Farmers kept these animals as security to crop failure or to meet other urgent domestic needs for which they would sell some to get the needed cash. Others also kept these animals as a means of diversifying family savings. The major constraint to animal rearing was reported to be diseases and lack of the technical know-how with regards to the rearing of animals

Generally gender was realised not to affect farming as a livelihood option in the rural community, as both male and female were actively involved with no significant difference in percentage participation. However certain factors like age and education was seen to significantly affect the choice of farming as a main or primary occupation.

4.3.1.2 Education and Farming

Generally, people with basic, secondary, tertiary education and illiterates alike were into farming, but as a secondary livelihood activity or supplement to their main livelihood. It was interesting to note about three-quarters of the tertiary holders were involved in farming as a livelihood strategy. However, the choice of farming as a major or primary livelihood option was affected significantly by education as shown table 4a and 4b below.

Table 4a: Education level against main occupation of farmers

<i>Main Occupation</i>	<i>Educational Level</i>					<i>Total</i>
	<i>Basic</i>	<i>Illiterate</i>	<i>Non-formal</i>	<i>Secondary</i>	<i>Tertiary</i>	
Civil and Public Servants			1	2	6	9
Farmers	27	8	1	3		39
Others	9					9
Trading	5	3	1	3		12
Student	2			2		4
Total	43	11	3	10	6	73

Table 4b: Chi-Square Tests

	Value	df	P value
Pearson Chi-Square	58.670	13	.000
N of Valid Cases	73		

From Table 4a, a considerably larger percentage of people with basic education (62.8%) and eight out of ten illiterates representing 72.7% use the farming as their a major livelihood option. On the converse, all the tertiary education holders (mostly teachers) and a sizeable percentage (72.7%) of secondary school leavers involved in farming, do so as a secondary livelihood option aside their respective main occupation. This suggests that farming, as a main livelihood option is regarded as a preserve of the less fortunate in education.

4.3.1.3 Age and Farming

Age is another crucial factor that affects farming as a major or otherwise livelihood option in the surveyed rural communities. The table below (Table 2.2a) shows the percentage of the people in terms of age category involved in various identified livelihood options.

Table 5a: Age Distributions and Main Occupation Cross-tabulation

<i>Main Occupation</i>	<i>Age Distribution</i>				<i>Total</i>
	<i>Below 18</i>	<i>18-35</i>	<i>36-55</i>	<i>Above 55</i>	
Civil and Public Servants		4	7	2	13
Craft Making		2			2
Dress Making		4	2	1	7
Farming		14	17	8	39
Others	1	10	1		12
Student	5	2			7
Trading	2	14	6	1	23
Timber Industry		2	2		4
Unemployed		1			1
Missing data	1		1		2
Total	9	53	36	12	110

Table 5b: Chi-Square Tests

	Value	df	P Value
Pearson Chi-Square	70.203	27	.000
N of Valid Cases	110		

It could be inferred from Table 5a again that farming as an occupation declines gradually as one moves from the aged class (Above 55) through the older economic activity or working

class (36-55) to the younger working class (18-35). Of the total number of people interviewed in the aged class, 66% percent were farming. The percentage reduced considerably to 47.2% and further to 26.4% in the older and younger working class respectively. The figure below clearly shows this relationship.

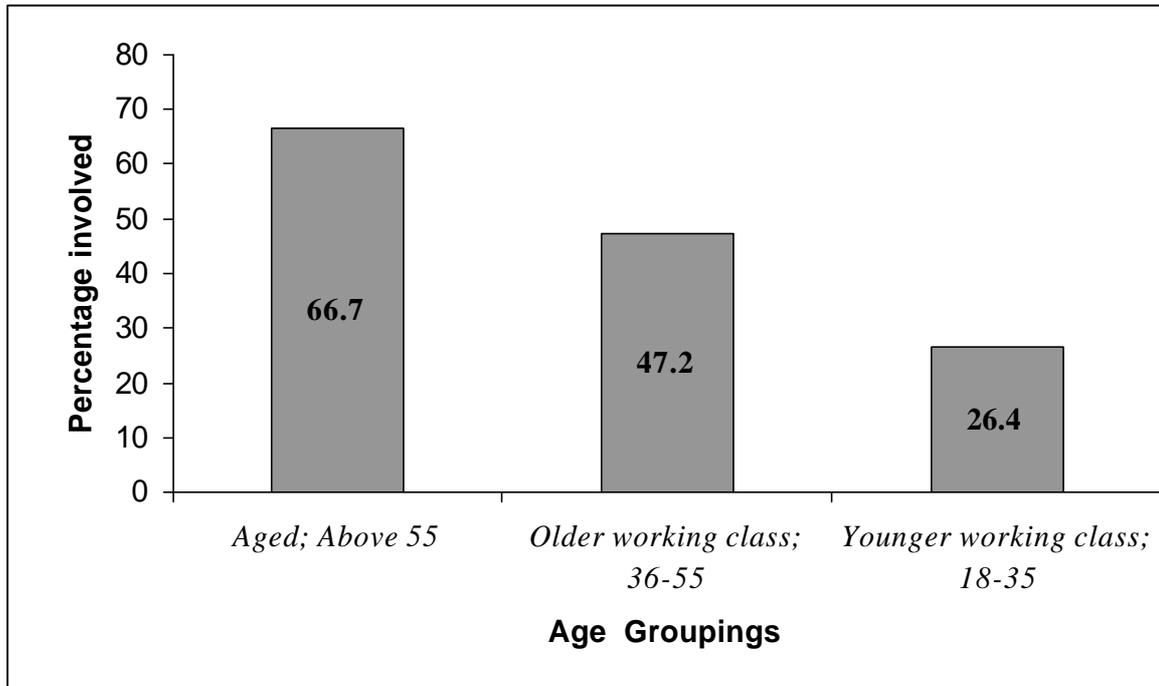


Figure 4.1: A bar graph showing the percentage of people involved in farming in each age groupings.

