

# *Consequences of the introduction of the Modified Taungya System in Ghana's High Forest Zone for the livelihoods of forest-fringe communities*



Ghana's High Forest Zone (Access Road for Sefwi Bopa Village, Bia Forest Reserve, Aug 2009)

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## Abstract

The decline of the natural tropical high forest in Ghana has reached a critical stage: timber resources are over-exploited and degraded. Loss of forest cover poses many problems, mostly to the communities that are adjacent to them and rely on them for their livelihoods. In the last decade several schemes to improve people's access to forest and tree resources and to protect the remaining forest have been introduced, of which the Modified Taungya System (MTS), an agroforestry system, is one of the most prevalent. The objective of this thesis is to present the findings of research from August-October 2009 of the consequences of the introduction of the MTS to Ghana in 2002. The study is part of a bigger project that incorporates the University of Amsterdam(UvA), Kwame Nkrumah University of Science and Technology (KNUST), and Tropenbos International Ghana (TBI Ghana). The partnership has the aim of: 'generating insight into and formulating recommendations on governance arrangements that enhance forest-based livelihoods so that they contribute to sustainable forest management and poverty alleviation'.

The research presents the perspectives of the farmers who have been involved in the MTS process in the villages of Kunsu Dotiem and Chirayaso in the Tano-Offin Forest Reserve in Ghana's High Forest Zone, as well as data from analysis of documents and from interviews with officials in the Ghana Forest Sector. The data was gathered in the communities through a series of semi-structured interviews, surveys and modified components of the PROFOR toolkit.

The study concludes with positive findings of the impact of MTS (thus far) in local people's livelihoods; the example of Modified Taungya System (MTS) shows that the potential of reforestation as a source of livelihoods can be enhanced through forest governance innovations. However, so far conclusions on the consequences of the MTS can only be made with regard to the contribution the crops harvested from MTS make to local people's livelihoods since the timber component of the scheme has not yet been harvested so it is not possible to assess its benefit. There is a certain fear precipitated with regard to the future prospects of the MTS: there is a need for more transparency in the process (*e.g.* land allocation and division of benefit), clear communication to all actors and firm insurance measures to be put in place. Currently, there is a feeling and scope that the nicely devised benefit-sharing arrangement will remain where it is at present: on paper, and may not deliver fully to the farmers and forest-adjacent communities.

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## List of acronyms

CFC	Community Forest Committee
CFM	Collaborative Forestry Management
CFMU	Collaborative Forest Management Unit,
CREMA	Community Resource Management Area
CRI	Crops Research Institute
CSIR	Council for Scientific and Industrial Research
DA	District Assembly
DEMC	District Environmental Management Committee
DFO	District Forest Officer
FBPA	Forest-based Poverty Alleviation
FC	Forestry Commission
FD	Forestry Department
FORUM	Forest Resources Utilisation and Management
FSD	Forest Services Division
GSBA	Globally Significant Biodiversity Area
HFZ	High Forest Zone
ITTO	International Tropical Timber Organisation
KNUST	Kwame Nkrumah University of Science and Technology
MTS	Modified Taungya System
NTFP	Non-Timber Forest Products
MLF	Ministry of Lands and Forestry (and Mines)
PROFOR	Programme on Forests Toolkit
RMSC	Resource Management Support Centre, FSD



## I. Introduction

### 1.1 Introduction to the study and problem statement

Forest resources in Ghana's High Forest Zone have been depleted at an alarming rate: between 1900 and 1990. Ghana lost approximately 80% of its forest cover (Opoku 2006: 9), destroying biodiversity as well as crucial sources of livelihood for the rural populations. Forests and trees on farmland in Ghana's High Forest Zone serve a multitude of environmental and social functions and support the livelihood of 21 million inhabitants (Treue 2001: 7, Blay 2006: 504). There is relatively easy human access to Ghana's High Forest Zone and many people derive goods and services from the forest; there is thus a high potential for over exploitation of the land due to the ease of access of many different parties with competing interests (Treue 2001: 7).

Opoku (2006: 16) reports of the "alarming situation" of forest-fringe communities<sup>1</sup>, where massive destruction of forest has brought about social, economic and human rights' decay. Reforestation and plantation schemes are therefore becoming increasingly important as a means of replenishing the deforested and degraded natural forests and thus a source of forest and tree products. The Forest and Wildlife Policy that was implemented in Ghana in 1994 stresses the importance of collaborative forestry management (CFM) and Community Based Natural Resource Management (CBNRM) (MLF 1994: 1). It has catalysed the introduction of several schemes to improve people's access to forest and tree resources. Furthermore, efforts have been made to protect remaining forests by creating forest reserves, as a result of which Ghana's forest cover can now be divided into two management areas: forest reserves and off reserves, which are managed under different management schemes. Reforestation and plantation schemes in the degraded parts of the forest reserves include the Modified Taungya System (MTS); HIPIC timber plantations-established under the Highly Indebted Poor Countries Fund and commercial timber plantations, while in off-reserve areas there are various schemes including private timber tree plantations among others. All these schemes fall under the umbrella of the National Forest Plantation Development Programme (NFPDP) launched in 2001. The National Forest Plantation Development Programme (NFPDP) is aimed at encouraging the development of a sustainable forest resource base that will satisfy future demand for industrial timber and enhance environmental quality. Additionally, the programme is expected to generate jobs and significantly increase food production in the country thereby contributing to wealth creation and reduction in rural poverty (NFPDP Annual Report, 2008:1).

Despite the introduction of various reforestation schemes in Ghana, forest and tree resources do not adequately serve as reliable sources of livelihoods for forest-fringe communities. It can be argued that the Ghanaian forestry governance context (policies, laws, institutions) seems to hinder the potential of forest and tree schemes as reliable forest and tree-related livelihoods. The question arises whether the introduction of these

new schemes has improved people's access to forest and tree resources and succeeded in enhancing the forest and tree-based components in their livelihoods. The extent to which this potential can be realised depends to a great degree on the governance arrangements in place to regulate access to forest and tree resources. It is therefore of great importance to investigate what governance arrangements hinder or help the full realisation of forest and tree-related livelihoods and what further innovations are needed to enhance these livelihoods. This research looks particularly at the Introduction of the MTS to Ghana in 2002 in light of this.

## **1.2 Research objectives and questions**

The aim of this research is to analyse the impacts of the introduction of Modified Taungya System (MTS) thus far in Ghana (see Section 4.2.2. for full details of the MTS scheme). The study is part of a larger partnership that has the aim of generating insight into and formulating recommendations on governance arrangements that enhance forest-related livelihoods so as to contribute to sustainable forest management and poverty alleviation. The entire project is a partnership between the Amsterdam Institute for Social Science Research (AISSR), University of Amsterdam; Tropenbos International – Ghana (TBI) and Kwame Nkrumah University of Science and Technology (KNUST), this study is part of Thomas Insaadoo's PhD project, the overall objective of which is to examine the role of newly introduced governance arrangements that aim to contribute to improved forest and tree-related livelihoods and poverty reduction in rural forest communities. The PhD research specifically seeks to (1) clarify the governance arrangements (actor configurations, policies, regulations and institutions) that relate to forest and tree use; (2) analyse newly introduced forest governance arrangements in the High Forest Zone; and (3) analyse the effect of selected forest and tree governance innovations (including the various reforestation schemes) on the livelihoods of rural people (adapted from [www.tropenbos.nl](http://www.tropenbos.nl)). The third component of the PhD study, carried out by Thomas Insaadoo, is of particular interest to this study. The main research question for this study is:

***What are the consequences of the introduction of MTS in Ghana's High Forest Zone for people's livelihoods in forest-fringe communities?***

In order to answer the main research question, the following sub questions were posed:

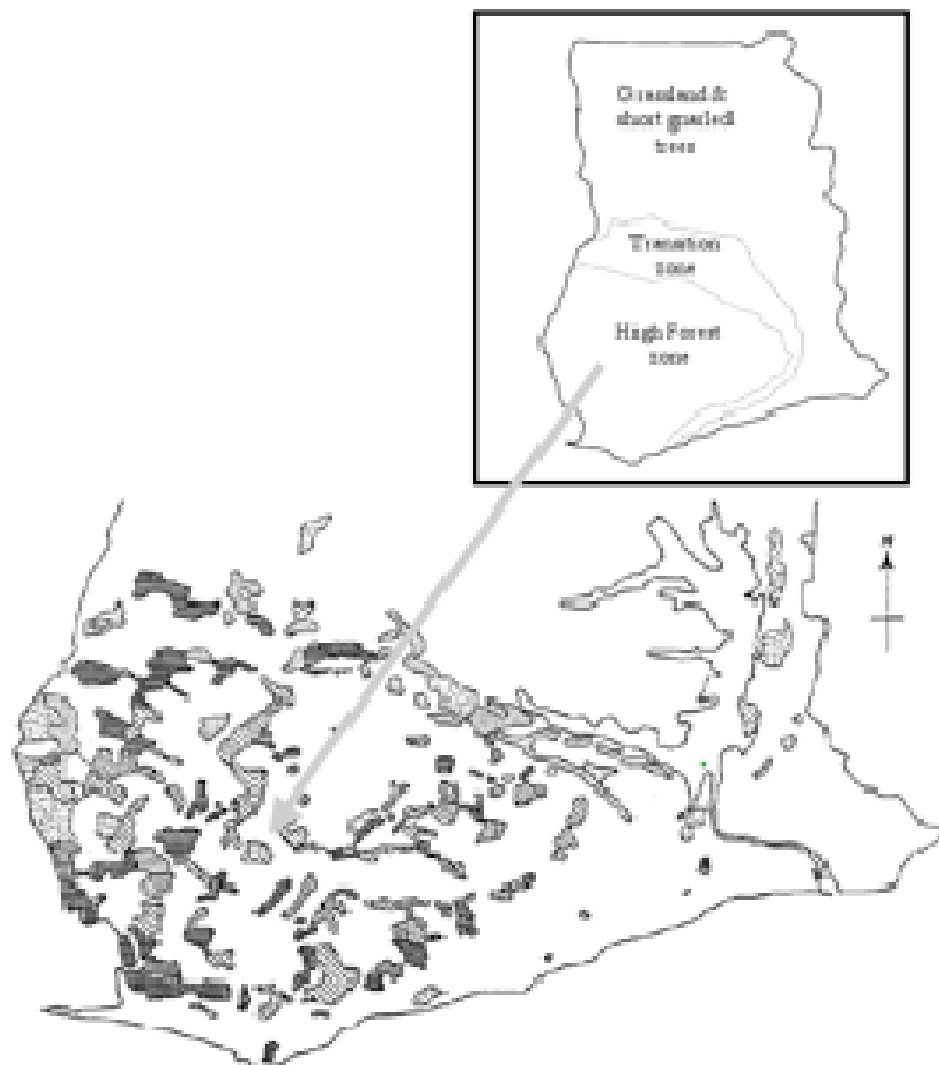
- How is access to forest and tree resources arranged under the MTS?
- What kind of forest and tree products are derived under the MTS and what is the contribution of these products to people's livelihoods?
- Do people perceive the changes since the introduction of the MTS as an improvement of their livelihoods, and if so, why?

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<sup>1</sup> Communities in this thesis are not assumed to be one homogenous group of people, see Section 4.2.2.

### 1.3 The study area

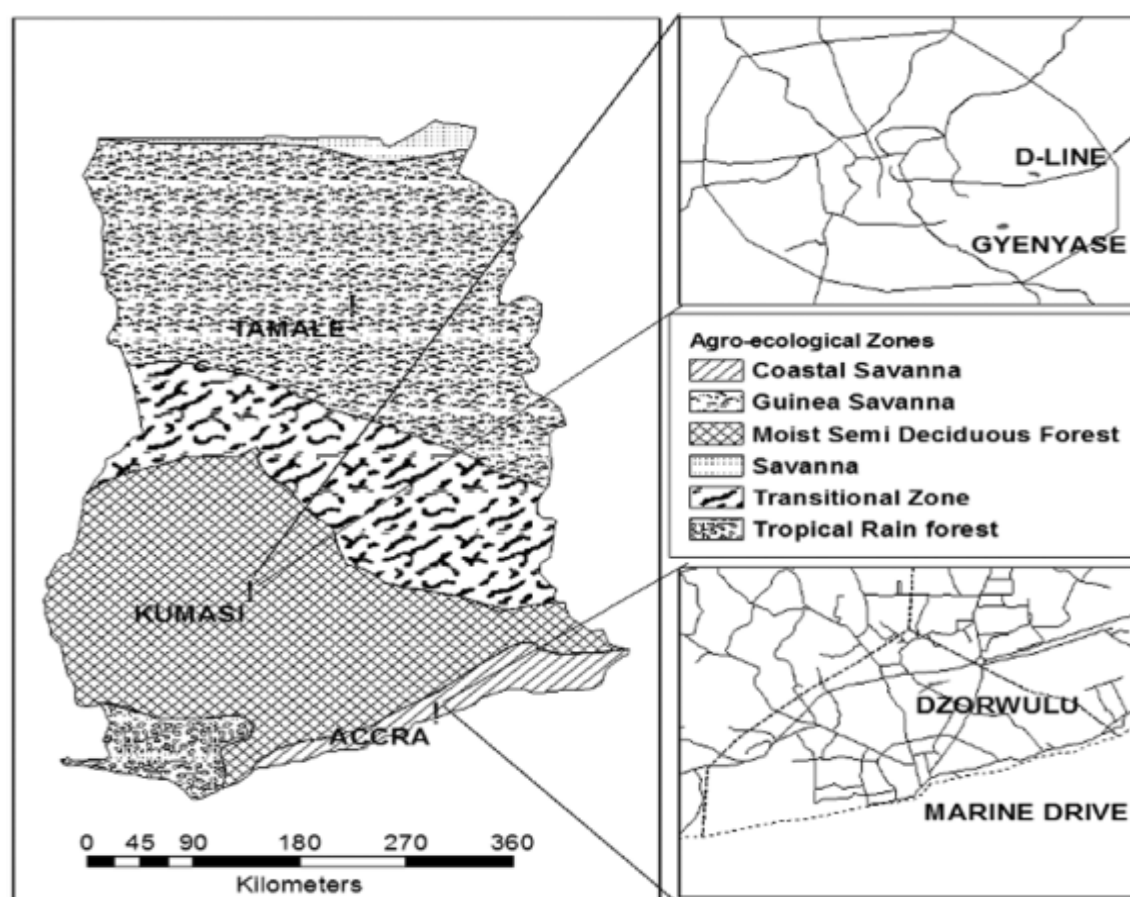
Officially the Republic of Ghana and formerly the Gold Coast, Ghana, lies in West Africa and is bordered by Côte d'Ivoire to the West, Togo to the East and Burkina Faso to the North, and the Gulf of Guinea of the Atlantic Ocean flows at the South. Ghana can be divided into three main vegetation zones which run nearly parallel to the equator: the High Forest Zone in the southern most third; the Savannah region in the North, which is the driest region, and the Transition Zone which falls between the two (Figure 1.1).



**Figure. 1.1** Map highlighting the different zones of Ghana and focusing on the level of degradation of the land (Source: Hawthorne and Abu Juam 1995)<sup>2</sup>

<sup>2</sup> I'm using this map mainly to show the different zones of Ghana, and don't find the shading to designate the extent of deforestation that useful. The different shading patterns indicate the extent of the forest degradation as seen in 1995. The light grey portions of the map indicate regions of 'very poorly degraded' forest, the dark horizontal striped regions show portions of forest that are 'mostly degraded', the diagonal stripes indicate 'partly degraded' forest and the dotted sections are 'non forest'.

The distinct vegetation zones are attributed to the regions' differing levels of rainfall and temperature. Within the High Forest Zone (HFZ) (where this study has been carried out) there is a huge variety of forest types from wet evergreen in the South West to dry semi-deciduous to the East (Treue, 2001: 4, Microsfere<sup>3</sup>). It is very rich and diverse in flora, containing over 70% of the floral diversity of the country and forms part of the 'Biodiversity Hotspot' the Guinean Forests of West Africa (Wagner *et al.*, 2008: 105). Within the High Forest Zone the agricultural landscape is dominated by a lot of small scale subsistence farming with annual crops like maize, cassava, cocoa, and cocoyam. Due to deforestation, the extent of forest within the High Forest Zone is now estimated to be about 1.2 million ha., with the bulk of the remaining forest being located in the forest reserves (which amount to approximately 20% of the zone) (Treue 2001:12). Indeed in Ghana, forests are classified as forest reserves; off-reserve forests; communal forests, community plantations, private/individual plantations and institutional plantations. There are a total of 266 forest reserves of which 216 are located within the High Forest Zone (HFZ) (Blay, 2008: 155, Opoku, E 2009: 1).