This finding is consistent with recent popular public outcry that farming as an occupation is going down. Many factors such as inaccessibility to land and poor markets for their produce and others were some of the major elements that could be attributed directly this trend.

4.3.1.4 Reasons for decline in farming

The research revealed that the reasons for the decline in farming in these communities stems from the problems associated with farming in these areas. These problems include the following;

- ***Unavailable land***

Access to land in these communities has become an increasing problem mainly because of the demarcation of the lands for the reserve, thus fertile lands have become limited and scarce for farming. Local lands, mostly owned by the indigenes are usually given out on share cropping arrangements. Such arrangements are unfavorable to the lessee as they are usually cheated out of by the youth are inherited from their fathers. This therefore discourages most of the youth from indulging in farming.

- ***Declining soil fertility***

According to all the respondents, one of the most important problems that confront crop production is the declining soil fertility intensive and continuous of land as well as increasing human population density has caused pressure on the natural resources such as land and forest. The result is that the fertility of the soil is greatly reduced, thus the level of their productivity does not reciprocate the effort of the farmers.

- ***Diseases and Pest***

This is a factor that has contributed to the low productivity of the farmers. The diseases, which attack the farms, almost always leave them with little or no harvest at all. Cocoa for instance was attacked by “akate” which greatly reduced the crop yield. The farmers however acknowledged/appreciated the recent mass cocoa spraying exercise by the government which has gone a long way to curtail this problem.

- ***Credit facilities***

The research also revealed that access to credit facilities in these communities were very difficult and nearly impossible as a result of the high interest rates and the inability of the rural folks to provide a form of security for the advancement of the loan. The absence of these credit facilities tend to limit the ability of the rural farmers to purchase farm inputs, clear large tracts of land and expand their farms as this involves a lot of capital input. Payment of labour used becomes very difficult as well as the control diseases and pest.

- ***Post harvest losses***

After harvest, the farmers are faced with the problem of lack of proper storage facilities especially for perishable vegetables and root crops. As such post harvest losses are very high.

This is usually the case when there is a bumper harvest. The traditional methods of storage do not keep the produce for longer periods, which makes it necessary for it to be sold. On the other hand, there is no ready or available market that can absorb these excesses. The buyers/purchasers of such produce therefore take advantage of the situation to purchase the produce at a price determined by them, which is always invariably pathetically low. The effort of the farmers, in effect, becomes unrewarding and their expectations to make a certain level of profit, becomes an illusion. This is a factor that has discouraged most of the youth from indulging in the farming occupation.

4.3.1.5 Income levels and Expenditure

The gross annual income of a farmer in the surveyed communities ranges from ₪100,000 to ₪30,000,000. On the average, a farmer earns approximately ₪4,800,000 with about 27.1% of the farmers earning less than ₪1,000,000 per annum. Approximately 11% earned a gross annual income that was above ₪9,000,000. This suggests that although farming is the predominant occupation, its returns are not encouraging. This is quite typical of rural areas in the country where small-scale agriculture dominates the economic activities. The results also revealed that feeding constituted about 50% of their expenditure followed by education and clothing and farm inputs.

Putting together the income level and the expenditure pattern of the farmers, it is not surprising that 56.4% of the farmers were unable to save, undoubtedly due to the very little or no money to save after the expenses.

4.3.2 Trading

Trading is the next outstanding livelihood option after farming with a percentage of about 37% of people surveyed. From the information gathered from the series of interview and discussion held, it came to light that this livelihood option is picking up steadily. The major reasons assigned for this trend are relatively higher profit margin and less market risk in trading. It is also interesting to note that majority of the traders (63 percent were farmers). With trading however, gender and age were the factors that significantly affected it. Education was insignificant

4.3.2.1 Gender, Age and Trading

Again it was realized that the number of people involved in trading was affected by the gender. Contrary to the farming, trading showed quite a larger proportion of females indulging in it.

The result revealed that 80% of the traders were females. From the series of interviews and discussions, it came to light that trading was seen as a job for females

Trading as an occupation increases gradually as one move from the aged class (Above 55) through the older economic activity or working class (36-55) to the younger working class (18-35). A trend contrary to the situation in farming. Of the total number of people interviewed in the aged class, 8 percent were trading. The percentage increased considerably to 16.7 percent and further to 26.4 percent in the older and younger working class respectively. This trend can be attributed to the fact that trading, the figure 4.2 below clearly shows this relationship.

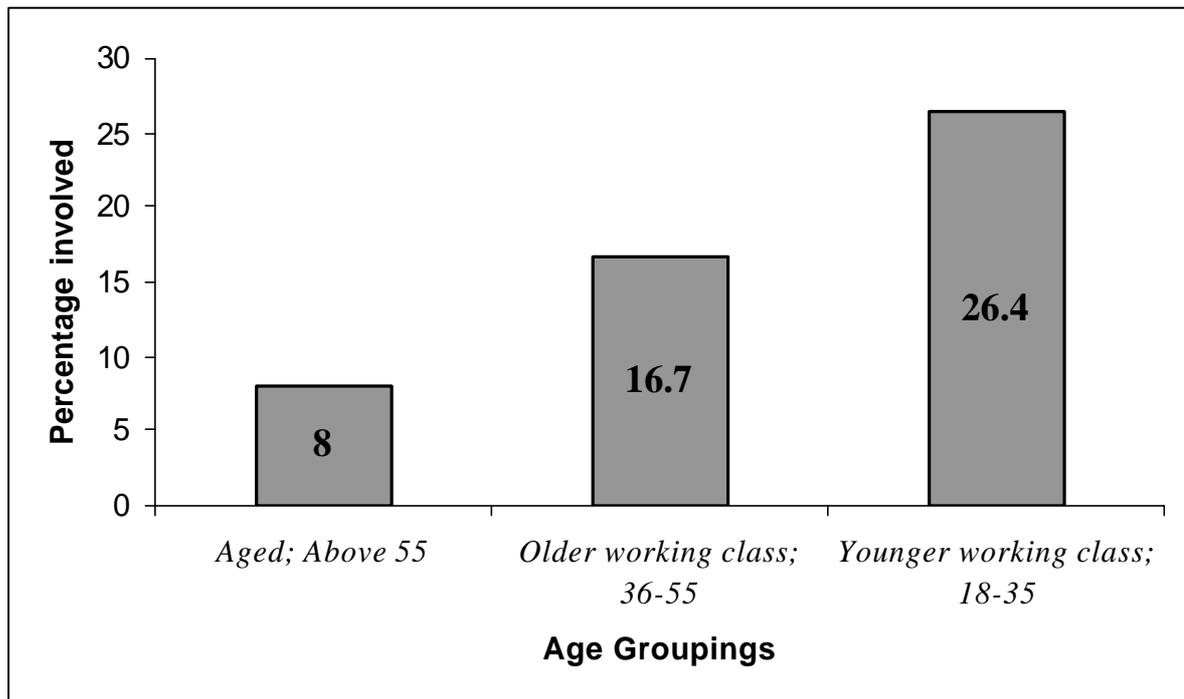


Figure 4.2: A bar graph showing the percentage of people involved in trading in each age groupings

4.3.2.2 Items traded

The items traded in were grouped under agricultural, non- agricultural and forest products

Table 6: Showing the percentage of items traded in by traders in surveyed communities

		Frequency	Percent
Items traded in	Agricultural produce	12	29.3
	Forest products	2	4.9
	Non agricultural produce	27	65.9
Total		41	100.0

The table above shows that 65.9% of the traders interviewed were involved in non-agricultural items. Agricultural produce was next with a percentage of 29.3%. This was so because the study revealed that most people in the communities grow what they eat thus the local people do not serve as potential or ready markets for such produce. The items that was least traded in was the forest products. This suggests that the quest to sustain the forest resources might have made an impact.

Although trading was steadily picking up, the major constraint associated with it was the lack of an effective market for their goods. Since the goods were mainly for the local community, the absence of effective demand prevents them from obtaining the desired sales. Most of the goods were bought on credit and payment of debt becomes a different problem on its own. It was also realized that it was only in the cocoa harvesting season that they are able to obtain good sales, thus they are practically out of business during the off seasons. In other words, its direct dependence on the cocoa season makes them virtually redundant in the off seasons.

4.3.2.3 Income Level and Expenditure

For traders, the gross annual income ranges from ₦110,000 to ₦12,500,000 whilst the average income ₦3,900,000 per annum. About 13.2% of the traders earn an annual income of ₦1,000,000 and below. This trend differed from that of the farming.

For the traders however, only 25% of their income went into feeding, 28% into clothing and 47% into education. In relation to farming, it can be said that less is gotten from trading.

However both trading and farming spent a greater proportion of their income on education and food.

Marketing in the two communities is organized mainly on daily and weekly basis. Both communities organize periodic markets called market days which see a lot of people from the neighboring villages coming to buy or sell. This periodic market gives the farmers the opportunity to bring their farm produce to the market place without having to travel long distances to sell the produce.

4.4 Alternative livelihood option

Non-timber forest products (NTFPs) used to be an important livelihood source to supplement income in the past but this has not moved along favourably with present trends and occurrences and challenges. The observed trend is due to the changes in policy that allow free collection for domestic use but demands acquisition of permits for commercial purposes. While this policy hopes to regulate the resource use, the rural poor have restricted access to the resource, due to poverty. The other reason is that over-use of the resource coupled with recent abuse of permits has caused some of the resources to become unavailable or virtually extinct. The situation therefore presents opportunity for finding other substitutes of meeting the needs and priorities of the rural poor. A description of the project such as snail rearing, soap making and Gari processing are given in chapter six Chapter 6.

The remaining forest resources in the communities that offer potential opportunities for income have limited use. This is because indigenous knowledge on their use is incomplete. The result is indiscriminate collection of some the products for sale outside the village with little concern on the ecological implications, destruction of some important species for lack of knowledge.

Nine (9) different species (trees and shrub categories) with anticipated or supposed multiple uses were documented and are discussed below.