**Figure 1.2.** Map Showing different agro-ecological zones of Ghana (Source: Redwood, 2009).

The research was conducted in the villages of Chirayaso and Kunsu Dotiem, which lie at the edge of the Tano Offin Reserve (Figure 3.1). This reserve lies between latitudes 6°54' and

<sup>3</sup> Url: <http://www.microsfere.org/en/ghana/index.htm>

6°35' North and longitudes 1°57' and 2°17' West and is located between the Kumasi-Tepa and the Kumasi-Bibiiani trunk roads (Kyereh, 2007: 10). Chirayaso is located 6°60' North and 2°16' West and Kunsu Dotiem is located 6°47' North and 2°10' West. The Tano Offin Forest Reserve falls within the Atwima-Mponua and Ahafo-Ano South District Assemblies and covers a gross area of 413.92km<sup>2</sup> (including village land and farms) out of which 178.34 km<sup>2</sup> (44.5%) constitutes the Globally Significant Biodiversity Area (GSBA) (Kyereh, 2007: 7). The reserve now falls under Forest Management Unit (FMU) 35 and was partitioned into 16 timber concessions in the 1970s and 1980s, with the last official logging was recorded in 1991. Some 2% of the reserve has been converted under the Modified Taungya System (*ibid.*). The reserve is classified as a moist- semi deciduous forest vegetation zone; the common timber species in the district are *Milicia excelsa* (Odum); *Triplochiton scleroxylon* (Wawa); *Khaya grandifoliola* (African Mahogany); *Terminalia superba* (Ofram); *Ceiba pentandra* (Onyina) and *Tectona grandis* (Teak) (Birdlife International, 2009)<sup>4</sup>.

#### 1.4 Thesis outline

The thesis is divided into six chapters. The first chapter serves as an introduction to forest and tree resources in Ghana and includes the problem statement that leads to the research question. It also provides an overview of the research sites. In the second chapter the relevant theoretical discussions to the research are explored: livelihoods, forest-based poverty alleviation and forest governance, these are then applied to the Ghanaian Forest Sector. Chapter three discusses the site selection, offers an outline of the different methodologies employed in this research and accounts for the representativeness and limitations to the research along with my related ethical concerns. Chapter four focuses on the evolution of forestry policies and laws in Ghana, including the 1994 Forest and Wildlife Policy, and the forest governance arrangements and tenure rights specific to Ghana's High Forest Zone. In chapter five the results of the surveys are presented, the findings of the PROFOR toolkit, the discussions from the semi-structured interviews are detailed and related back to the initial research questions. Chapter six serves to summarise both the content and issues brought up in this thesis, relate the research questions to the theoretical framework and offer conclusions, followed by recommendations for policy.

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<sup>4</sup> URL: <http://www.birdlife.org/datazone/sites/index.html?action=SitHTMDetails.asp&sid=6333&m=0>

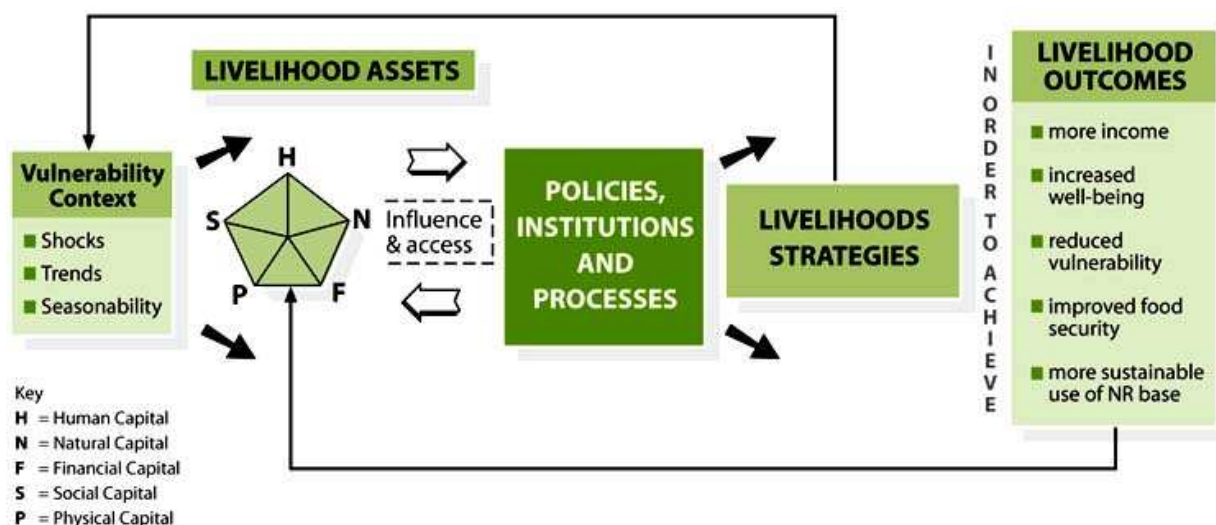
## II Theoretical Framework

This chapter discusses the theoretical framework in which my research is embedded. Firstly the livelihoods approach is talked about, when it emerged and how it has come to be thought of today some 11 years after its initial inception and how it relates to my research. Next I look at the relationship of forests to poverty and the debate around forests and the potential of their role in poverty alleviation. Finally I focus on forest governance, increasingly of importance with the impetus on collaborative approaches to forest use and conservation.

### 2.1 Livelihoods

Since the focus of my research is on people in forest-fringe communities and how they perceive and value the effects of the MTS on their livelihoods, there needs to be an understanding of the different aspects of people's lives in rural areas with particular regard to the multifaceted and elaborate dynamics in which poor households construct a living. The relationship between natural resources and the livelihoods of rural people who depend on them, in large part, is determined and heavily dependent on the quality of the natural resource base (*i.e.* the content and condition of the landscape) on which they are dependent (Dubois 2003: 2). In this section I discuss the Sustainable Livelihoods Approach (SLA), which is illustrated in Figure 2.1 as an approach, made popular in 1999 to understanding how poor people in rural areas build their livelihoods, and goes beyond a purely economic approach to poverty. It recognises the multifaceted dimension to poverty and offers a framework through which to understand the way people express their agency, the assets they draw upon and the strategies they devise, and activities they take part in. Moreover SLA recognises that the poor know best what their needs are and thus should thus be involved in processes that can contribute to policies being made (Krantz 2001: 2). The framework emphasises the contribution that external factors make, and the dynamic nature of reality, given that every capital influences the others and people can make use of a particular asset by reducing or increasing the contribution of another one (Bebbington 1999; Rakodi 2002). Carney (1998: 4) defines a livelihood as "the capabilities, assets (including both material and social resources) and activities required for a means of living". The assets are defined as capitals (natural, human, financial, physical and social) and more than just being simply the means to make a living with, they also give value to people's life. This definition incorporates attributes such as: getting the basic requirement of living (food, shelter, clothing, money); capabilities or capacities, which are based on equity, ownership of resources and participatory decision making (Hiremath and Raju 2004); assets, namely: natural, human, financial, physical and social capitals; and maintaining or enhancing capabilities and assets. The potential of sustainable forest and tree-related livelihood activity is grounded in the concept of SLA, however as Shackleton *et al.* (2008) point out, these capacities are reliant upon the availability and accessibility of options which are ecological, socio-cultural, economic, and political and are predicated on equity,

ownership of resources and participatory decision making. This can also be applied to forest-related livelihoods in Ghana, and the importance of empowering individuals to improve the farmers' capacities to generate and maintain their means of living and enhance their well-being, as well as that of future generations.



**Figure 2.1** The Sustainable Livelihood Framework. *Source:* DFID(1999) Sustainable Livelihoods Guidance Sheets.

A livelihood is sustainable when it can cope with and recover from stresses and shocks and 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 in the short and long term' (Chambers & Conway 1992). In the fringes of the forest, livelihoods are built nearly entirely on the use of local natural resources, be it from farming, forestry, chainsaw operations, charcoal production, or hunting and gathering (Marfo *et al.*, 2002: 11). The Forest of Ghana (both on and off reserve) provides both direct and indirect livelihood benefits to the entire population (Blay, 2008: 161). The forest-fringe communities are thus vulnerable to changes in the environment and shifts in policy.

The livelihoods approach has been criticised as merely a reinvention of the failed integrated rural development paradigm of the 1970s (Scoones 2009: 9.). Bebbington (1999) finds the framework's lack of inclusion of the role of access to resources as problematic, since access is the most important resource in determining the capacity of people to build sustainable poverty alleviating rural livelihoods (FAO). Shackleton *et al.* (2001) point out the pitfalls of applying such a synthetic model to such a plural and alive subject matter. Scoones' discussion of the somewhat unfashionable turn the livelihoods approach may have taken since being thrust into the fore in 1999, offers reflection that it did deconstruct staid policies and permeate a certain awareness in policymakers. Policies can fall short in stimulating sustainable livelihoods because it is not integrated (or politicians are reluctant to do so) in national policies.

This study departs from the assumption that the reforestation schemes currently being implemented in Ghana set the conditions for accomplishing some of the livelihood outcomes listed in Figure 2.1 and creating some potential for improvement in the livelihoods of people in forest-fringe communities. It is evident that livelihoods of local people and the management of natural resources are entangled, which leads me to the next theory of forest-based poverty alleviation.

## 2.2 Forest-based poverty alleviation

In recent years there is a burgeoning set of research and literature correlating the relationship between poverty and disappearance of forest and there has been increased interest to understand the contribution that forest resources can make to the provision of local employment, income and the well-being of rural communities (Arnold and Townson 1998; Mamo *et al.* 2007; Appiah *et al.* 2009). This relationship can be described as forest-based poverty alleviation (FBPA) (Sunderlin *et al.* 2005), and is understood as the use of forest resources for the purpose of lessening deprivation of well-being on either a temporary or more permanent basis. It is not limited to the pursuance of forest alone but incorporates many economic activities, such as agriculture, pastoralism and off-farm activities. Forests serve many purposes that can loosely be divided into the provision of subsistence goods (*e.g.* firewood, bushmeat, crops), goods for sale and indirect benefits (biodiversity, watershed protection). Within the concept of the potential of forests to contribute to poverty alleviation, it is helpful to offer a distinction between the realms of poverty mitigation and poverty elimination. ‘Poverty elimination’ can be used to differentiate the use of forests as a “source of savings, investment, accumulation, asset building, and permanent increases in income and welfare” (FAO, 2003, p. 61). ‘Poverty mitigation’ or ‘poverty avoidance’ are used in reference to “the use of forest resources to meet household subsistence needs, to fulfil a safety net function in times of emergency, or to serve as a ‘gap filler’ in seasonal periods of low income, in order to lessen the degree of poverty experienced or to avoid falling into poverty”(Sunderlin *et al.* 2005: 1386).

Sunderlin *et al.* (2005: 1392) summarise both the potential opportunities and obstacles for FBPA with regard to five different categories of forest use: conversion of natural forests to agriculture, timber exploitation, extraction of non-timber forest products (NTFPs), payment for environmental services, employment and indirect benefits. In terms of my study it is also important to note the debate around forest-based poverty alleviation, since Sunderlin *et al.* (2003: 8) point out the need to appreciate that much remains unknown about the relationship between forest resources and rural livelihoods. On the one hand, destruction and removal of forest cover can be seen to actually enable poverty alleviation, yet on the other hand, sustained use and maintenance of forest can contribute to poverty alleviation. Thus further development of knowledge around FBPA is needed in order to obtain a better understanding of where forest conservation and poverty alleviation converge, and where they diverge as policy goals. Of further importance to my study are developments that Sunderlin *et al.* (2003: 5) outline which may impact and



improve the potential of forests to alleviate poverty: decentralisation; forest tenure change; democratisation; anti-corruption campaigns; retreat of concessionaries; growing markets; market deregulation and liberalisation, new technologies and growing global environmental threats. Indeed Agyeman *et al.* (2003b: 4) discuss the general notion of the need to increase access to forest resources, provide security of tenure and optimize revenue generation. The authors also discuss the manner in which poverty can be achieved at a rural level through the judicious use of forest resources, along with the equitable distribution of wealth, which fits in line with the intentions of the MTS.

Since I am interested in the effects of the MTS on the livelihoods of people in forest-fringe communities, the notion of forest-based livelihood is central to this study. In the first place, it should be made clear that forest-based livelihoods have a different focus and different degree of dependence on forest resources, depending on the specific location of the village in terms of its proximity to the forest and its location vis-à-vis the market (Byron and Arnold 1999; Ros-Tonen and Wiersum 2005). Secondly it must be emphasised that in the context of Ghana's High Forest Zone there are a lot of mixed landscapes that replaced the natural forest. I therefore look to Ros-Tonen and Wiersum (2005: 131) in their distinction of these factors, and follow their distinction between:

- comparatively undisturbed forest areas (*ibid* : 131) with hunting, gathering and fishing playing the crux as the source of livelihood;
- areas where natural forests have been partly replaced with anthropogenic vegetation types (*Ibid.*: 131) with a combination of forest-based as well as agricultural activities as the main source of livelihood;
- either type of forests 'where the rural-urban interface and links with outside markets predominate people's livelihood strategies' (*Ibid.*: 131).

The second situation is most fitting to my study. As highlighted in the introduction, the natural forest cover in Ghana's High Forest Zone has reduced drastically in the last century restricting the potential for forest and tree resource-based poverty alleviation. There is real decay in forest-dependent communities in terms of economic, social, human rights' conditions as well as a general sense of insecurity (Opoku 2006:16). Opoku (*Ibid.*: 16) reports that 60% of Ghana's population (total population being approximately 21 million) live in forest-dependent communities and the people in forest-fringe communities are in an 'alarming' social condition. It is evident that the management of forests and trees can be crucial to improving the wellbeing<sup>5</sup> of people in forest-fringe communities, where there are few opportunities and assets for improving livelihoods aside from the forest and the reforestation schemes under the new governance arrangements.

Furthermore, peculiar to Ghana is a complicated stool and tenure system, which has great prominence and history, as well as effect on people's access to forest and tree resources. This is described in further details in Section 4.2.1. Essentially farmers' rights to income from trees they may grow are at best, ambiguous, and otherwise non-existent. In

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<sup>5</sup> In the development debate, wellbeing – defined by Chambers (1995: 175) as “the experience of a good quality of life” – is now being accepted as a more important objective than wealth.

addition, there are two somewhat conflicting sets of laws: customary and statutory, that restrict and don't clearly define the manner in which those in forest-fringe communities can legally operate (Section 4.1.3). This lack of rights of farmers to benefit if they tend trees, and lack of secure land tenure means that there is little incentive for the poor to engage in tree growing activities. Owubah *et al.* (2001) point out the inherent problem that "stems from limited understanding of the effect of the interaction between forest policies and indigenous tenure systems". In order for governance arrangements to be successful and for local people to be able to fully optimise the use of forests and trees to improve their livelihoods it is necessary to be aware of the need of communication between all the actors involved, comprehension of the indigenous tenure system as well as participation at a local level. In Ghana in order to alleviate poverty at the rural level it is generally proposed there is the need to increase access to forest resources, provide security of tenure and optimise revenue and income generation at the rural level to create wealth (Agyeman *et al.* 2003b: 4). The MTS (see Section 4.3 for further details) is one of the collaborative approaches to enhance farmers' participation and ownership of forest resources. Farmers are given rights to access the land, rights to own food crops they grow as well as being legally bound to owning a proportion (40%) of the final income from the sale of the timber. Having differentiated the wide spectrum that 'poverty alleviation' implies I think in this arena it would be more realistic to consider this in terms of the definition of poverty mitigation as opposed to believe full elimination of poverty.

## 2.3 Forest governance

Governance is a crucial concept in development because it encourages interaction and participation at local as well as regional and international levels. It is helpful to refer to Kooiman *et al.* (2005:17) and their definition of governance:

*Governance is the whole of public as well as private interactions taken to solve societal problems and create societal opportunities. It includes the formulation and applications of principles guiding those interactions and care for institutions that enable them.*

It can be seen that this is complicated process with the involvement of a wide spectrum of different actors with conflicting claims to the biophysical landscape. Of particular importance to my research is forest governance which is concerned with "the policy, legal and institutional conditions that can affect how people treat forests"(Higman *et al.* 2005: 6), and can be described as a series of processes, mechanisms and institutions in place that determine:

- How and to what end forests are managed;
- How decisions on forest use are taken;
- Who are involved in these decisions;
- How forest policies, laws and regulations are enforced on the ground; and

- How conflicts with regard to forest resources are mediated (Ros-Tonen and Kusters, in press).

In Ghana, as can be seen in the introduction, various governance arrangements have been introduced as part of the 1994 Forest and Wildlife policy (see Section 4.1.2). There is a wide range of different actors involved all with competing claims, values and interests: the central government, the Forestry Commission and its subdivisions, stool landowners, district assemblies, people in forest-fringe communities, timber contractors, NGOs, administrators of stool lands, as well as private plantation developers (Boakye and Baffoe 2006). Indeed, increasingly the role of the central government is reduced with the increased prevalence and influence of non-state actors (Ros-Tonen & Kusters, 2009: 26). These policies may be advocating collaborative approaches to forestry management to evolve and promote collaboration of the formal institutions with farmers, landowners and smallholders in the forest fringe communities, but this is hindered by confusion of the different systems of customary and statutory law. Even if the customary law may advocate involvement of traditional leaders, statutory law can override access and ownership rights (Section 4.1.3). The MTS, created through a collaborative framework of stakeholders, advocates a collaborative approach, at least on paper. However it is necessary to see the MTS in action before confirmation of the collaborative nature of the MTS can be achieved.