4.4.1 *Daniella ogea* (Hyedua)

It has Indicative Felling Level (IFL) for stem, felling limit and volume of zero (0) in Subim and Bonkoni Forest reserves (RMSC, 2001). Though Hall and Swaine state that the species regenerate in shade and small gaps, Saul and Fox (1967) record no usual requirements. According to the people 'ehye', a lump obtained from 'hyedua' is used as incense. The 'ehye' are generally found under the ground at the tree base, and the gum exudes from cracks and wounds in the trunk and branches. Its quality is good, though much impaired by impurities of soil often marketed with it. The gum burned and mixed with soot and oil. Is used in tattooing, and the gum with other ingredients is rubbed on the skin as a perfume and is also pounded, placed along edges of pots, set alight, and then used for mending the breakage. In West Africa it is chewed and used as a purge alone, or as an ingredient in a remedy for snake bite (Irvine, 1961).

4.4.2 *Entandrophragma angolense* (Edinam)

Indicative felling level (IFL) of stem and volume is 4 and 46 respectively. The total volume is 36,429 stands, however, total volume greater than the felling limit is 47 in Subim forest reserve. The values recoded for Bonkoni is low except for the total volume above the felling limit, which is 51. All the observed values for Ayum is null except for the 9693 recorded for the total volume. The bark of 'Edinam' and 'Oyaa' are used in the preparation of powdered medicine for the treatment of piles.

4.4.3 *Garcinia kola* (Tweapia)

RMSC (2001) multi resource inventory did not indicate the species in any of the study reserves. Hawthorne (1995) reported that the species is not common in Ghana. Germination is hypogeal and slow, 6 weeks to 18 months. Flowers December- March, May- August). Male and female flowers are separate. Fruits are smooth, reddish yellow; seed –coat is brown with branched lines. All tree parts have valuable uses. The twigs can be used as tapers, and the roots yield the favourite bitter chew sticks sold in small bundles in local markets. The seed are chewed as an aphrodisiac, and the dried nuts for dysentery. The seeds prevent or relieve colic, and particularly cure head or chest colds relieving cough and hoarseness, and improving the singing voice. They enhance the flavour of local alcoholic beverages. The bark is used in tanning in Ghana. The raw bark is purgative. Powdered bark is applied to malignant

tumours, cancer. The latex is used internally for gonorrhoea and applied externally to fresh wounds. On the other hand, 'tweapia' is used as local chew stick. The local people collect the fruits for sale.

4.4.4 *Jatropha curcas* (Nkrangyedua)

It is commonly grown for hedges and fences in the communities. Grown easily from cuttings and seeds and believed to be avoided termites. Leaves are 5-lobed or entire; flowers (April-May) yellowish green and seeds are rich in oil. This oil burns without smoke. They have a wide range of uses. Dried seeds are put on a stick and, after being dipped into palm oil, are used as a torch, which will keep alight even in strong wind. Roots are edible. In Ghana, they are a common ingredient in enema preparations and are prepared with oil palm fruits as an enema for weakly children.

4.4.5 *Raphia hookeri* (Adobe)

Common in the communities especially on river edges and are usually gregarious. The stems are covered with black leaf-fibres. Leaves flowers (May) monoecious, on same flower stalk. The leaves are used as thatch; the leaflets are made into hats their midribs into baskets. The ash of the fronds was formerly used as a substitute for cooking-salt and in soap-making. The young terminal bud of various *Raphia* palms can be eaten as a vegetable. Young plants can easily be transplanted into pots and make a good interior decoration for houses. Palm-wine is obtained by piercing the base of the terminal bud of the standing tree; this eventually kills the tree. This wine is considered weaker than that from the oil palm. In Ashanti the seeds are cut to make rings.

4.4.6 *Rauwolfia vomitoria* (Kakapenpen)

This is a tree found normally in disturbed forests. The crushed roots in warm water are used as aphrodisiacs.

4.4.7 *Ricinodendron heudelotii* (Wama)

This tree is common in Ghana. However, there are no record on this in the reserves around the fringe communities. According to members of the community people from Cote d'Ivoire

buy the seeds. However, the people had no idea as to the actual use these seeds are put to, but discussion with buyers revealed that the seeds are used for oil and soup. This confirms literature that the seeds are boiled and eaten in cote d'Ivoire (Irvine, 1969). The seeds have good market within the community but in Ghana there is no such record on the extent of usages of the oil obtained seeds

4.4.8 *Ricinus communis* (Castor oil plant)

The seed oil obtained from this is used for asthma. The plant is planted around houses to expel mosquitoes. Leaf decoction is used as purgative (Abbiw, 1990). The use of the leaf as purgatives however conflicts with the indigenous knowledge of the people that the seed with one palm kernel serves as very good laxative.

CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS

This section highlights the important conclusions from the study and is followed up with the recommendations that will improve livelihood options.

5.1 Identified livelihood options

Diverse forms of livelihoods were revealed by the survey in the study communities. More people were involved in more than one livelihood. These ranges from agricultural and non-agricultural to forestry related activities. However the number involved in vocations was not that encouraging. The existing livelihoods are indication of changes that had occurred from the initial hunting activities to farming and other options. Differences in resource abundance/availability greatly determined livelihood similarities or otherwise in the communities. While communities closer (immediate) to the forest reserves bear resemblance in livelihoods, those distant from the reserves showed marked differences from the former.