## 2.4 Summary

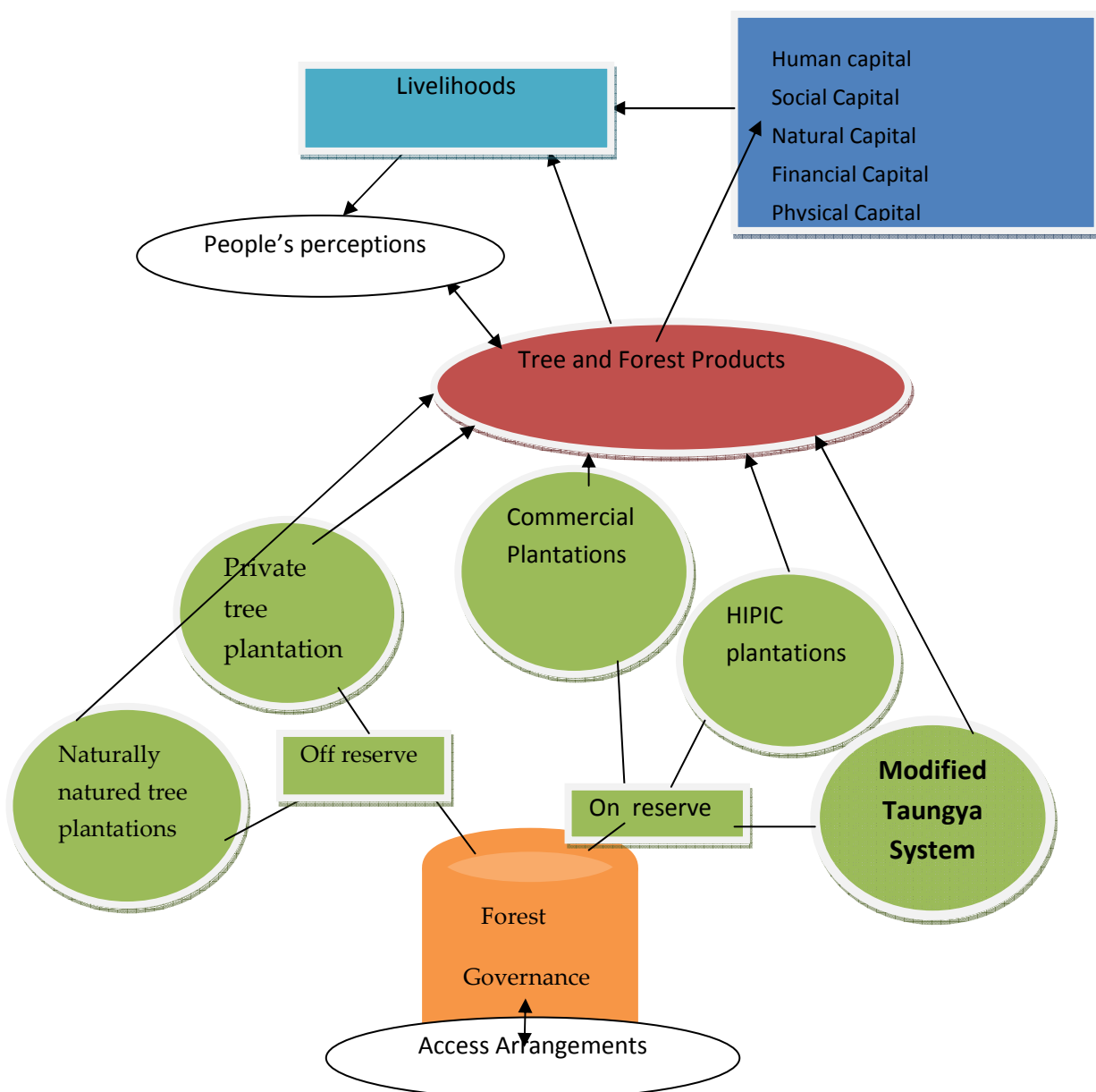
The theories on sustainable livelihoods, forest-based poverty alleviation and forest governance are useful as a reference basis to shape the research and the ideas woven through the rest of the thesis. An awareness of the livelihoods framework is helpful when looking at the consequences of the MTS. It will be interesting to look to the extent the households in the selected communities in the High Forest Zone rely on their natural resource base as a means to achieve a sustainable livelihood. Next, the theory of the manner in which forests could have the potential to contribute to forestry alleviation was discussed as a guiding framework to discuss the livelihood impact of the MTS. Finally with regard to forest governance, I will look to how the different actors with different claims over forests can come together to collaborate under the MTS. In Section 6.2 I try to explicitly integrate these theories in the discussion of my research findings.

### III. Methodology

This chapter relates the conceptual approach and describes the research methods employed in this study, as well as the criteria for the selection of cases and locations. Firstly, the conceptual scheme is used to relate the themes and actors addressed in this thesis, which is followed by the operationalisation of the major concepts which serves to put in place a manner in which to answer the research questions. The methodology and concerns about limitations and representativeness are also discussed in this chapter.

#### 3.1 Conceptual scheme and operationalisation of major concepts

The conceptual scheme outlined in Figure 3.1 is useful to show the relationships between the different concepts and theories prevalent in my research. The conceptual scheme relies on the capitals from the Sustainable Livelihood Framework (1999).



**Figure 3.1** The Conceptual Scheme

Since the Forest and Wildlife Policy of 1994, various other governance schemes aside from the MTS have been designed and actively encouraged, thus this conceptual scheme makes reference to them. In terms of the Sustainable Livelihoods' approach to capitals, the most important for my research is natural capital and the individuals in forest-fringe communities' ability to make use of it.

### *Operationalisation of the major concepts*

In order to make the main concepts relevant to this research, it is necessary to digest them and then translate them into something that can be made use of. Table 3.1 demonstrates the essential concepts of my research, and then separates the dimensions and variables. The indicators of the variables are outlined which in turn enables questions relevant to the study to be established. These questions are then referred to and answered in Chapters five and six.

**Table 3.1** Operationalisation of the major concepts

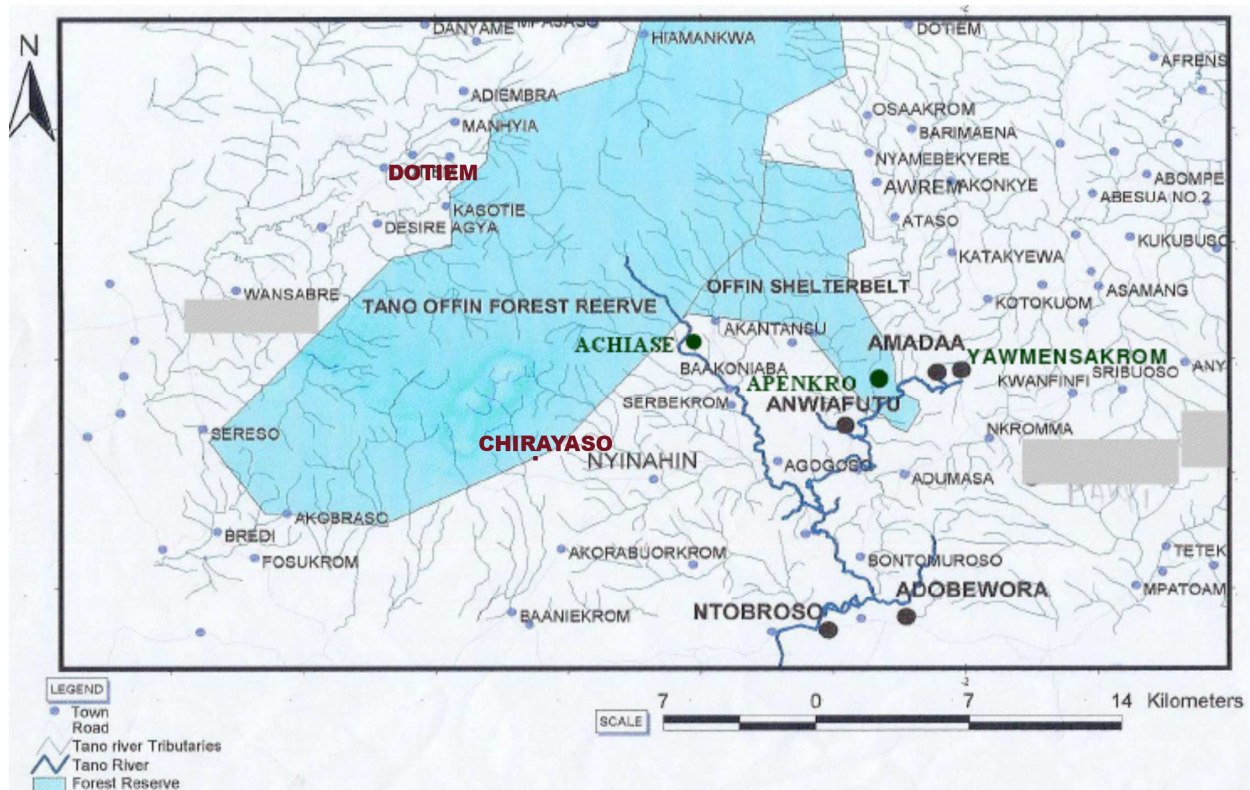
Concept	Dimension	Variable	Indicators relevant for this study	Relevant questions asked
Forest governance	Different arrangements that regulate access to forest and tree resources	Forest-use schemes in place	Number of households/ people having access to MTS	How is access to forest resources arranged?
Livelihood assets	Physical capital	Infrastructure Physical goods that support livelihoods	Roads Means of transportation	How accessible is the community? What means are available to reach markets?
	Financial capital	Remunerated activities Other sources of income	Income per household from: - farming - forest products - tree products - wage labour - remittances - pensions - loans - savings and other sources	What income-generating activities do people have? What are other sources of income (remittances, pension, credit, savings)?
	Natural capital	Forest and tree resources	Kind of forest resources available Kind of forest products extracted Kind of tree resources available Kind of tree products extracted	What forest and tree resources do people explore? What forest and tree products do these resources generate?

	Social capital	Social networks	Village associations Community-NGO networks Support networks (gifts, remittances) Cooperative arrangements among friends and neighbours Saving groups	In what kind of networks are people involved that provide them access to resources, goods or income?
Livelihood perceptions	Contribution of forest and tree resources to livelihoods	Income from forest and tree products	Relative contribution of forest products to household income Relative contribution of tree products to household income	What is the contribution of forest and tree-based production to the household income?
		Forest and tree products for auto-consumption	Forest products used for direct consumption Tree products used for own use	What forest and tree products are used for direct consumption?

### 3.2 Selection of cases and study sites

The villages selected were purposively chosen in order to fit in with the scope and region of the larger research project and with the view to choose two communities that have been actively engaged in the Modified Taungya System since its inception in Ghana in 2002 [see Appendix II: profile of communities involved in MTS in Tano Offin forest reserve]. The locations were selected from a list of possible villages identified on the basis of personal knowledge of the Ghanaian PhD students and reports of past studies. This recommendation was followed up with preliminary field visits of introduction to the identified communities and reconnaissance surveys taken during the first day in the field. Villages were sought where members of the community were willing to participate in the study and the villages didn't require too much travelling time. Both settlements also met the criteria in that they had a substantial number of households, were close to substantial areas of forest (close means 2 km, and substantial area implies at least 10 km<sup>2</sup> of forest). The two villages are located in the Forest District of Nkwaie, and in the area of the Tano Offin Reserve. Site One was Chirayaso in the Tano Offin Reserve, approximately 4 km from the Globally Significant Biodiversity Area (GSBA) and the admitted settlement<sup>6</sup> of Kyekyewere. Site two was Kunsu Dotiem at the North West edge of the Tano Offin Reserve, and is 10 km from Nyinahin and thus further from the access roads and local markets.

<sup>6</sup> An Admitted settlement or Admitted Village refers to a legally acknowledged settlement amidst a forest reserve.



**Figure 3.2** Map showing research sites and Tano-Offin Reserve (Source: Kyereh, 2007).

#### *Site One: Chirayaso*

My first research site is a village of approximately 400 inhabitants where the main source of income is from farming. It is located approximately 40 km south of Kumasi. It is 6 km from the relatively large town of Nyinahin (population: 7544<sup>7</sup>). Many farmers either walk or hitch (by bike or on the back of a vehicle) to get into the town and the market. Nyinahin is the capital of the Atwima Nwabiagya District (with a total district population estimated to be 130,000) in the Ashanti Region, where a number of guesthouses, hospital, high schools as well as markets and people commuting to Kumasi can be found<sup>8</sup>. In the village of Chirayaso there are a number of schools including a large Presbyterian Junior High. There is a central bore-hole where water is collected by all (Figure 3.3). There are several small shops selling basics such as biscuits, soft drinks, dried pulses and torches and batteries, also piles of fresh tomatoes, plantain and onions are sold. On the way to the village there are various people selling plantain. The village is on the main thoroughfare from Nyinahin to several other forest-fringe villages. The community, like much of Southern Ghana largely followed Christianity in its various denominations. The main source of income in the village is farming.

<sup>7</sup> [www.ghanadistricts.gov.gh/pdfs/atwima\\_mponua\\_demo.pdf](http://www.ghanadistricts.gov.gh/pdfs/atwima_mponua_demo.pdf).



**Figure 3.3** Women and children pumping water from the central bore hole, Chirayaso, Ghana.

*Site Two: Kunsu Dotiem*

Kunsu Dotiem is located at the North West edge of the Tano-Offin Forest Reserve, and the population was reported to be between 300-500 people. The village fringes the forest reserve and the main source of income in the community is from farming. When we visited the village for the first time, a week after Chirayaso, there was a constant stream of villagers coming back from the farm with crops and going off again. Similarly to Chirayaso, there is a central bore hole (installed in the last few years) as well as several small stores within the village selling provisions such as dried crackers, soft drinks, tinned fish, and fresh tomatoes, onions and garden eggs. The village is connected to other villages along the Kunsu-Dotiem Road. The village is predominately Christian, but among the respondents there was one Muslim MTS farmer. Interestingly, on the second day when I was in Kunsu Dotiem, I noticed there was also faith-based NGO working in the community. In Kunsu-Dotiem several NGO projects have been recorded, it is part of a Cargill-Care rural education project, whereby a school farm with maize and palm has been set up as a sustainable



fundraising venture (Tulane company reports, 2007). The exposure of the community and familiarity to other NGOs was interesting in terms of whether this may have had a positive or negative motivation on farmers' tendency to participate in research and interviews.



**Figure 3.4** View of typical dwellings at Kunsu Dotiem

### **3.3 Methodology used**

First of all a desk-study of literature was undertaken. This was important in order to understand formal access rights to forest resources, tenure arrangements, regulation of stool lands and regulations on benefits in reserves and off reserves in Ghana. I describe the crucial points of these acts in Chapter four. This information was collected from a review of relevant forest policies and acts, including the following:

- Forestry Commission laws (forest and wildlife laws)
- Benefit-sharing Agreement of MTS
- The Constitution of the Republic of Ghana, 1992
- The Forest and Wildlife Policy, 1994
- The Forest Plantation Development Fund (Amendment) Act 2002
- The Timber Resource Management (Amendment) Act 2002, (Act 617)

#### *3.3.1. Epistemology*

My research is embedded in constructivism. The theoretical perspective behind my methodology is interpretivism, in order to gain an understanding of the social reality experienced by the target population (Crotty 1998: 65). The social reality I wished to gain an understanding of is the role MTS plays in local people's livelihoods.

#### *3.3.2 Units of observation and units of analysis*

The unit of observation for my research was the specific governance arrangement, *i.e.* the MTS. The units of analysis were the households involved in the MTS. I used purposive sampling within each village in order to choose people involved with the MTS. In order to

get my sample my interpreters tried to choose farmers as randomly as possible, however it was not a random sample. Firstly due to the nature of farming, and the fact that many farmers were away from the village and at the farm during the day, it was not possible to knock on for example, every third dwelling. Moreover the chief of the village made all of the MTS farmers in the village aware that we would like discussion, thus many came forward to find us, and the sampling would have favoured those more confident, whereas more marginalised and shy farmers had less likelihood of being selected. Similarly those who could not or chose not to speak to us were more likely to be those who were excluded from participation in the Taungya Committees. If I were to repeat this research and had more time, a random sample would be the ideal. However, with a view to involving as many farmers as possible, we went especially early and stayed until nightfall. Also, it was made sure that each farmer interviewed came from a different household in order to get a better overall picture of the situation. In each village a reconnaissance study and introductory meeting was held and some discussion made. Two full days from 6 am to 6 pm were spent in each village, with two interpreters collecting surveys more or less non-stop. In Chirayaso, 33 surveys were collected and 41 in Kunsu Dotiem. Then ten men and ten women took part in the PROFOR toolkit in each village.

### *3.3.3 Research methods*

A pilot study was conducted in two villages Sefwi-Bopa and Sefwi-Abrabra in the Sefwi-Wiawso District, the most South-Western region of Ghana, to the West of Kumasi which falls within the moist semi-deciduous forest zone of Ghana (TBI Ghana, 2007:20). Here I trialled some of the surveys as well as focus group discussions. My local supervisor then undertook some more in-depth research in these villages. For my actual research the following methods were used.

#### *Household survey*

I designed a household survey (Appendix I) that was administered to MTS farmers in Chirayaso and Kunsu Dotiem. The survey took approximately 30 minutes to complete and was used in order to establish (i) household characteristics and bio data; (ii) livelihoods prior to the introduction of the scheme; (iii) responsibilities of the farmers; (iv) products gained from the MTS; (v) benefits obtained and perceptions of impacts on livelihoods, as well as (vi) problems faced by the farmers in the scheme. It is important to note firstly, the surveys were only administered to those farmers who were involved in the MTS. Secondly, within the purposive selection of only MTS farmers, respondents were chosen randomly and depending on who was available and not in the farm as well as willing to talk. Thirdly, it was made sure that all the people surveyed were from different households (household is defined in Section 5.1.1.). A total of 34 surveys were administered in Chirayaso and 41 in Kunsu Dotiem. This is about one third of the total number of 90-100 MTS farmers that was reported to me to be in both of the villages.

### *Semi-structured interviews*

Through the process of completing the surveys, several farmers were keen to speak more; their discussions went far beyond the scope of the survey and offered in-depth insights into the system and to people's perceptions of the impact of the governance arrangements. These responses could then be treated as semi-structured interviews. The heads of the Modified Taungya Committees at in Chirayaso and Kunsu Dotiem (both male) were included in this as well as one female farmer from Kunsu Dotiem.

### *Semi-structured interviews with key persons*

I also conducted semi-structured interviews with staff of TBI-Ghana, experts at FORIG and staff of the Resource Management Support Centre (RMSC) in order to collect information about changes in governance arrangements and access to forest and tree resources. Data from these sources also served as a good means of balancing the viewpoint of the data, and to base the study not solely on farmers' perceptions. It also gave me an invaluable opportunity to clarify components of the MTS that are neither always explicitly explained nor understood. In hindsight, coming back to write the thesis, if I were to repeat the research I would conduct more interviews and try and delve deeper into some of the issues.

### *PROFOR toolkit elements*

The next research tool was a modified version of components of the PROFOR toolkit, the 'Poverty-Forests Linkages Toolkit' designed to facilitate relevant data collection and analysis with regard to efforts to establish manners in which forests sustain the poor. PROFOR's grounding principle is that although an estimated 1.2 billion people rely on forests for some part of their livelihoods, the importance of forests is often overlooked in national development processes such as poverty reduction strategies due to inadequate evidence documenting how forests sustain the poor (<http://www.profor.info/profor/node/60>). The toolkit has seven components which can be used in order to assess the relative contribution of forest and tree-related activities to people's livelihoods. I made use of modified sections of tools four, five and seven in order to facilitate my research. Tool four serves as a livelihood analysis and was used to assess the relative contribution of forest and tree-related activities to people's livelihoods. The participants ranked the components which make up both their cash and non-cash income. In each village 20 participants were involved: 10 female and 10 male MTS farmers. There were many farmers who wanted to participate. In order to be fair and non-biased, potential participants pulled straws in order to select the final ten for each gender group. Participants were given 20 small stones and asked to divide up them according to their yearly income sources (both in -cash and non-cash terms). We asked them to assess this in relation to the last year (which was 2008) where possible. The placement of the stones was recorded. The ranking facilitated a great deal of discussion among the farmers and served as a focus group, of which notes were recorded. I found this tool to be very useful to overcome the difficulty that presents in trying to gauge income and defining a precise

figure. This enabled a clear picture to be gathered of the relative contribution of different products and the MTS to people's livelihoods as well as accounting for such things as petty trading and non-cash income, which is often difficult to measure or define. Tool seven is essentially a matrix that enabled particular strengths and weaknesses of MTS to be revealed. The problems were then ranked according to their perceived prominence.

### **3.4 Ethical issues, limitations and representativeness**

#### *3.4.1 Ethical issues*

Before going 'into the field' to Ghana I had many ethical concerns and challenges related to the research process. After three months in Ghana, many of the same issues concern me. The very nature of entering the communities in Ghana as a 'researcher' from overseas instantly created an unequal power dynamic and with it the issue of reciprocity arose. In research scenarios researchers create formal and informal relationships with informants who spend time with researchers, by sharing their opinions, feelings and histories. However, in many research scenarios, the researcher gains much more (in the form of data, recognition after study, etc.) than those who have been studied.

#### *3.4.2 Limitations*

Due to the short time frame and small budget of a Master's research, many limitations were observed. However, I will try to briefly outline some of my chief concerns. The most noticeable factor that I felt put some limitations or a slant on my research was the fact I am very noticeably an outsider to Ghanaian values, beliefs and manners. I did my best to follow protocol, and with the help of the Ghanaian PhD students and interpreters we held introductory meetings in each village, and followed the correct procedure with the chief and offered an explanation of what we were doing and why we were there. By portraying myself as a student carrying out research, I hoped to be more accessible to the participants. However I felt a certain barrier prevailed and sometimes I felt quite uncomfortable; an Obruni<sup>9</sup> turning up at a village in the NGO's swanky four-wheel drive and coming in and staying for a few days. No matter how much we said we were there for merely research there is likely to be a certain amount of suspicion or caution exercised when participants responded. Indeed more time could have allowed for this to be perhaps subdued somewhat. Ideally, I would have liked more time in the villages to get more acquainted with the local people before suddenly embarking on the series of surveys and semi-structured interviews. A good level of trust is important not only on a personal level but also for the establishment of more thorough and reliable research. I felt there was not sufficient time to get a true feeling of life in those villages and thus it was also hard to find out much about the participants, and the balance of local power structures and relations, and who may have been excluded from the research and why. The lack of time was mainly linked to budget constraints, in that more time equated to a lot more money being spent;

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<sup>9</sup> Twi word for non-Ghanaian, particularly of European descent.

as it was necessary to pay for a driver, interpreters, as well as food and accommodation for them, as well as costs to cover the participants' time spent in the PROFOR focus group.

Furthermore, although English is the official language of Ghana, there are many local languages, of which Twi is the most significant in the area I visited. In the villages a few elders and children spoke bits of English; it was neither possible to conduct focus groups nor would I have felt comfortable enforcing discussion in English. I was lucky to have the help of interpreters to conduct my surveys and the PROFOR focus groups, especially as they were university students in various forest-related programmes and thus had good knowledge of the governance arrangements and the concepts of livelihoods among other related forestry issues. Despite the prowess of my interpreters, there were still the inevitable problems that came with translating discussion, and the possibility that some of the finer points and intricacies made were missed. However I felt that given the situation we did the best that we could. It is disappointing and distancing for me as the researcher not to be able to engage in full-flowing discussion with the farmers, and to have somewhat stilted, interpreted interaction.

### *3.4.3 Representativeness*

Obtaining an appropriate sized and representative sample is integral to achieving good research. I tried as much as possible to attain an accurate representation of the communities I visited in my data collection. My concerns in this area are that although farmers chosen to participate in the surveys were selected as randomly as possible, due to the nature of farmers working long hours in the fields it was not always easy to encounter them, and thus random household sampling did not work particularly effectively, since a lot of farmers are away from their house all day. We did spend all the hours of daylight in the village but still it was difficult to ensure the total random nature of sampling. Moreover there is no doubt more vocal people or people with particular interests came forward to be interviewed and we perhaps did not delve enough to find less readily available people. It was also interesting to note in the surveys in particular at Kunsu Dotiem, the gender bias: 27 of the 41 respondents were women. With more time I would aim to get a more equal match, but with the time available and without staying overnight in the village we were grateful to access as many farmers as possible. A lot of women are involved in the MTS generally, however an exact figure wasn't known in the villages I visited.

Furthermore, I have described the PROFOR toolkit as a very lovely participatory experience where everyone is able to participate and share with the group the percentages of cash and non-cash income. However it would be naïve to assume that this is necessarily the case, and not appreciate that some members may feel embarrassed or feel pressure when discussing their incomes or viewpoint in a group setting, which may impact their responses. Indeed there is a wealth of criticism directed at participatory research as a whole which is important to bear in mind with the notion that 'participation' is nothing more than a vacant buzzword, which even when performed with good intentions can only serve to preserve the local power structures and not deliver any 'empowerment' to respondents. I did however feel the PROFOR tool, as long as the researcher is pragmatic,

was a brilliant tool for catalysing discussion and allowing an insight into the components of the farmers' income sources.

### **3.5 Summary**

In this chapter, I outlined the conceptual scheme and its operationalisation, described the two study locations around Tano Offin reserve and justified their selection, and described the methods my interpreters and I used in the field (document analysis, household survey, semi-structured interviews and application of elements of the PROFOR toolkit). I furthermore highlighted my concerns about the limitations and representativeness of this study. The results of the document analysis of Ghanaian forestry policies are presented in the next chapter, whereas the primary data from the field visits are presented in Chapter five.

## IV. Forest governance and tenure rights in Ghana's High Forest Zone

In this section I discuss the evolution of policies towards forests in Ghana, and how they have changed from the hierarchical experience of colonial times to reflect the global trends towards sustainability and participation. I then go on detail the tree and land tenure systems that guide Ghana, as well as the actors involved in Ghanaian forest governance and finally describe the MTS in detail.

### 4.1 History and current context of forest governance in Ghana

The issue of forest governance in Ghana is integral to this study, and access to forests is essential for people's participation in governance (Kowern *et al.* 2003). In Ghana, like in many developing countries, decisions *vis-à-vis* forest use until recently did not involve local communities. The people who depend on and have direct contact with forests were often marginalised and not considered in policy development. However, in line with trends of governance thinking and the idea of 'good governance', the appreciation of involvement of local people in forest policy is beginning to change. This is not easy, not least because of the complicated web of constitutional rights, policies, laws as well as competing actors that can hamper changes in forestry governance in Ghana.

#### 4.1.1 *The legacy of colonial law*

Forest conversion for cultivation was heightened during colonial times with the creation of large-scale oil palm, cocoa, timber and rubber plantations (Palumbo, 1992). The dawning of the 20th century saw the introduction of a wealth of statutory laws and policies for the management of forests (Kotey *et al.* 1998). The central interest of these policies was not the sake of indigenous communities, but to preserve the economic benefits from timber that forests brought, as well as to reconcile the competing land and forest demands of farmers and loggers (Wiggins *et al.*, 2004: 1944; Asante 2005: 62-3). Asante (2005: 63) made a useful summary of the crucial policies and their purposes which is presented in Table 4.1. In the table, Asante categorises certain policies as 'Pseudo-Conservation' since the policies' main concern was for the preservation of forests for timber extraction purposes rather than to genuinely conserve them. The colonial legacy is embedded in the creation of the Forest Department in 1909 as the main agency for forest management in Ghana (*Ibid.*, 66). This continued the European forest management style, with its hierarchical mode of governance (Ros-Tonen *et al.* 2010: 4; Asante, 2005:66), compounding a deep crevasse between the institutions and the people within forest-dependent communities. With the main concern being the preservation of the forest for economic reasons, demarcation and reservation of the forest estate was largely completed by 1939. During the early colonial period, a number of different Ordinances, Acts and Decrees were drawn up, as displayed in Table 4.1. In 1948 the first formal government forest policy was enacted, devised when Britain was rebuilding itself after Second World War. In line with this policy, forests were essentially managed to promote conversion to agricultural land in off-reserve areas and to protect and manage forests in the reserves

(FAO, 2001). During the colonial period, 282 forest reserves and 15 wildlife protected areas were established, which occupied about 16 percent of the country's total land area (Boakye & Baffoe, 2006: 7). Between independence in 1957 and 1992 there was little review of policy in Ghana, save for the introduction of a few acts including the 1974 Trees and Timber Decree, which enabled the government to be the owner of all timber trees (FERN: 20; Boakye and Baffoe, 2006:18).

**Table 4.1** Categories and principle purposes of colonial era forest policies in Gold Coast (*Source: Asante, 2005: 63*).

The Crown Land's Bill 1894	Land Tenure Policy	Colonial control over lands and forests
The Land's Bill, 1897	Land Tenure and Pseudo-Conservation Policy	Colonial control over lands and forests
The Concessions Ordinance 1900	Pseudo-Conservation Policy	Colonial administration of contracts between the governments and British timber merchant
The Forestry Ordinance 1901	Pseudo-Conservation and Extractive Policy	Appointment of forestry officers, constitution of reserve acquisition of lands and appointment of reserve commissioner
Timber Protection Ordinance 1907	Pseudo-Conservation and Extractive Policy	Prevent cutting of immature timber for the purpose of guaranteeing future supplies of timber
The Undersized Trees Regulation, 1910	Pseudo-Conservation	Enforcement of the timber protection ordinance
The Forestry Ordinance 1911	Pseudo-Conservation and Extractive Policy	Creation, control, and management of forest reserves
The Forest Ordinance 1927	Pseudo-Conservation and Extractive Policy	Involvement of traditional rules and enforcement of forestry laws and regulations

An agro-forestry system called taungya system was introduced as a means to encourage reforestation, however it failed and only underlined the hierarchical mode of governance (which is discussed in greater detail in Section 4.2.2). Outside of Ghana, changes were beginning to emerge that recognised that forest conservation was often neglecting those people living in the forest fringes and their associated livelihoods (Ros-Tonen *et al.* 2005: 9). This was first recognised in the 1978 FAO VIII<sup>th</sup> Forestry Congress 'Forestry for People'



with the launch of the notion of social and community forestry (*Ibid*: 9). The United Nations World Commission on Environment and Development's (WCED) 1987 Brundtland Report: *Our Common Future* (WCED, 1987a) was a catalyst for the promotion of conservation with consideration of livelihoods of forest-fringe actors and inserting sustainability into the development agenda. Its definition of sustainable development – "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (*Ibid.*) – is often referred to. At the same time, participation was on the agenda; made popular by Chambers' Participatory Rural Appraisal, and grounded in Freire's (1972) belief that "development can only be achieved when humans are 'being for themselves' and when they possess their own decision-making powers." A flurry of policies and speeches advocating the need for participation appeared (World Bank, 1992, World Bank 1994, Gardner & Lewis, 1996: 111). The acceptance of both sustainability and participation of forest-fringe actors in policy became commonplace in the 1990s, and all sorts of community-based conservation objectives took heed, ascribed many names of Community-Based Natural Resource Management (CBNRM) and Collaborative Forest Management (CFM). In Ghana, The Forest and Wildlife Policy of 1994 was the first to fall in line with this trend and began to challenge the stagnant, staid, top-down system (examined in more detail in Section 4.1.2). Indeed, Agyenim-Boateng *et al.* in 2002 find collaboration to be an integral part of Ghana's forest management system. The policies may be there, but the real challenge comes in the translation of such policy to reality. There is a need to ensure a clear-cut policy that is clear to, and communicated to, and understood by, all parties (Agyenim-Boateng, 2002).

#### 4.1.2 The 1994 Forest and Wildlife Policy

The 1994 Forest and Wildlife Policy is being implemented by The Ministry of Lands, Forestry and Mines (MLF) through the Forestry Commission (FC) and was formulated to guarantee local communities basic minimum rights to benefits from forest management. Committed to the notion of CFM, it aims to improve the role of communities in forestry and to recognise and incorporate social, cultural and environmental aspects of forestry (FERN: 21). The central premise is "the conservation and sustainable development of the nation's forest and wildlife resources for maintenance of environmental quality and perpetual flow of optimum benefits to all segments of society (MLF, 1994)". However the policy was soon criticised for being shallow. Despite identifying challenges and objectives it failed to identify explicit solutions or an actual framework for sharing benefits (Agyeman *et al.* 2003b: MLF, 1994). It also retained the same criticisms of earlier policy: the underrepresentation of traditional rulers, farmers and members of the forest-adjacent communities, and that it is little more than a vehicle of the commercial timber industry (Opoku, 2006, Treue, 2001). A 2001 report by the Forestry Commission (2001a) recognises that: "The choice of policies has failed to create the right incentives for improved efficiency and forest conservation at all levels of the Ghanaian forest sector." Since 1994 there have been several amendments to the forestry law which particularly relate to timber, hence there is not one distinct and unified forest law, but a number of separate legislations that

govern forestry. Table 4.2 offers an overview of recent acts and regulations on Forestry, and Wildlife Management since 1994.