- ⇒ Vocational institute at Akrodie should be well expanded to serve other neighbouring communities in training more youth in vocations of their interest.
- ⇒ We encourage efficient income management through proper record keeping on returns and outflows especially with people involved in more than one livelihood.

5.2 Farming as a Major Livelihood Option

An extensive analysis on farming is given because it offers a major livelihood source to all age categories and is also beleaguered with a lot of problem. The predominant and significant livelihood among the various options were farming (66.4%) and trading (38.2%). Most farmers cultivate food crops as a main crop (90%) but on subsistence level because of poor profit margins as a result of market constraints and unavailable processing and storage facilities and poor condition of roads linking the food crop production areas to the market centres.

- ⇒ To add value, avoid waste and ensure availability of products, keen interest should be on: market, processing and storage.

Farmers complained of low economic returns due to poor markets, which limit production to home consumption.

- There should be a research into standard ways of determining prices of foodcrops as well as the marketing patterns of products
- Exploit market opportunities and remove market constraints. All stakeholders could be brought on board to generate discussion on the subject. Farmers can also come together to form co-operatives to enable them determine fixed prices of foodcrops to be sold to buyers. The formation of these co-operate bodies will as well enable farmers to access credit facilities to expand their farms, encourage savings and avoid the problem of buyers determine the prices at which they want to buy foodcrops.

Most of the foodcrops are perishable and the technology to add value through improved processing systems and provision of storage facilities are lacking.

- Indigenous techniques of making powders from foodcrops (cassava and plantain) should be explored developed and encouraged both for domestic and commercial use.
- Traditional cassava storage systems based on submerging tubers in water or curing produce at high humidity and high temperature conditions in clamps or pits with sawdust (or similar materials) that has being developed to extend the shelf-life of fresh cassava have served communities well, however, with changes in lifestyles and increasing urbanisation, it will become increasingly difficult for traders to ensure the delivery of high quality fresh cassava tubers to commercial or domestic clients at a distance from areas of production. A cheap and robust system capable of delaying the onset of post-harvest deterioration in cassava tubers would not only increase the flexibility of the marketing systems but also reduce wastage.
- As an alternative to the traditional methods, a simple technology that enables storage of freshly harvested cassava to be extended for up to 7-10 days should be explored. The technology consists of harvesting and selecting relatively undamaged tubers, which are washed or dipped in water and stored in locally available sacks for several days to cure. Damage caused during harvesting is

therefore sealed by the plants own mechanisms preventing deterioration. The technology allows more time for marketing and so reduces losses.

- ❑ Plantain chips /slice could be encouraged in the communities. Whilst this reduces the burden of food waste, it is also an attractive (requiring an initial low capital) additional source of income if products are well fried and packaged for domestic and commercial consumption.
- ❑ Plantain flour preparation by members of the community by drying and grinding the fruits at the local mills could be used as substitute for fufu.
- ❑ There should be research into creating new products such as bread, wine and industrial starch from plantain.
- ❑ Cassava roots can be stored in the ground for up to 24 months, and some varieties for up to 36 months, Harvest may be delayed until market, processing or other conditions are favourable.
- ❑ Cassava leaves should be promoted and consumed as a green vegetable, since it provides vitamins A and B.

Few cash crops for example cocoa and oil palm were cultivated. Cocoa is the major cash crop that has been cultivated for ages and is highly prioritised by the aged as it offers better market security. However most farmers are out of business and are without any income support.

⇒ Farmers can occupy themselves during the off-season with other income generating activities such as grasscutter rearing, snail and mushroom farming to sustain their income all year round

Cocoa farms are perceived as highly valued legacy and allowed to persist even when the crop yield are low and without worth due to diseases and insects attacks.

⇒ There should be regular stand valuation for subsequent improvements and modifications through discussions and negotiations with farmers. Extension officers should play an active role in this.

Oil palm is a new livelihood option with a lot of prospects but seedlings are imported from as far as Kade, over 200km from Goaso. The cost of transportation coupled with expensive labour during planting makes this uneconomical.

- ⇒ The local people must be assisted with skills of raising oil palm nurseries to stimulate production and provide additional livelihood option because of the multiple uses of the crop- oil, roofing material. Being part of the Presidents Special Initiative (PSI) offers an added market advantage

The traditional system of farming practiced on all cultivated crops does not allow easy farm expansion and leads to land access, management and soil fertility problems.

- ⇒ Crop rotation system whereby legumes are grown alternately on the same land with other crops must be explored. This system is an advantage for improving soil fertility, yield and ensuring complementary use of nutrients. Mulching with chopped vegetation in a practice called 'Proka', which avoids ecologically destructive burning is encouraged. In addition, multistrata system whereby annuals and perennials are combined should be introduced in situations where cocoa yield is not that significant. The combination of cocoa with foodcrops, fruit trees would allow farmers to reap multiple benefits. This system would also provide ecological benefits by encouraging diversity within the fauna and flora as well as increase the income of the farmer through sales of the additional crops.

Although farming dominates the livelihoods, this is not impressive for a farming community like the study area. This is mainly due to the numerous problems that weighed down farming making it unattractive to the economic working group. They normally approach the problem by migrating to the cities for survival than to remain miserable in the village, leaving the inactive age group

- ⇒ Farming can be made attractive to the youth through easy access to land and land security, provision of incentives in the form of farm inputs and technical assistance. Intensive education must also be done to erode the negative perception on farming.