**Table 4.2** Acts of Forestry Management in Ghana (adapted from Atuguba & Dowuona-Hammond 2006 and FAO 2002 <sup>10</sup>)

Title	Summary
The Trees and Timber (Amendment) Act 1994, Act 493	The Trees and Timber (NRCD 273) was amended by ACT 493 in 1994 by Parliament. The act serves as a framework for the regulation of the identification of trees for harvesting and the exportation of timber.
Ghana Forest and Wildlife Policy 1994	The Forest and Wildlife Policy of 1994 promotes a timber industry that considers all members of society reliant on the forest. It advocates public participation, local rights to access basic natural resources, encourages protection of forest resources with the intention of doing so in an ecologically sustainable manner.
Timber Resources Management Act, 1997, Act 547.	The Timber resource Management Act, 1997 assented to March 17, 1998, seeks to provide for the granting of timber rights in a manner that secures the sustainable management and utilisation of the timber resources of Ghana and to provide to related purposes.
Timber Resources Management Regulations, 1998, LI 1649	Legislative instrument 1649 of 1998, Timber resources Management Regulations is in two parts. The first part focuses on the area of the measurement of timber, conveyance certificate and payment of stumpage fees, payment for management services and payment of rent contract areas. The second part covers the regulation of the uses of the chainsaw in the timber industry.
Forestry Commission Act, 1999, Act 571	This act establishes the Forestry commission, bringing together all public agencies that were previously individually responsible for the management and regulation of utilisation of the forest and wildlife resources in Ghana.

<sup>10</sup> <http://www.fcghana.com/publications/laws/index.htm>

The Forest Plantation Development Fund Act 2000, Act 583	Act 583, 2000 established The Forest Plantation Development Fund. The aim of which was to provide financial assistance for the development of private commercial forest plantation. It also made provision for the management of the Fund and to provide for related matters.
The Government Plantation Development Programme started (HIPC plantations) 2001	Programme with funds from HIPC to achieve plantation development
Ghana Poverty Reduction Strategy 2001	To increase revenue and other benefits to farmers, in line with the overall strategy
The Forest Plantation Development Fund (Amendment) Act, 2002, Act 623	Amendments Act 583. To enables plantation growers, both in the public and private sectors, to participate in forest plantation.
Timber Resources Management (Amendment) Regulations, 2003, LI 1721	Timber Resource Management Regulation of 1998 LI 1649 was amended by Timber Resources Management Regulations 2003 LI 1721. The law is divided into nineteen sections and it explicitly spells out the procedure in operating in the Timber Industry.
Adoption of Modified Taungya Agreement 2002	Benefit-sharing agreement between Forestry Commission, Farmers, Land owners and those in forest-fringe communities to undertake agroforestry scheme.
Forest Law Enforcement, Governance and Trade (FLEGT) Voluntary Partnership Agreement (VPA). Signed with EU November 2009	Signed with EU to provide a legal framework to guarantee timber imported to EU from Ghana has been legally harvested and exported.

The number of acts show that sustainability issues have been identified and that the agenda for change towards sustainable timber extraction is there. The rise of CFM has been seen since the introduction of 1994's policy, in order to give some benefits from the reserves to the local communities dependent on them. The problem is to enforce the laws and translate ideas about sustainable forestry and community participation so as to actually improve governance in practice. In 1999 in a bid to coordinate the different institutions within the forestry sector, the FC was made the umbrella organisation of three divisions: the Forest Services Division (FSD), the Timber Industry Development Division (TIDD) and the Wildlife Services Division (WSD) (Figure 4.3).

Progress in combating illegal logging and promoting sustainable forest management is hoped for in the form of the Voluntary Partnership Agreement (VPA) process in which Ghana has been involved with the EU since 2005. One of the aims of the VPA process is to benefit the communities who depend on the forest as their source of livelihood. Part of the

VPA review process' intention is the aim to consolidate this complicated array of laws.

#### 4.1.3 Statutory and customary law

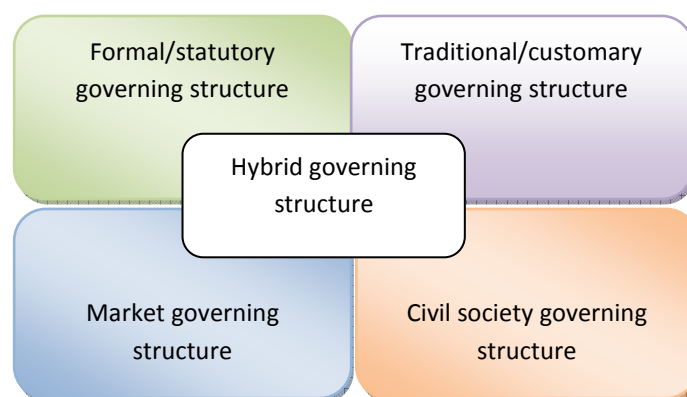
In Ghana, there is a complicated structure of rights and policies. Land resources are guided by two conflicting sets of law: customary and statutory. In Southern Ghana the majority of the land is still held under longstanding custom (Marfo *et al.*, 2002: 5) and customary law, which according to Article 11(3) of the Constitution:

*“consists of rules which by custom are applicable to particular communities in Ghana, not being rules included in the common law under any enactment providing for the assimilation of such rules of customary law as are suitable for general application” (1960, C. A. 4,s 1891).*

There are a lot of different components, but essentially chiefs hold the land on behalf of the community and allocate usufruct rights to members of the community, and then rights to land are divided between those to arable land and those to forest trees (Marfo *et al.* 2002). Agyenim-Boateng *et al.*(2002) report that after Ghana's independence the customary rights of the local people were incorporated into the Working Plans by which Forest Reserves were managed. However, in the management of the forest reserves little attention was paid to how people could actually access these rights. In fact in the 1992 Constitution (Article 11), customary law became fully recognised in common law thereby making Ghana a dual political entity. There is some flexibility in the negotiation of the intricacies of customary law, with juries sometimes calling upon members of the public with knowledge of complicated native customs (Marfo 2009: 7). Much literature and scholarly work is spent detailing the clashes and the intricacies of the two sets of law that are borne out of two very different standpoints (Arko-Adjei *et al.* 2009; Blocher, 2006; Marfo, 2009). On the one hand, customary law is based on traditional ideas and the importance of family lands. On the other hand, the statutory law reflects colonial notion of how forests should be regulated, and control is vested in government authorities as opposed to traditional heads. Statutory law puts limit on access rights and rights of extraction for commercial purposes of those in forest-fringe communities, and operates a permit system to control access (Marfo, 2009: 8, CAP 157). As much as the two can work side-by-side, there are times when the two come head to head, for example, between community members and FSD on access to forest land for farming or NTFP collection or between 'illegal' chainsaw operators and the Forest Services Division (HICN, 2009: 196). In these instances when there is discrepancy, Kasanga & Kotey, (2001) argue the state system tends to be used and enforced and the customary system becomes weakened. It is clear that in order for progress to be made to achieve the so-longed for sustainable forest strategies, the interaction between the claims of the dominant statutory law and the traditional customary laws need to be reconciled (Owubah, 2002).

#### 4.1.4 Actors in forest governance

Further to Section 2.2 on forest governance, the actors involved in the decision-making process and their ability to communicate with each other can be crucial to the success of forest governance (Higman *et al.* 2005). In Ghana, there are a wide variety of actors involved in forest governance, including forest users, households, associations, companies, institutions, NGOs, traditional authorities, local communities and government officials (Ros-Tonen *et al.*, 2010). Of course the interests of an individual are very different to that of institutions, and the scope of good governance is to efficiently, transparently manage these competing claims (Mayers *et al.*, 2006: 101). In order to see how the different actors involved in Ghanaian Forest governance can interact and be involved in decision making it is helpful to refer to Figure 4.1 (Ros-Tonen *et al.* 2010). The different actors are grouped into four separate arenas: the formal/statutory governing structure, the customary governing structure, the market governing structure, and the civil society governing structure. In addition, there is a hybrid governing structure, in which two or more governing structures amalgamate (Ros-Tonen *et al.*, 2010).

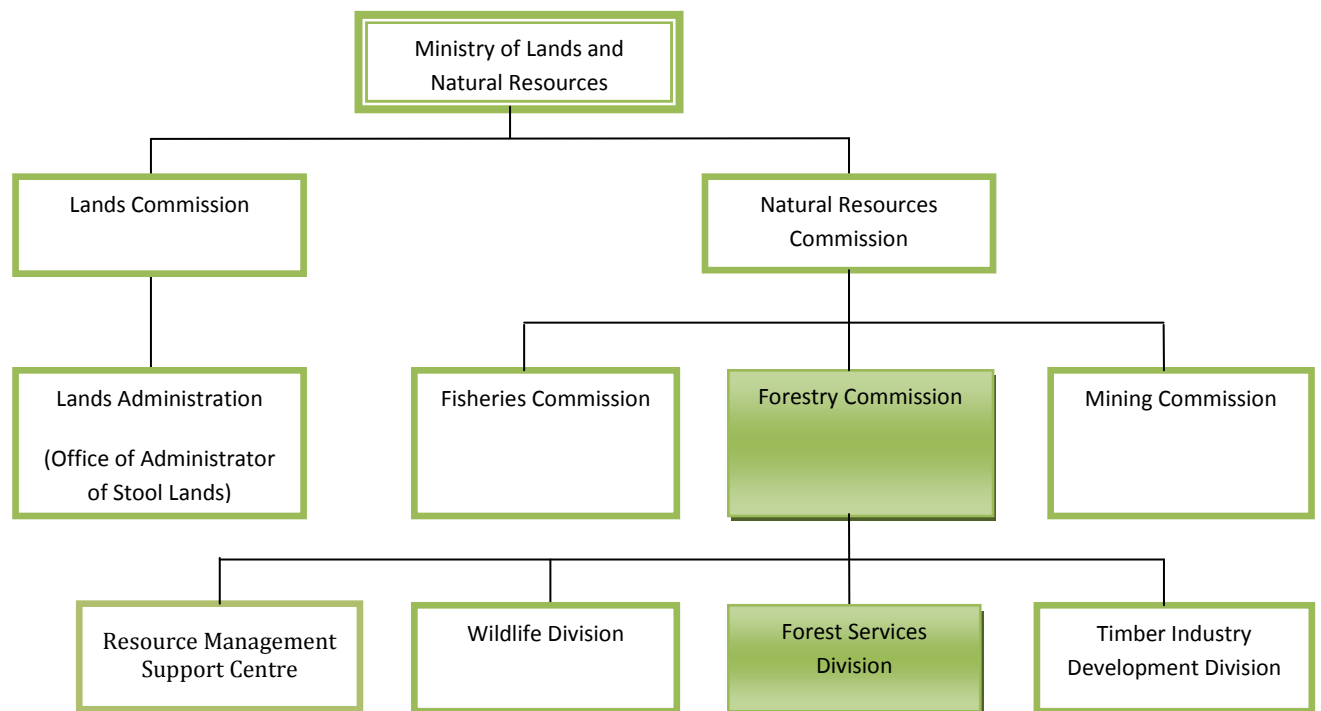


**Figure 4.1:** Categories of actors in forest governance, forest and tree-related livelihoods, conflicts and conflict management in Ghana's High Forest Zone. *Source:* Ros-Tonen *et al.* 2010.

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

From Section 4.1.1 it is clear that a wealth of laws and regulations have been introduced in Ghana but who are those responsible for making the actual policy? There are a lot of institutions involved. The clearest manner in which to understand the organisation of the structure is through Figure 4.2. Essentially the Ministry of Lands and Natural Resources (MLNR) is the centralised head, and is responsible for the formulation of policies and legislations of Ghana's land, forest, wildlife and mineral resources. It administers 16 Wildlife-Protected Areas, as well as Accra and Kumasi Zoos (FC Ghana<sup>11</sup>). Under the MLNR, responsibility is divided between the Lands Commission and the Natural Resources Commission. Essentially the decentralised regional lands commissions are charged with the management of public and vested land. Of particular interest to this research is the

<sup>11</sup> [http://www.fcghana.com/forestry\\_commission/wildlife.htm](http://www.fcghana.com/forestry_commission/wildlife.htm)



**Figure 4.2. Structure of the Ministry of Lands and Natural Resources (Source: Ros-Tonen *et al.* 2010)**

forestry subsector that is managed by the Forestry Commission, responsible for advising the Minister on forest and wildlife policies. The divisions that fall under the Forestry Commission are the Forest Services Division (FSD), the Wildlife Division (WD), the Timber

Industry Development Division (TIDD) and the Resource Management Support Centre (Donkor & Vlosky 2003: 22). Aside from the institutions described in the formal structure, there is a wide range of actors who provide support to the implementation of policy (Ros-Tonen *et al.* 2010),

- Academic institutions (*e.g.* the Faculty of Renewable Natural Resources (FRNR) at KNUST);
- Research institutions (*e.g.* the Forest Research Institute of Ghana – FORIG);
- Donors representing foreign governmental organisations (*e.g.* DFID);
- Inter-governmental organisations such as the Food and Agriculture Organization of the United Nations, FAO. (*Ibid.*) MTS (Section 4.3) falls under the remit of the Forestry Commission who devised the plan and who is in charge of keeping records and documentation of the benefit sharing agreement. The FSD is responsible for raising seedlings (although in some communities farmers have been allowed to raise their own) and the rolling out of the MTS, while its field staff are responsible for the supervision of the maintenance of the plots (Agyeman *et al.* 2003a: 3). The Resource Management Support Centre (RMSC) is responsible for rolling out the agreements and getting them signed. The Plantations Department (PD) is a further subsidiary of the FSD and is responsible for the implementation and coordination of the National Forest Plantation Development Programme (NFPDP). At the community level, Taungya Committees and Land Allocation Committees have been established who report back to the FSD (*Ibid.*;

Boakye & Baffoe, 2006: 12). The MTS is supported financially by DFID, The World Bank and The African Development Bank (*ibid.*), NGOs and CBOs are supportive in terms of wildfire management strategies and in providing training and support in tree planting.

## **4.2 Community forestry and tenure rights in Ghana**

Ghana's system of collective and individual rights to land and trees is an interesting one and ownership in Ghanaian forests is closely linked to the indigenous land tenure system within the country. First of all I detail the general rights to access land, then I go on to detail the specifics of MTS.

### *4.2.1 Forest governance and community rights to forest and tree resources*

When forest reserves were first created, a series of elaborate processes were developed to identify what the rights of communities and landowners were in relation to these forest reserves. However, these rights were ambiguous and not clearly defined, and there is often a need for the forest authorities to intervene at the local level in the allocation of forest resources. In terms of ownership of forest land, Ghana has retained the traditional customary system of communal ownership and the government recognises the rights of stools and clans to ownership of their traditional lands. Some 78% of land in Ghana is held under longstanding custom, the other 20% is owned by the state, and the remainder in dual ownership (Appiah *et al.* 2009). The stool (or in Northern Ghana: Skin) is essentially a chief and can refer to any person or body of persons having control over community land, as a representative of a particular community, *i.e.* a type of community governance (Kasanga 2003: 144; Ros-Tonen *et al.* 2010: 7-8 Sasu 2004: 2). The community's chief exerts usufruct rights and allocates land to community members. There are two forms of inheritance in which land is acquired for farming if an individual is a subject of a landowning community or family: the patrilineal system and the matrilineal system (Zhang & Owiredù, 2007: 605). These two main inheritance systems have different concepts of land, land acquisition and ownership rights (*ibid.*, p. 603). In both systems, however, immigrant and tenant farmers have restricted rights to plant, use and own trees than indigenous farmers, mainly because of land inheritance systems (*ibid.*, p. 605). Aside from rights to access the land it is important to appreciate the regulations that govern trees; separate laws apply to the trees and the land that the trees are grown on, as well as different ones applying to those planted and those growing naturally (Marfo, 2009:11; Agyeman, 1994). If trees are naturally growing on communal lands,, rights depend on the use that will be made of the tree. If the naturally growing trees occur on family lands, tenants can harvest but not sell them (Marfo, 2009: 11-12). On the other hand planted trees on communal lands are owned by the community and cannot be harvested by individuals without a chief's approval. The laws are often interpreted differently depending on the region (Marfo 2009: 12). In addition, ownership of land does not necessarily imply the ownership of and right to fell, extract and convert logs for sale. The bundle of rights over trees and their produce may be held by different people at different times. These

issues of tenure and tenure rights are important to consider especially when designing or implementing policy. With farmers faced with insecure and ambiguous tenure rights, there was little incentive for them to be interested in conservation and tree planting. Indeed, Treue (2001) argued that the strongest incentives for promoting timber production are to give farmers full rights over trees they cultivate. In relation to forest-based poverty alleviation, it can be argued that the inheritance systems restrict access and benefit to reforest resource and thus discourage sustainable forest management and poverty alleviation (Boakye & Baffoe, 2006: 20). However the MTS (see Section 4.2.3) includes benefit sharing and recognises farmers' tenure rights and puts into action the Forest and Wildlife Policy's of 1994 concepts of increased involvement of communities in the establishment, management and utilisation of forest resources. It also grants individual farmers and tree growers the right to plant and inherit trees in forest reserves (Agyeman *et al.* 2003: 3; Boakye & Baffoe, 2006: 10). The MTS overcomes some of the restrictions for people in communities to access forest resources. Farmers have the right to access both land and tree crops and the MTS is open to both women and men as well as migrant farmers. The agreement stipulates that: 'the lessee shall have the sole and exclusive right to participate in the development of plantations in the allocated area' (3.2) but 'does not confer land rights or ownership rights to the lessee' (5.1(FC, 2002)). Furthermore, since the 1994 Forest and Wildlife Policy, the Timber Resources Management Amendment Act, 2002, and the Forest Plantations Development Fund Amendment Act, 2002, further strengthen the ownership rights of farmers and provide some incentives for farmers' participation in the MTS and participation in tree planting activities (Agyeman *et al.* 2003b: 3).

#### *The concept of community*

Within forestry literature and policies in Ghana, 'community' occurs frequently and can be taken to mean groups of people who use forest products, those who become affected by changes in the forest, or people who provide resources towards managing the forest (Asare 2000:5; Marfo, 2009: 23). However Marfo (*Ibid.*) raises concern at the inevitable loss of meaning and the tendency for 'community' to be slotted into rights and benefit sharing arrangements. This could lead to problems particularly with regard to benefit sharing. With multiple interpretations plausible there is difficulty in establishing who is to reap the benefit. Indeed community refers to a heterogeneous entity and is used to describe all the people in the locality of the forest who belong to the human settlements that have been targeted for the collaboration. In line with Marfo (*Ibid.*), the assumption in this thesis is that a community does not refer to one homogenous group of people, but that it can be diverse with differences in religion, class, ethnicity, gender and age.

#### *4.2.2 The Modified Taungya System*

The Modified Taungya System (MTS) is an agroforestry system, and a newly adapted version of the original taungya system. It was designed after an 18 month consultation period from July 2001 to December 2002 with the Government of Ghana, and with support

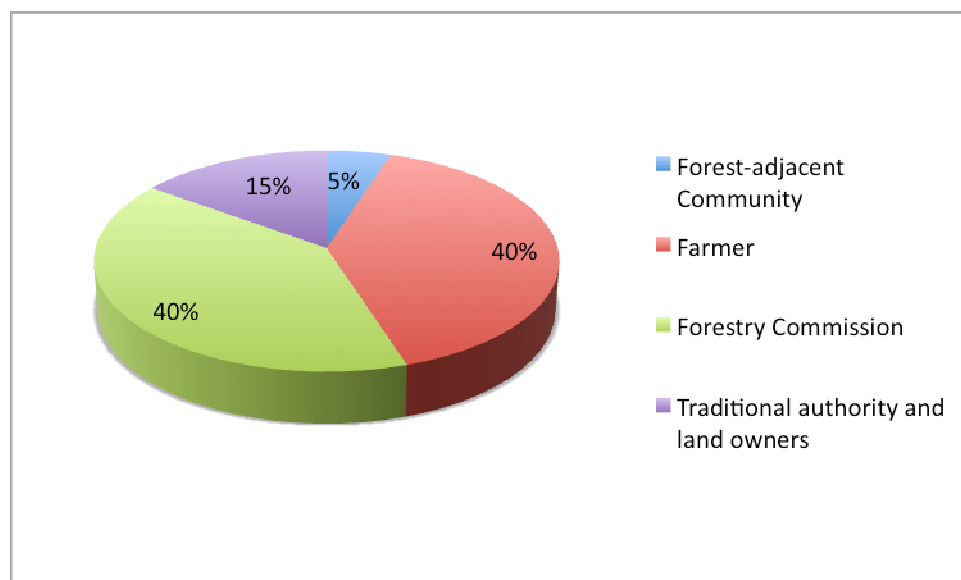


from FAO and the World Bank (Agyeman *et al.* 2003a). The original taungya system was introduced in the 1920s to Ghana whereby farmers were given small degraded sections of land, with the idea of growing both timber trees and agricultural products on the same piece of land with the aim to address both the lack of farmland in Ghana's forest reserves and in order to grow commercial timber quickly (Marfo 2009: 38). However the farmers were not included and did not receive any revenue from the timber. The consequences of the exclusion of farmers from timber revenue soon became apparent and the scheme failed due to a wealth of weaknesses: inequitable distribution of benefits accrued (which in turn saw farmers deliberately killing seedlings, not tending to weeds (Marfo 2009: 38)), abuse of power by officials, lack of supervision, and conflict of interests between growth of trees and crop production (Agyeman *et al.* 2003a: 40). The MTS reflects shifts in forest management thinking and is a clear example of collaborative forest management (CFM). Under the MTS, farmers are given land to grow a mixture of food crops alongside the planted timber trees during the early years of a plantation's development (Blay *et al.* 2006: 505). The food crops are mainly annual agricultural crops such as cocoyam and plantain. After a few years the shade from the growing trees impedes the growth of the agricultural crops. One crucial evolution in the MTS is the improvement in tenure security and benefit arrangements: farmers are now essentially the co-owners of forest plantation products, with the Forestry Commission, landowners and forest-adjacent communities acting as shareholders. The ownership of the trees has been transformed from a single entity (the government) to multiple owners (farmers, local communities, government and land-owners). All participants in the MTS, including the farmers, are eligible for a share of the benefits accruing from the plantation (Agyeman *et al.* 2003a: 40-42). The framework is based on the contribution of participants as outlined in Table 4.3.

Table 4.3 Division of responsibilities under the MTS (*Source:* Marfo, 2009: 41).

Forest Commission	Farmers	Community	Traditional authority
<ul style="list-style-type: none"> <li>Supply of good quality seedlings to the farmer group</li> <li>Provision of training and extension services</li> <li>Marketing and accounting of the plantation products</li> <li>Manage, oversees and see to day-to-day supervision of activities</li> <li>Provide financial resources and equipment to fulfil its own obligations</li> </ul>	<ul style="list-style-type: none"> <li>Provision of labour include site clearing, pegging, planting, weeding and pruning over the tree rotation period</li> <li>Provision of labour for wildlife protection strategies</li> <li>Bear financial cost to recruiting additional labour to assist them (if need be)</li> </ul>	<ul style="list-style-type: none"> <li>Assist FC with labour for wildfire prevention and control</li> <li>Prevention of members from setting fires</li> <li>Assist FC to prevent illegal activities within the plantation</li> </ul>	<ul style="list-style-type: none"> <li>Provide land within the degraded forest</li> <li>Guarantee uninterrupted access to the allocated land for the FC and other parties</li> </ul>

The arrangement is legally binding and upon sale of the timber (after between 10-20 years depending on tree species and location) the benefits are to be shared as illustrated in the pie chart below, with the intention that the compensation received be proportional to the level of input: Forest Commission: 40%; Farmers: 40%; Traditional landowners: 15%; Forest Adjacent Community: 5%. The farmer is entitled to 100% of the benefits from the agricultural crops.



**Figure 4.3** The benefit-sharing arrangement under the MTS (*Source: Data from Agyeman et al. 2003b: 11*).

The objectives of the MTS are consistent with the overall objectives pursued by the National Forest Plantation Development Programme, whose main aims are (NFPDP end-of-year report 2003: 1))

- The restoration of forest cover of degraded forest reserves;
- To address the wood deficit situation in the country, especially timber. This deficit is estimated at 4-5 million m<sup>3</sup> /year, with the fuel wood consumption estimated to be at some 14 million m<sup>3</sup> /year;
- The creation of employment opportunities at the rural community level and to generate income for plantation owners, timber processors and the national economy;
- To contribute to food production in the country.

Aside from the provisions listed above, the reforestation of the degraded land offers indirect benefits that could include: improvement of soil fertility, control of water and soil erosion, regulation of water quality, and prevention of desertification (Kalame, 2009: 103). The FSD aims to establish 20,000 ha of plantation a year under the MTS (NFPDP Annual Report, 2005). The MTS is not suitable for all communities and setting it up is a somewhat laborious process. The communities chosen to take part in Ghana were selected based on recommendations received from regional and district forest managers, the strength of

community participation in various plantation activities, and their success rate in previous schemes and as well as their location (Agyeman *et al.* 2003: 8). The tree species selected for planting include Teak, Cedrella, Cassia, Eucalyptus, Wawa, Opron, Ofram and Emire, Mahogany, Ceiba, Nyankom, Edinam, Utile and Otie (FC Annual report 2003: 1).<sup>12</sup> The benefit sharing agreement stipulates that at least 5% of trees planted must be indigenous (FC, 2002: 4.9). The crops planted are the choice of the farmer (except cassava, which is for the most part not permitted, see Section 5.1.6) and mainly consist of a mixture of cocoyam, plantain, maize, as well as tomatoes, onions, peppers and garden eggs<sup>13</sup>. Products derived from the MTS cannot be discussed without the mention of cassava. In most of the villages involved in the MTS, cassava is not allowed amongst the tree seedlings. Cassava is not permitted in the MTS because early trials (pre-2002) found that its quick growing nature had the potential to hinder the growth of trees, as well as that it can compete with the tree seedlings for nutrients. However cassava is one of the staples of the Ghanaian diet. The prohibition of growing cassava is not the case in all of Ghana and there are various trials taking place in different areas where cassava is carefully planted between the tree saplings. At present most of the MTS plantations, employ a 2.5-3m<sup>2</sup> spacing distance between where the trees are planted, however the trials that are underway are trialling 4m x 4m arrangements, with space in the centre for cassava to grow. The trials are to be published in the annual Forestry Research Institute of Ghana (FORIG) reports and as I understand it the Resource Management Resource Centre (RMSC) may adjust the policy with regards to cassava if the trials are successful. The perception at present is, if the prohibition of growing cassava was voided a significant impact would be felt.

### 4.3 Summary

This chapter discussed the history and evolution of changes in forest policy and its legislative instruments in Ghana. It charts the introduction of Acts brought in during the colonial era, with the idea of protecting the forest due to the potential economic value of timber. I then discussed the different policies in Ghana where it is evident, in line with international thinking, Ghana has modified its perspectives and forest policies in the last twenty years. The 1994 Wildlife and Forestry Policy is discussed and its impact bringing about the likes of the MTS. Next the differing laws are detailed along with the clash between the customary and statutory is detailed along with the implications of tenure rights on Ghana's forest resources. Chapter V goes on to look at the results from the field and the experience of MTS in practice and whether the policy can translate as effectively to the community as it intends.

## V The Modified Taungya System in practice

<sup>12</sup> URL: [http://www.fcghana.com/publications/forestry\\_issues/plantation/nfpdp\\_annual%20report\\_2003.pdf](http://www.fcghana.com/publications/forestry_issues/plantation/nfpdp_annual%20report_2003.pdf).

<sup>13</sup> Garden egg or gilo or huckleberry, is very popular in West African cooking. It comes from the African garden egg plant (*Solanum aethiopicum*) URL: <http://www.africanfoods.co.uk/garden-egg.html>.

## 5.1 Results of the survey

This section gives a summary of the household survey results. The surveys were administered to 33 MTS farmers in Chirayaso and 41 farmers in Kunsu Dotiem (about one third of the total number of 90-100 MTS farmers that was reported to me in both of the villages). Many of the questions were qualitative and open-ended, which in some instances allowed for more full elaboration than would be expected for a survey; these parts constitute what is essentially a semi-structured interview and are thus treated as such.

### 5.1.1 Demographic of respondents

In Chirayaso 16 respondents were female and 17 respondents were male; in Kunsu Dotiem 27 respondents were female and 14 were male. This gender ratio is not wholly representative of the community, but by the nature of time and access problems as described in Section 3.4 it still offers a valuable insight – it was a privilege to encounter so many women and to be able to include their thoughts and experiences of the MTS in this research. In any case there are lot of women involved in the MTS in Ghana, and many of the women living in the HFZ are farmers – there can be no doubt of the critical role women play in the management and use of natural resources such as crops and forests and in the rural economy of forest-fringe communities (Dubé 2007: 96; Theue 2005). The average size of the nucleus of the household was 6.8 in Chirayaso and in 7.4 in Kunsu Dotiem – with the definition of household taken as to include all those who regularly take their food from the **same pot**. This was explained to the respondents and as far as I am aware all of the respondents came from different households. In Chirayaso 17 (51%) of the farmers were migrants and in Kunsu Dotiem 36 (88%) of those interviewed were migrants. In both communities nearly all migrants had migrated from a nearby community and had mainly (70% and 64 % respectively) moved for the pursuit of farming. The different ages of those taking part in the survey are shown in Table 5.1. In Kunsu Dotiem significantly more under 30 took part in the research (29%) compared to the same age bracket in Chirayaso. However at this point, and with lack of village data available it is difficult to ascertain whether the community at Kunsu Dotiem had a much greater proportion of young farmers involved in the MTS. Due to the selection of respondents for the surveys not being random, it is not possible to speculate. Respondents at Kunsu Dotiem also include 34% over 50 of which five farmers were over 75 years old. The mixture of farmers both old and young is interesting, because for the young farmers there is the incentive that they will live to see the income from the trees, whereas the older farmers have to work on the premise that their next of kin will be able to reap the reward for their work.

**Table 5.1** Demographics of the survey respondents

Characteristic	Chirayaso (N = 33)		Kunsu Dotiem (N = 41)	
	n	%	N	%
Sex				
- Male	17	52	14	34
- Female	16	49	27	66
Average household size	6.8		7.4	
Number of migrants	17	52	36	88
Age group				
- 18-30 yrs	3	9	12	29
- 30-50 yrs	19	58	15	37
- > 50 yrs	11	33	14	34

Source: Field data, September 2009.

### 5.1.2 Motivation

Since there are different governance arrangements in the villages of the Tano Offin Reserve to encourage reforestation, it was interesting to know what encouraged farmers' participation in the MTS. Villagers were asked if they were participating in other schemes and it was reported that the villages used in this research have only been offered MTS, but neighbouring villages have been involved in HIPC plantations and alternative livelihood strategies). The main interests for participating in the MTS reported in the two villages were (i) increased access to food crops, (ii) improved livelihood, and (iii) access to farming land. Upon reflection of the research question, it could be mentioned that access to land and access to food are intrinsically linked and a similar interest. However I feel that farmers' desire for access to land as well as access to food are considerably separate concerns to warrant distinction. Five villagers in Chirayaso reported their desire for land, because there was no farmland left for food crops cultivation as it had all been turned into cocoa plantations. In my surveys unfortunately I didn't raise the questions about farmers' motivation to join other reforestation schemes and the rationale for choosing the MTS as a preference to another scheme. For the most part it seemed that MTS was the only scheme offered in the villages where I carried out research. Table 5.2 shows the actual data from the field. It is important to mention that these answers were spontaneously mentioned by the farmers, and as far as I understand (reliant on interpreters) possible answers were not suggested to the farmers as part of the question. It can be seen that answers such as opting for MTS due to the incentives of income and ability to pay for children's education are essentially the same motivation with different spending priorities. However I feel these different responses are important to note down and not entirely dismiss.

**Table 5.2** Reasons for the farmers' participation in the MTS in Chirayaso and Kunsu Dotiem (farmers gave all the reasons that had contributed to their decision)

Reason	Number of participants Chirayaso (N = 33)		Number of participants Kunsu Dotiem (N = 41)	
	n	%	n	%
Access to food crops	23	70	39	95
Improved livelihood	24	73	33	80
Access to Land	26	79	37	90
Concern for the environment	7	21	15	36
Income	2	6	6	14
Children's education	2	6	9	21

Source: Field data, September 2009.

### 5.1.3 Plot allocation

Part of the ambition of the MTS is to enable people to better make use of the resources, so as to contribute to their livelihoods. Therefore it is important to establish whether the people within the forest-fringe communities perceive any changes with regard to access to forest and tree resources. Indeed, if there are noticeable changes, in what manner do they serve as a positive contribution to their livelihoods? At present within the communities visited there was an overwhelming sense that the MTS was enabling the farmers to access more products and to have more physical capital from the cash and non-cash income provided by the agricultural products.

Most farmers had been involved in the MTS since its inception in 2002. Plots had been allocated annually, except for 2008 in Chirayaso and 2005 in Kunsu Dotiem. Most farmers reported having being allocated plots roughly equivalent to half to three quarters an acre, each year that land was allocated. The precise measurement is quite difficult to tell, especially as different farmers used vastly different means of measuring. What became clear however was that the leaders of the Modified Taungya Committee in both villages had been allocated substantially more land, about two or three acres, each year of allocation, much more than other member of the committee.