5.3 Alternative livelihood option

Other alternative sources of livelihood have the advantage of supplementing incomes and subsequently improve the livelihoods of the rural folks if these sources are well utilised.

The nine (9) different species and their multiple uses were documented and were discussed based on level of indigenous knowledge and available literature and subsequent recommendations are made below to ensure its optimum utilization

a) *Daniella ogea* (Hyedua).

- ⇒ Research into the germination requirements of the species
- ⇒ Explore the active ingredient which makes ‘ehye’ a good incense thus substance to fill the gap in knowledge
- ⇒ The extent of extraction of the species should be controlled in the forest reserves since the existing quantity looks threatening. Off-reserve control is also advised.

b) *Entandrophragma angolense* (Edinam)

- ⇒ Medicinal properties of the species for the treatment of piles should be explored and developed. This is because most people rely on traditional medicine for treatment of various ailments, and only attend the clinics in the Cocoa season for lack of funds.

c) *Garcinia kola* (Tweapia)

- ⇒ No work done on dormancy mechanisms operating in the seed or whether ingestion by elephants affects germination and therefore requires further research for possible domestication of the resource, especially at a time the resource is virtually extinct in the country
- ⇒ On-farm species should be monitored to control extraction of the fruits by the people for sale. This is because little is known on the effect of the current rate of extraction of the fruits by the local people on regeneration of the tree.
- ⇒ Off-reserve inventory should be carried out in the area to determine the status for subsequent protection (regulate and control felling on farms) and domestication.

d) *Jatropha curcas* (Nkrangyedua)

- ⇒ Investigate the technology of extracting the oil in the seed. The technology, which has become available in Ghana, recently can offer advantage. The oil from the seeds can be used, along with burnt plantain ashes, in the making of home –made hard soap

- ⇒ Explore the possibility of preparing candles from the oil; cooking salt from the ashes from the roots and branches and dyes from the barks. .
- ⇒ They are very common in the community but are not well developed in these communities by the people. This is because they do not see other uses beyond the medicinal use. However, establishing plantation should be promoted. This because its easy growth, efficient combustion and its adoption into the country provides ready market in future.

e) *Raphia hookeri* (Adobe)

- ⇒ Explore and develop sophisticated technology that allows distilling of local alcohol to be more sustainable than killing the tree.
- ⇒ People involved in distilling activities move from farm to farm in search of palms. Indigenous knowledge on growing the resource is encourage

f) *Ricinodendron heudelotii* (Wama)

- ⇒ There should be a research into the extraction of oil from the seeds and promotion of the oil on the local and international markets.
- ⇒ Explore other possible uses, as this would encourage community planting or further protection measures.
- ⇒ Off – reserve inventory should be taken on this tree to know the stocking and other conditions of growth. This is because it is doubtful whether the present levels of extraction would favour or maintain resource regeneration.

g) *Ricinus communis* (Castor oil plant).

- ⇒ There should be a research on this to clear this confusion on this usage
- ⇒ Explore the possibilities of extracting oil from the seeds

This chapter addresses the theme of “Improving rural livelihoods within the context of sustainable development”

Rural livelihoods are diverse and confronted with numerous problems. At the same time various possibilities are offered by available resources for development, most of which remain hidden to the rural dweller for lack of skills and technology. The research outcomes

set out therefore to design interventions that would improve and sustain existing local resources and capabilities for promoting different opportunities in the rural communities.

CHAPTER 6 INTERVENTIONS

This section focuses on five projects that are critical for immediate implementation. These projects would help improve and impact on existing situations in the community that can be easily measured and evaluated. Most of the earlier recommendations in the preceding chapter are however long term. More people in the communities lack training in the activities they are involved in, and the project will seek to:

- develop and equip the people with skills to earn a sustainable livelihood,
- reduce poverty and
- protect the natural resources that are dwindling in number.

Interventions proposed are based on outcomes of the survey and centered on various livelihood opportunities (for employment), major problems and potentials unique to each studied community (sometimes can be similar or overlap).

In designing the interventions, we took cognisance of resource condition, skills and level of knowledge. Forest resources can no longer meet the demands of the community because of growing populations and resource scarcity. The resources have then become depleted because of the people's quest for survival. The community members also lack the skills to create most of the important forest (food) resources. The result is that the resources continue to dwindle in number with some becoming unavailable or too expensive for the rural people to afford.

The projects are broadly categorized as: 1) Forest-based projects - grass cutter, snail and mushroom farming. 2) Agricultural-based projects - women in soap making and gari processing.

The broad category would consist of five phases for smooth and successful implementation. These are selection criteria, training, monitoring and evaluation, setting up business and assisting in marketing.

6.1 Forest-Based Projects

The interventions discussed were as a result of the level of enthusiasm shown by the communities for projects that will diversify their farming methods as well as provide forest foods that would be made available all year round. Though unemployment was minimal, seasonal farmers (e.g. Cocoa farmers) were out of business after harvesting their crops and had no income. This project will serve as additional income earning activity as well as occupy farmers during the off-seasons.

6.1.1 Snail Rearing in Captivity

Snails have been raised in small pens currently in Ghana; there is a major campaign to promote snail farming both as a back-yard activity to supplement household income, protein supply and as large-scale commercial activity. Snails are marketed fresh or smoke-dried and can be very cheap during the season when they are abundant. Apart from being cheap, snails have the advantage of being easily transported and easy to store alive for a considerable length of time. The small unit size also means that producers for household consumption can harvest just what is required for a meal.