### 5.1.4 Group participation

Farmers were asked whether they are involved in MTS as an individual or as a group (*i.e.* a group of farmers who decide to participate together). I explained to the respondents that the idea of group includes village associations, support networks (gifts, remittances), cooperative arrangements among friends and neighbours and savings groups. If the farmers were a member of a group, they were asked if they had regular interactions with supporting institutions, to try and get an idea of how involved the farmers are in the implementation process and to see the manner in which information was communicated to them and by them. The question of whether the farmers participate in groups is

important in terms of looking into the potential of social capital. There is a Community Taungya Committee in both villages that purposes to relay the information to the farmers. The establishment of these committees is part of the arrangements put in place in order to give the community a voice and an arena of discussion and to ensure the compliance of all actors involved in the MTS scheme. The committee is made up of those members of the community who are elected after putting themselves forward and is headed by representatives from the Forest Services Division (FSD). It is the committees that allocate the degraded lands to farmers. They also aim to monitor farmers' and FSD's performance as well as settle disputes, and can implement sanctions if necessary (Agyeman *et al.* 2003a). Many farmers reported they had formed small groups with spouses and family members in order to enter the scheme. The minutes of any meeting are relayed to the farmers, and many farmers felt that the feedback motivated them to keep working. However there did not seem to be much of a reciprocal approach, with the farmers being able to voice concerns back to the officials. For example, respondents reported frequent incidents of unequal distribution of the degraded land between the farmers and the committee executives. The executives were reported to always take the best and the biggest plots. This is somewhat inevitable – there is no way that each farmer can have the same quantity, same quality of soil and same distance. Inevitable it may be, but it needs to be addressed.

#### *5.1.5 Responsibilities as a farmer in the MTS scheme*

It was interesting to ask the farmers what their perceived role in the MTS is; knowledge of their role and full understanding of it is important in order for all the farmers to effectively contribute to the scheme and for its success. All respondents were keen to say they needed to plant and then take care of the tree species and the crops. Some mentioned the need to weed and the need to maintain the trees and to replace seedlings if there is mortality, others mentioned the responsibility in the dry season is to protect the trees from fire. There was an overwhelming feeling of the importance to generally keep an eye on the trees, be it in the instance of fire, theft, encroachment or chainsaw operation. As a whole what was reported was in line with how the arrangement was designed, but this does not necessarily reflect what actually goes on – farmers were quick to point out **other** farmers were lazy or not as committed, but the farmers always reported that they themselves were upholding the rules. This raises the impression that these answers were in line with what would be appropriate to respond to the research. Without the possibility of having more time spent in the villages, it is difficult to establish whether these answers are an accurate representation, but researchers with longer experience in the region are of the opinion that MTS farmers indeed generally meet their obligations, except for a few 'lazy ones' (Mercy Derkyi, pers. comment).

#### *5.1.6 Crops cultivated under the MTS*

The survey, combined with the PROFOR tool (see Section 5.3) enabled a good discussion of the products harvested from the land in-between the tree seedlings. These include

plantain (all MTS farmers), cocoyam (45%), maize (45%) and vegetables (63%), including tomatoes, peppers, okra, garden eggs, onions – essentially all of the staples of the Ghanaian diet, except cassava that the farmers were not allowed to grow under the MTS scheme (see discussion below).

The products from the MTS plot are not only sold, but also used to feed the family. Thus, the farmers do not have to spend much cash (if any) on supporting their families' dietary needs. Many farmers with an MTS plot at some times of the year have a surplus harvest, and are then involved in petty trading or sell to the bigger markets in Nyinahin.

As mentioned in Section 4.3 for the most part cassava is not allowed to be grown. Upon discovery of the absence of cassava crop from the list, the farmers were asked of the reasons for its absence. The answers were that they are afraid to plant them because the FSD officials such as the Forest Guards would destroy all of their crops if it was found to be growing. However cassava is one of the main ingredients of the Ghanaian diet – everywhere in Ghana you can hear the pounding of cassava, which is used to make the omnipresent 'Fufu'. This presents problems; farmers have to buy it in from other farmers and sometimes from other villages. It is not surprising therefore that to the question as to what crops the farmers would grow if they had the choice, 94% of the respondents reported that they would like to grow cassava.

#### 5.1.7 Tree species

There are a wealth of tree species that have been designated for the MTS scheme in the area studied, part of the criteria being that 5% of the trees must be indigenous, of which both Wawa (*Triplochiton scleroxylon*) and Ofram (*Terminalia superba*) are planted. It was interesting to see if the community had any ideas of trees they would prefer to plant as opposed to the ones designated. Farmers were interested in growing faster species like Teak, Cedrella and Ofram. In both villages the majority of farmers were growing teak and



Cedrella in their plots of land (88% and 80.4% respectively). 22% of farmers in Chirayaso reported planted slow-growing mahogany (*Khaya grandifoliola*) as did 29% of farmers in Kunsu Dotiem. A lot of what the farmers were growing depends on what seedlings are available to them, which is fact somewhat restrictive of their choice, but not completely so. The FSD provided seedlings to the MTS farmers in both villages, however it was reported that in some other communities, people in the community have been allowed to raise the seedlings (and earn some income from the sales of these seedlings to FSD).

**Figure 5.1** Farmer at Kunsu Dotiem, showing teak trees planted in 2002 under the MTS. (Photo: September 2009)



### *5.1.8 People's perception of the benefit sharing of MTS*

The manner in which the revenue from the sale of the timber grown within the MTS, will be shared is an important consideration. The agreement (see Section 4.3) describes how the proceeds from the trees will be divided, including the 40% to the farmer and 5% to the forest-fringe community. The farmers were asked what mechanism has been put in place to share the 40% amongst members. People generally had some faith that the income from the eventual sale of the timber would be divided up according to how much land/trees the respective villagers had tended. They believed it would be according to how many trees they had planted. Most farmers (88%) suggested that the revenue should be divided up according to how much land the farmer had cultivated or how many trees s/he had tended; others had little idea and hoped the authorities would come and divide the money up 'fairly'. However, dividing it up, whether it should be number of trees harvested or the size of the land tended remains unknown. The agreement doesn't specify the manner for this division, it merely states: 'The Farmer (or farmer group) shall receive 40% of all proceeds obtained from the tree plantation and all the non-permanent food crop proceeds except otherwise agreed' (FAO, 2002).

However 64% of the respondents at Chirayaso and 54% at Kunsu Dotiem reported at present that there wasn't any mechanism in place and that they were unaware of how it would work and how the money would be divided. In general people were content that forty percent (40%) was an appropriate amount for the farmer to receive. An overwhelming proportion of the respondents yearned for some sort of loan or part payment to support the weeding and general tending of the planted trees until maturity. This is because farmers reported to spend a lot of time in planting and maintenance since they do not have money to hire labourers. Some farmers hope the government could give part of the future benefits as loans to be used for maintaining the farm, or to buy rubber boots or cutlasses.

### *5.1.9 Livelihood benefits from the MTS*

Since I was interested in the consequences of the introduction of MTS on people's livelihoods, it was important to identify the farmer's main occupation before signing up to MTS and also the occupation the farmers were undertaking alongside MTS. Most of the farmers (86% at Chirayaso and 87.8% at Kunsu Dotiem) reported their previous occupation was farming or farming related; 86% were cocoa farmers and engaged in plantain and vegetable farming; a few reported petty trading. Most MTS farmers also derived income from other sources: cocoa farming, citrus farming, barbering, carpentry, cassava farming, chicken and goat rearing. Remittances accounted for another source of income as well.

From discussions it emerged and it is presumed that additional activities are carried out to a lesser extent than previously since the farmers' involvement in the MTS. In a bid to begin to establish the capacity of the MTS to serve as a livelihood option, respondents were asked whether they considered the MTS as a livelihood (occupation) and if so whether they considered the MTS as a main livelihood option or as a safety net. The notion of livelihood was explained if respondents were unsure.

**Table 5.3** Table showing farmers' other sources of livelihood (aside from MTS) in Chirayaso and Kunsu Dotiem.

Source of Income	Chirayaso (n = 33)		Kunsu Dotiem (n = 41)	
Cocoa farming	20	59%	19	46%
Citrus and fruit farming	10	30%	19	46%
Barbering	2	6%	0	0%
Carpentry	6	18%	11	26%
Chicken rearing	12	36%	14	34%
Goat rearing	14	42%	19	46%
Remittances	3	9%	4	10%

Of the respondents in Chirayaso, 61% saw the MTS plot as a reliable source of income, hence a major livelihood option, whereas 36% saw it as a safety net. In Kunsu Dotiem 54% saw it as a reliable source of income and 46.4% saw it as a safety net. Many farmers responded that although at present the MTS was a main source of income, they were worried about available plots in the future once almost all degraded portions of the reserves close to them are planted with trees

#### 5.1.10 Standard of living

In order to try to establish any changes in their standard of living, farmers were asked to describe the ease of getting farm produce, children's education, putting up a building, household's daily care and access to land for farming, before and after the introduction of MTS. In both Chirayaso and Kunsu Dotiem the majority of farmers reported that it was now easier to access farm produce and land for farming and to afford their children's education (Chirayaso only). The percentage of farmers in Kunsu Dotiem reporting of the ease to afford children's education was much lower than in Chirayaso, I don't have a particular explanation for this (see table below for specific numbers). Approximately a third of farmers in both Chirayaso and in Kunsu Dotiem reported putting up a building was easier (this was asked as a question in terms of the ability to afford to put up housing as a means to try to understand household's access to physical capital). It was reported to me that the provision of the household's daily care was easier for the majority of the farmers. The farmers who had not seen an improvement, reported that the level of ease to access the various options remained the same. Only one farmer reported that his potential to put up a building was harder since the introduction of MTS. At the current stage of MTS it is clear that the MTS is having a positive effect on people's lives; the income generated from the agricultural crops is enabling farmers to obtain an improved standard of living, However,

the amount of income the MTS provides will not continue once the trees overshadow the crops.

**Table 5.4** Effects of MTS on household's ability to afford various livelihood components.

Effect	Chirayaso		Kunsu Dotiem	
	N	%	n	%
Easier access to farm produce	26	79	34	82
Easier to afford children's education	19	58	15	37
Easier to afford putting up a building	13	39	13	32
Easier to afford household's daily care	25	76	38	93

#### *5.1.11 Threats to the MTS scheme*

The farmers were asked what they felt were particular threats to the scheme, since threats and fears affect participation. Farmers were afraid of fire (54.5%) and the dramatic impact it would have on the scheme's success. For the most part it was wildfire that people feared, but several farmers voiced concern that deliberately started fires could also be a problem. It emerged that to some extent jealousy existed between communities, particularly when one community is selected to be involved in a particular scheme while a neighbouring village is not chosen. It was reported anecdotally that a neighbouring village which had in recent years been involved in a pig rearing scheme as an alternative livelihood strategy was successful for some time, but after a while the pigs were attacked and killed by people from other communities in a manner of sabotage. This is indeed a problem if other villages fall behind and become jealous of innovations trialled in neighbouring villages. With regard to other fears or threats to the scheme, nine farmers (22%) raised concern at the prospect of illegal chainsaw lumber operations being carried out in the MTS plots. Others raised concern that some farmers putting more effort in the MTS scheme than others could be a threat to the scheme as a result of weeds spreading from lazy farmers' plots. Rainfall is also a concern; in recent years the region has seen particularly high rainfall; a deluge of rain after long days of sunshine has a tendency to equate to soil erosion. There were also a number of farmers saying they neither had nor could afford equipment, for example proper rubber boots and rain coats, which sometimes infringes upon their ability to be able to farm.

## **5.2 Results of interviews**

Interviews were carried out with both the heads of the MTS committees in the two communities. An official involved in the implementation of the MTS at the Resource Management Resource Centre (RMSC) as well as a member of FORIG involved in the MTS from the inset was interviewed. What follows is the results of discussions with four key

persons.

### *5.2.1 Forest governance changes in Ghana and their manner of impacting forest and tree-related livelihoods*

In discussion with Taungya leaders, they had witnessed the advent of various programmes in recent years and there was a general weary feeling that any system or programme had the same tendency to be hard work for the farmers. One village elder suggested that, “unless you’re patriotic, you wouldn’t plant trees.” This was a feeling that was generally precipitated, that yes people were gaining livelihood opportunities from the forest, but in many aspects it was a lot of effort and farmers discussed that they could identify why chainsaw lumbering was so appealing. The Taungya leaders felt that the MTS did offer increased opportunity for all members of the community to participate and the increased access to forest resources was having a positive impact on the people in the communities. However the Taungya heads do have a certain degree of uncertainty about the benefit sharing mechanisms in place for the revenues of harvestable timber trees. According to the Taungya leaders several farmers have mentioned, that the change in access rights was encouraging, and that finally there was more incentive to be involved in tree planting. Indeed they discussed that previously access rights were not wholly clear and that there had never been much of an incentive to engage in planting trees. The new rights of co-ownership of the final timber were promising to the farmers and Taungya heads, as well as the ability to own agricultural crops grown on the forestland. From the perspective of the RMSC officials the signing of the MTS agreements among the various parties is an indication of positive governance change.

### *5.2.2 Changes in access to forest and tree resources*

Under the MTS plan as outlined above, farmers now have rights to access land, rights to ownership of the agricultural crops as well as part ownership of grown timber when sold. However, from the perspectives of the Taungya leaders, the change in access rights in practice does not work effectively as intended by law for several reasons. First, access and motivation of participants is hampered by the lack of full tenure agreements that have been signed, which is currently negatively affecting motivation of farmers because of the lack of a secure tenure arrangement within the collaborative programme. The RMSC officials reported the real logistical complexities that come with rolling out, signing and verifying the agreement to all the communities. When I discussed this with the officials (Oct 2009) only 51 out of several 1000 benefit sharing agreements had been fully signed nationwide. In terms of the Tano-Offin reserve according to Appendix II, 27 communities are involved with the MTS, it is not known precisely how many of these are signed up officially but certainly not all of the communities are. The officials reported that they are working hard to unroll the scheme in all communities, but it is reliant on the functioning and participation of a large array of actors (officials in offices, forest guards, FSD, Taungya committees in different villages and farmers) to ensure effective enforcement of rules and regulation and to monitor and impose sanctions. These problems notwithstanding, the

MTS does seem to be accessible to a lot of members of the community, and a lot were motivated to opt to be involved in the system; both males and female. In the remit of the MTS there was speculation to ensure that the scheme didn't perpetrate differences in access to land, which may occur along gender and ethnic lines. In discussions it was reported that the MTS was open to all members of the community who were willing, with quite a few older women involved too, who use labourers to help them to cultivate the soil and do any heavy farm activities.

The second problem regarding access is the lack of consistency with regard to plot allocation. At present community taungya committees exist, where all stakeholders are able to consult each other and coordinate their efforts to address the major issues and impediments to implementation of the system. However in discussion with Taungya heads, it seemed that information from the Forest Services Division (FSD) was relayed to the community via the committee, but there wasn't always discussion and input flowing from the community back to the committee and back to the FSD. Indeed the Taungya heads felt that some of the farmers had reported to them about being 'left in the dark' about matters such as the fact that in some years no plots were allocated. Since the participation of the community in all aspects of the process was integral to the **modification** of the taungya system, it is important to address this (discussed further in Section 6.4).

Thirdly, in subsequent discussions from the survey it was reported that there was inequitable distribution of plots, in spite of the community taungya committees being meant to ensure fairness in the allocation of plots. Certain community leaders and in particular the taungya heads were given more and better plots of land (better in terms of soil quality and in being nearer to the village). This means that the leaders are able to grow more crops, and will also earn more in the end when the revenue from timber tree sales is to be divided. This is worrying; this scenario seems to only heighten already existent power imbalances. In discussion with community members, this turned out to be an important point; with people being suspicious of each other and competitive over the size of the land, the MTS system may be a source of conflict within the communities. The FSD and those in the forest-fringe communities alike reported the need for the MTS to be well mobilised and motivated into forming more and stronger vocal groups.

### *5.2.3 Impact of the MTS on people's livelihoods*

The discussions with key persons involved in the MTS in both communities revealed that small-scale subsistence farming with crops like maize, cassava, cocoyam and plantain is the main provider of income, together with NTFPs that can be harvested from the forest. The Taungya leaders discussed that they and the farmers are able to make a reasonable income from the agricultural crops obtained from the MTS, since the crops belong to them and they collect all the revenue from their sale. On the occasions when they may have a surplus they are able to sell products in the local markets. At other stages the crops are used for subsistence, and hence form a non-cash component of their income.

However concerns were raised at the lack of diversity in the livelihood portfolios of the community, in that it is mainly reliant on crops and with the potential for land

degradation and wildfire, it means that it is not a very secure option. The purpose of the MTS scheme is to not only to improve the livelihood of the local rural population within the surroundings of the plantation sites but to also expand the plantation sites in an economically and ecologically sound manner. In discussions with farmers and Taungya heads it appeared to be difficult to obtain actual data on the extent to which the MTS contributed to people's livelihoods. Not only because of a lack of records, but moreover because so little is ever converted into a physical monetary value (*i.e.* much is petty traded, or a non-cash income). The PROFOR tool (see Section 5.3) offers helpful statistics in relative terms of the income achieved from the MTS. In discussion with key respondents and MTS farmers in the communities it is clear that the MTS at present has certainly enabled an improved food supply and contributed positively to people's livelihoods.