6.1.2 Grasscutter Rearing in Captivity

The demand for grass cutter meat in the urban areas is high with its attendant price hikes. Hence, the prospect of grass cutter rearing is very bright either as a full-time job or part-time at the back yard of one's house. The youth in the rural areas could be encouraged to take to grass cutter farming instead of migrating to the urban centers in search of jobs, which are virtually non-existent. In most of the countries within the sub-region, grasscutter meat fetches higher prices than that of beef. The popularity of grass cutter meat led to the choice of the animal as the subject of several studies during the early 1970s, aimed at domesticating the species for large scale farming and production of the meat for human consumption.

Feasibility reports on grasscutter farming ventures indicate that the long-term profitability is comparable to that of poultry farming and higher than cattle ranching (Tutu et al., 1999). The market for both fresh and smoked grasscutter meat is effectively unlimited and there is therefore the need to invest in research to develop cheaper ways of production and extension services to enable the transfer of appropriate technologies to small scale farmers.

6.1.3 Mushroom farming

Traditionally in Ghana, mushrooms are picked in the wild in forest regions during the rainy seasons. However, with the advent of new technologies, various varieties of mushrooms are now available all year round for consumption.

The trade does not require much capital to start. There is a growing demand for mushrooms from educational institutions, hotels, restaurants and others. Indeed, mushroom cultivation has become a lucrative venture in the country.

6.1.4 Selection criteria

It is recommended that six people should be selected from each community to undergo training to obtain technical knowledge. This number of people is to ensure effective supervision and also to train other people in the communities. Gender balance should be ensured during the selection process. People with basic education level as well as some experience in the above mentioned activity but lack the technical know how should be considered. An NGO called Rural Development Youth Association (RUDEYA) which is already into such projects in the communities so effective collaboration by both organizations will go a long way to ensure its success.

6.1.5 Training

The selected people should then undergo a two-month intensive training that should be organized by Tropenbos International (TBI) in collaboration with Center for Biodiversity Utilization and Development (CBUD), German Technical Corporation (GTZ) or RUDEYA. These organizations have the technical know-how and knowledge in such ventures and can assist in that direction. Provision should be made for materials and the initial stocks.

6.1.6 Monitoring and Evaluation

The project should be monitored to know the progress of both participants and trainers. Evaluation should be done at the end of the training to know whether training had been successful and the gaps that need to be tackled another time. Preferably, monitoring should be done at least twice a week with evaluation coming off once every month. This will be

especially very important during the initial stages of the project. This should be done by both the participants (farmers) and their supervisors who should come from the implementing organization. Feedback from the monitoring and evaluation is important for corrections and adjustments.

6.1.7 Setting Business

At the end of the training participants should be assisted to set up their own business with financial assistance on condition that the person takes up a number of people within the community to train as well.

6.2 Agricultural Based Project

6.2.1 Women in Gari Processing

The proposed project takes into consideration the basic human need for food and availability the resource that can maximize benefits for individuals and the communities as a whole

Post harvest losses of foodcrops were attributed to lack of processing facilities within the communities. To off set post harvest losses, cassava processing into gari should be encouraged. Gari can be kept for longer periods without going bad and used for diverse foods in the country. In addition, it will serve as a source of employment for the community as a whole. Gari is a cassava based processed food in fine granules that is extensively consumed in West Africa. Good quality gari has an export potential.

6.2.2 Women in Soap Making

After harvesting cocoa husks and plantain peels are processed into potash, locally called 'dor'. This ash is sold to outside buyers who use it for soap preparation. To ensure that women within the communities are financially equipped to cater for themselves and their families, training women in soap making should be considered.

6.2.3 Selection Criteria

Women within the community who are already into the preparation of 'dor' should be considered. However, those who already have a bit of indigenous knowledge in soap making

but lack technical know how should be also be considered. Similar should be done for the gari processing.

6.2.4 Training

Tropenbos international in collaborations with the District Assembly and other organizations like the Cassava processing demonstration unit of the food research institute to organize training workshops for interested community members. This unit is already into cassava processing and has expertise in improved methods of cassava processing.

6.2.5 Setting Business

At the end of the training, participants must be encouraged to form groups that would go into the taught vocation. To facilitate this, assistance in the form of both financial support and equipment to start work should be provided. Beneficiaries should be allowed to pay back within a given time framing either in part or fully.

For these afore mentioned projects, TBI can solicit funds from GTZ, Department for International Development (DFID) for support in the implementation

6.2.6 Monitoring and Evaluation

The project should be monitored at each stage of both the training and implementation process to know the performance of the participants. At the end of the entire project, an evaluation should be conducted to identify the gaps in the training and implementation so that measures can be put in place to check them.

6.2.7 Assisting in Marketing

After equipping the people with such intense skills there should be ways of helping the people market their produce efficiently. All the stakeholders involved in this project should sort for markets. At the end of this project it is expected that individuals and the community as a whole have sustain livelihood to depend on and the pressure on the forest during the seasons of snails and mushrooms would decrease as well.

The projects when effectively implemented will reduce poverty, build capacity that will sustain rural livelihoods

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APPENDIX

TROPENBOS GHANA PROGRAMME STUDENTS PLATFORM PROJECT

Improving rural Livelihoods within the context of sustainable Development

COMMUNITY LEVEL QUESTIONNAIRE

Name of Community:..... Code.....
Administrator/Interviewer:..... Date:.....

Profile of Respondents

- 1) Name:.....
- 2) Sex: (a) Male [] (b) Female []
- 3) Age: (a) Below 18 [] (b) 18-35 [] (c) 36-55 [] (d) Above 55 []
- 4) Marital status: (i) Married [] (ii) Single [] (iii) Divorced [] (iv) Widowed []
- 5) Religion: (a) Christianity [] (b) Islam [] (c) Traditional [] (d) None []
(e) Others (specify).....
- 6) Level of education: (i) Basic [] (ii) Secondary [] (iii) Tertiary [] (iv) Illiterate []
(v) Non-formal []
- 7) Number of dependants []
- 8) Status in the community: (i) Domiciled [] (ii) Not Domiciled []

Occupational Information

- 9) What is your **main** occupation (i) Farming [] (ii) Timber Industry [] (iii) Trading []
(iv) Civil and Public servants [] (v) Craft Makers [] (vi) Hunting []
Others (Specify).....
- 10a) What **other** occupation do you engage in? (i) Farming [] (ii) Timber Industry []
(iii) Trading [] (iv) Civil and Public servants [] (v) Craft Makers [] (vi) Hunting []

(vii) None [] (viii) Others (Specify).....

10b) Why do you do/not engage in other activities?

- .1.....
- .2.....
- .3.....

Farmers

1a) What is the main crop you cultivate? (a) Cocoa [] (b) Oil Palm [] (c) Plantain []
(d) Maize [] (e)Vegetables [] (f) Others (specify).....

1b) On what basis (a) Commercial [] (b) Subsistence [] (c) Both []

1c) For how long? []

2a) What other crops do you grow (a) Cash Crops [] (b) Food Crops []
(c) Cash and Food Crops [] (d) Others (specify).....

2b) Is it on (a) Commercial [] (b) Subsistence [] (c) Both []

2c) For how long? []

3) How do you market your produce?.....

4a) Do you rear animals? Yes [] No []

4b) If yes, what kind of animal do you rear (a) Poultry [] (b) Grass cutter []
(c) Goat and sheep [] (d) Snail [] (e) Others (Specify).....

4c) Is it on (a) Commercial [] (b) Subsistence [] (c) Both []

4d) For how long? []

5) What is your maximum sale (per Day, Month, Season (), Year)?

6) What is your minimum sale (per Day, Month, Season (), Year)?

Trading

1) What do you trade in? (a) Non agricultural [] (b) Agric ultural products []

(c) Forest products [] (iv) Agricultural and forest products []

2) For how long? []

3) How often do you trade in a week (a) Once [] (b) 2-5 [] (c) 6-7 times []

4) What do you do aside trading (a) Farming [] (b) Civil Servant [] (c) None []
(d) Other (specify).....

5) What is your Maximum sale Minimum sale.....
(per Day, Month, Season (specify)

6) What is your annual income

7) What problems do you usually encounter in your business?

Civil And Public Servants

1) Where do you work?.....

2) What is your average monthly income (a) Below ₺200,000 [] (b) 200,000 – 350,000 []
(c) 351 – 600,000 [] (d) 601-1,000,000 [] (e) 1- 2 million [] (f) Above 2 million []

Timber industry

1) Type of Timber industry: (a) Sawmills [] (b) Chain Saw [] (c) Wood vendors []

2) Do you operate with permit? (a) Yes [] (b) No []

3) How many trees do you fell in a month? Maximum..Minimum.....

4) What is your maximum sale (per Day, Month, Season (), Year)?

5) What is your minimum sale (per Day, Month, Year)?

6a) Do you undertake replanting (a) Yes [] (b) No []

6b) How often (i) Weekly [] (ii) Monthly [] (iii) Never [] Others (Specify).....

7) What are the problems do you usually encounter in your business?
.....

Craft makers

- 1a) What craft do you produce?.....
- 1b) For how long? []
- 2) Where and how do you obtain your raw materials?
- 3) How is your finished product marketed?.....
- 4) What is your Maximum sale Minimum sale.....
(per Day, Month, Season (specify)
- 5) What are the problems encountered regarding accesses to raw materials?

GENERAL QUESTIONS

- 1) Which social groups do you belong to? (a) Workers cooperatives [] (b) Susu groups' []
(c) Religious groups [] (d) None [] (d)Others (specify).....
- 2) If none, why
- 3) How do you benefit from the social group?.....
- 4) What are your major income outflows? (a) Education-School fees [] (b) Food []
(c) Farm inputs [] (d) Others (Specify)
- 5a) Do you receive any income from any other sources? (a) Yes [] (b) No []
- 5b) Maximum Minimum and how often? (a) Weekly []
(b) Monthly [] (c) Annually [] (d) Others (specify).....
- 6) Do you save any of your income (a) Yes [] (b) No []
- 7) If yes how do you save it?
- 8a) Do you want to change your present occupation? (a) Yes [] (b) No []

8b) If yes, what other occupations would you like to do. Give reasons (Order of Preference)

- .1.....
- .2.....
- .3.....

8c) How will you change your present occupations?

.....
.....

9) What ways can you improve your present livelihood option?

.....

10) What benefits do you get from the forest

.....
.....

11) What can you do to sustain the forest?

.....
.....