#### *5.2.4 People's perceptions of the MTS*

From what was reported to me, I think the MTS is perceived on the whole as a positive system that is having a positive impact on people's livelihoods; enabling a better access to food and increasing ability to pay for education and housing. It is important to reiterate that at present the farmers are able to generate income from the food crops but none of the income generated at present is from the trees (*i.e.* the 40% of revenues they will eventually receive when the timber is harvested). Since the first trees were planted in 2002, it is unlikely to be until at least 2017 before any timber can be sold. Taungya leaders' perceptions for the future of the MTS are less certain. In both villages the confidence of the farmers in the MTS is hampered by a lack of clarity and certainty in the scheme and how the revenue will be divided up as promised. Without the release of funds for 10-20 years, farmers lack capital to invest in planting, pegging, weeding and maintenance of the MTS. The reported lack of documentation signed and held by the community's *vis-à-vis* the agreement is leading to a feeling of insecurity. There is however a difference between the two communities: Kunsu Dottie farmers had signed on to the agreement (Appendix II) whereas when Chirayaso was visited, the community had not yet formally signed up to the agreement. There is a fear of fire, and there is a fear that if a farmer dies that any income due may not be put into the right hands (even though the agreement form makes provision for the farmer to indicate the next of kin). There is a general fear that illegal loggers may come and harvest the trees when they are mature enough and then the farmer would not receive any money. There is also the fear of destruction of the forests and with it the disruption to the income provided by NTFPs and bushmeat.

Delays in the allocation of the plots of land to be planted are perceived, meaning that there has sometimes been a tendency of seedlings to die or to be infested by insects. There is also the inevitable report of the inequitable distribution of the land by MTS leaders, and some have to travel a lot way to reach the plot. This is not cost effective and also is a tiring process for the farmers. The distance travelled to and from the farms is an important aspect in determining the amount of effort involved in farming (King, 1968). Many farmers perceived that in order for the MTS to be sustainable, after the end of the harvest of agricultural crops (around the third year), there should be a flow of benefits so

as to reduce bulk payment at the time of harvesting of matured trees. The pre-harvest timber benefit would serve to entice and motivate farmers to invest labour on a continuous basis. Forest officials discussed the idea of thinning as a means for the farmer to generate income; once the trees are beginning to establish themselves, some need to be removed in order to allow sufficient space and light for the others to grow. The trees that are thinned could be sold to make telegraph poles and the farmers could take the revenue. Other future benefits of the MTS which were briefly discussed include the improved functions of land covered with trees, such as improved drainage, watershed protection and windbreak, and prevention of soil erosion and flooding.

The Taungya heads discussed that a sizeable proportion of the farmers are over 50 and many discussed that in all likelihood many of those in that age bracket will not live to see the financial benefits of the timber sales, given the average life expectancy in Ghana calculated to be 56.8 years (World Bank, 2008). Whereas the young farmers were mainly concerned about the agreement to be signed and legally binding, the older farmers were concerned about whether their efforts invested would be guaranteed for their next of kin. Finally one village elder in a focus group discussion pointed out that, “Unless you’re patriotic; you wouldn’t plant trees.” This was a feeling that was generally prevailing, that yes people were gaining livelihood opportunities from the forest, but in many aspects it was a lot of effort and people farmers discussed that they could identify why chainsaw lumbering was so appealing.

### **5.3 Results of the PROFOR tool**

As outlined in Chapter 3, modified sections of PROFOR toolkit were used. Tool 4 was used in the research to analyse livelihoods, using ranking and looking at the components that make up both the cash and non-cash income of people in the forest fringe communities. The tool was used in both villages, with the focus on the contribution of the MTS to the livelihoods of the villagers. The male and female groups, each with 10 MTS farmers, were asked to divide their yearly income (both in non-cash and cash terms) according to what activities they derived most income from. In this way they could choose between products derived from the natural forest, crops from the MTS and agricultural products from land exclusively used for farming and products from fallow lands. Below, the women’s results are presented first, then the men’s. Both the villages’ results are explained together for each gender since the villages exhibited remarkably similar trends in this exercise.

#### *5.3.1 Female cash and non-cash income from the MTS*

The raw data gathered in the field (examples in Appendix III) was copied from the flipchart to an excel table. For the sake of simplicity, tomatoes, okra, peppers, beans and onions were grouped together as ‘vegetables’. The rest of the data is presented in pie-charts; here individual products are not distinguished – it is more useful to differentiate the areas from which the income was derived than the specific crops. The areas were divided up into the Natural Forest, the MTS, solely agricultural land and fallowlands, with an additional

category for income from wages and remittances. Figure 5.2 a-d highlights the relative importance of the MTS, particularly in terms of its cash and non-cash contribution to the livelihoods of women: 45% and 54% (Chirayaso); 50 and 54.5% (Kunsu Dotiem) respectively. In both villages the results were fairly similar, with the women in both villages being reliant on the crops of the MTS more than the men. In the cases of Chirayaso and Kunsu Dotiem women derive hardly any income from products harvested from the natural forest (6% cash/5% non-cash and 0% cash/2.5% non-cash, respectively) or from fallow lands (5% cash/ 6% non-cash and 7% cash/9.5% non-cash).

**Figure 5.2** Cash and non-cash components of women’s livelihoods in Chirayaso and Kunsu Dotiem.

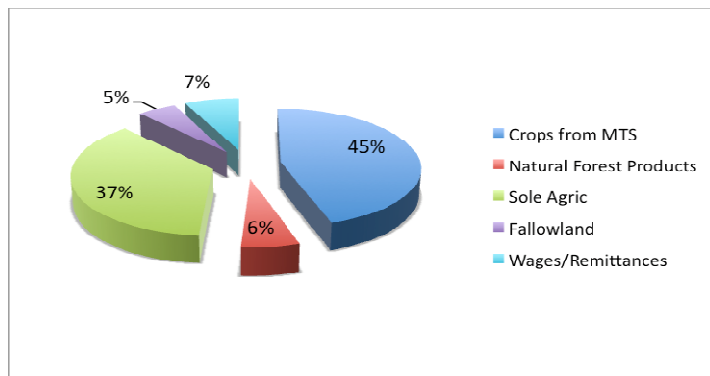


Fig.5.2a Cash component of women’s livelihood in Chirayaso

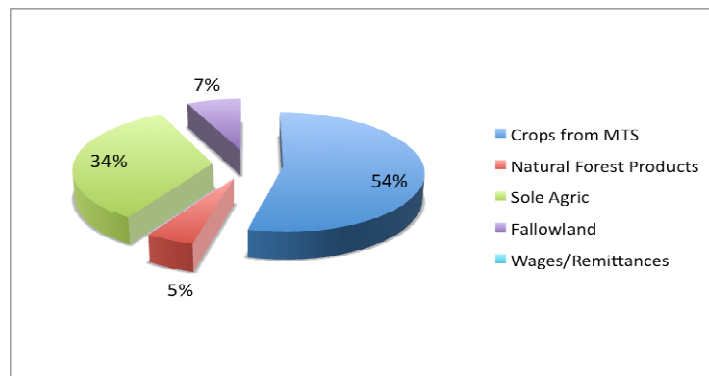


Fig.5.2b Non-cash component of women’s livelihood in Chirayaso

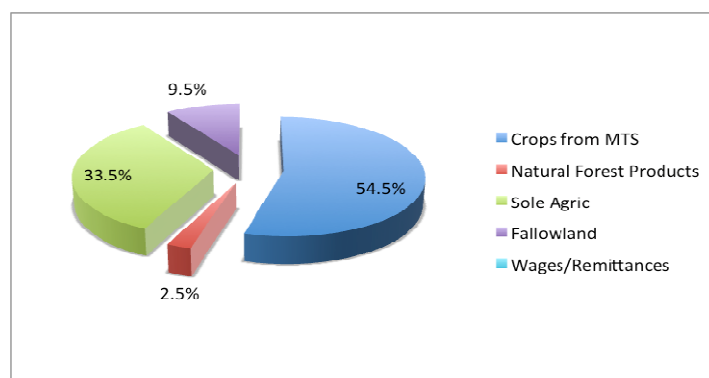
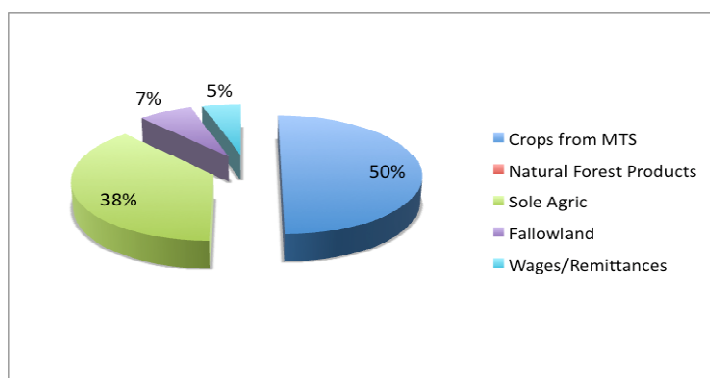


Fig.5.2c Cash component of women’s livelihood in Kunsu Dotiem Fig.5.2d Non-cash component of women’s livelihood in Kunsu Dotiem

From this exercise it emerges that once the women sign onto the MTS scheme, they use the crops derived from it – cocoyam, plantain, maize and, to a lesser extent, tomatoes, and pepper – as their main source of income (both cash and non cash). When trying to comprehend the women’s experience of MTS, and why they derive so much of their income from it is useful to consider Ardayfio-Schandorf’s (2007) work on Gender mainstreaming in Africa, where she reports that women in Ghana constitute 52% of the agricultural workforce and produce 70% of the subsistence crops. Ardayfio-Schandorf (2007) finds that due to the gender structures and socio-cultural environment, women in rural areas lack access to and control of economic assets like land and credit. With this in mind it could possibly be determined that the provision of MTS and the associated land drastically impacts and broadens the livelihood options of women. In this exercise and in



the subsequent discussions when the groups were divided according to gender, the women seemed to be quite vocal and to talk freely in both villages. Moreover in both villages when the time came to choose 10 participants for the discussion exercise, there were a lot of women who were willing and wanted to participate, and it was a shame to have to limit the group to ten people.

### 5.3.2 Male cash and non-cash income from the MTS

When the men in the village participated in the livelihood ranking it became evident that although they rely on the products derived from MTS as a source of cash and non-cash income (32% and 31% (Chirayaso) and 29% and 27.5% respectively in Kunsu Dotiem) they derived the major proportion of their income from land exclusively used for farming (43% of cash/48% of non-cash income in Chirayaso and 55% of cash/46.5% of non-cash income in Kunsu Dotiem) (Figure 5.2 a-d). As with the women, products derived from natural forest and fallow lands were of minor importance

**Figure 5.3** Cash and non-cash components of men's livelihoods in Chirayaso and Kunsu Dotiem.

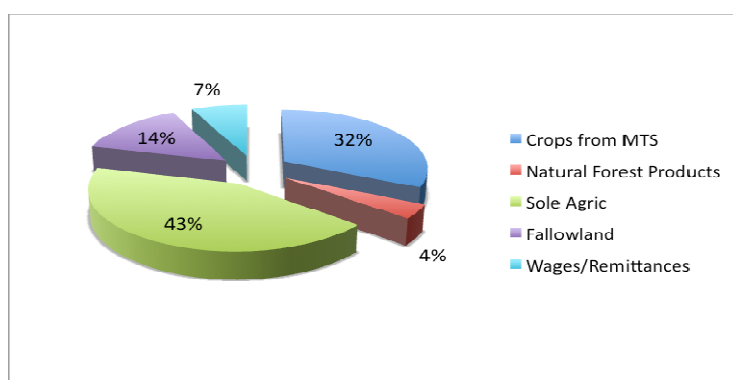


Fig.5.3a Cash component of men's livelihood in Chirayaso

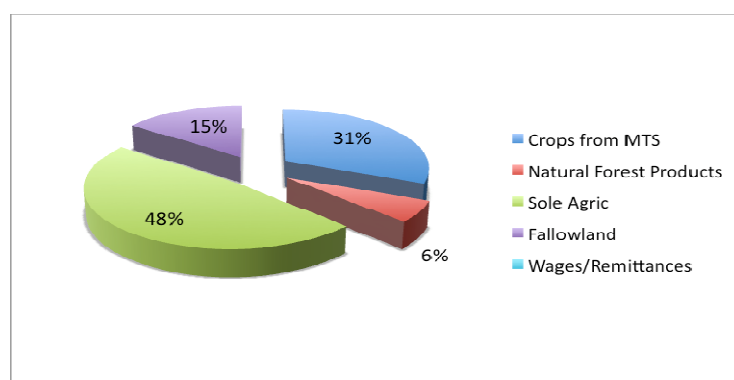


Fig.5.3b Non-cash component of men's livelihood in Chirayaso

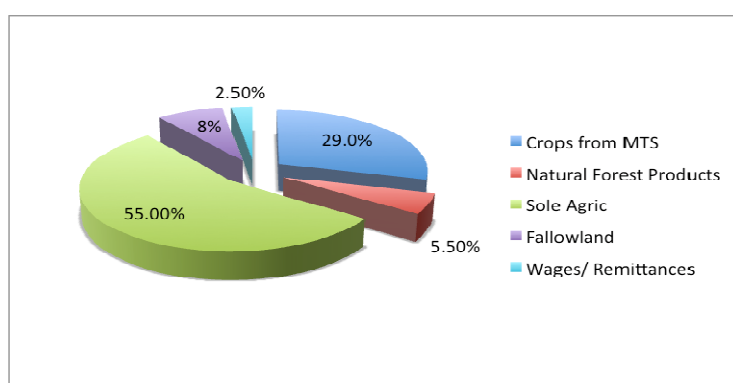


Fig.5.3c Cash component of men's livelihood in Kunsu Dotiem

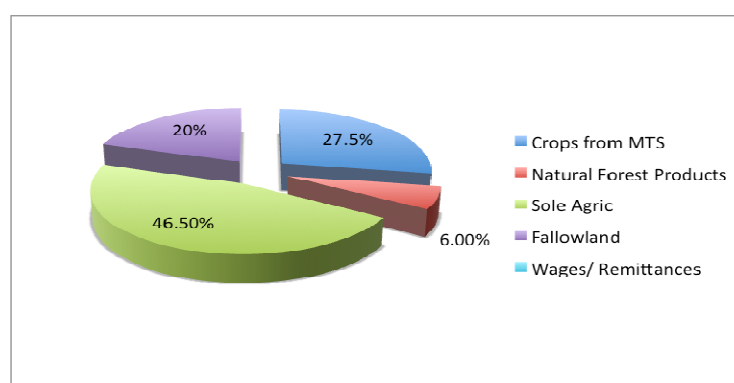


Fig.5.3d Non-cash component of men's livelihood in Kunsu Dotiem

## 5.4 Summary

In summary, it can clearly be seen that both female and male groups are reliant on MTS as a source of income but that women in this case are deriving a higher proportion of cash and non-cash income from agricultural products cultivated under the MTS. The MTS analysis in Chirayaso and Kunsu Dotiem revealed a diversity of livelihood portfolios. In a closer analysis of the products listed from the PROFOR exercise, although both men and women have access to forest resources, a noticeable difference can be noted in the types of products collected. Ardayfio-Schandorf (2007) found in her study that women have less access to social capital like education, health and legal rights and the ability to participate in decision-making. However it seems that in the MTS women have a greater experience and possibility of participation in the MTS than perhaps in the everyday farming experience. In line with the intentions of collaborative resource management, women seemed to be just as involved in the process as the men – with both genders still reporting being somewhat marginalised from the committee. It is a positive experience that the MTS appears to be taking into consideration and accommodating gender differences in needs (older women can still participate in the MTS, but sometimes employ younger members of the community to do the more strenuous activities). However it is important not to oversimplify or homogenise these experiences; it is important that further effort is made to ensure that women have independent access and entitlement to land. Furthermore, the pie charts also pose an interesting angle to the MTS; the data presents that farmers harvest a good proportion of their crops and goods from the MTS scheme, and thus perhaps less emphasis is on harvesting products from the natural forest. It could be argued that in this stage of the MTS in which the farmer is able to derive a good income from the MTS crops the natural forest is given a slight improved chance of regeneration. However, a more detailed comprehension of the picture is needed especially as the collection of NTFPs is governed by a slightly thorny system of permits and farmers may not have been as forthcoming in realistically expressing the extent to which they are in fact extracting products from the natural forest.

## VI. Summary, conclusions and recommendations

The overall research question I strove to answer in this thesis was the consequences of the introduction of the Modified Taungya System. In this chapter I will go on to summarise my findings of the subquestions. I then go on to relate my theoretical framework from chapter two to my research findings, I then give my suggestions for future research as well as recommendations for policy.

### 6.1 Summary of research findings per research question

#### 6.1.1 *How is access to forest and tree resources arranged under MTS?*

As outlined earlier, access to and tenure of land and tree resources in Ghana is complicated and ambiguous, and growing trees in Ghana is not usually akin to ownership of the tree. Few farmers were aware of their particular rights to access forest resources in the off-reserve areas. In the MTS farmers are given small, degraded parcels of lands on which tree seedlings are planted and agricultural crops are grown in between the tree seedlings for the first three years. The farmers have the rights to access the land, sell all of the agricultural crops that are grown and keep the revenue. Farmers take care of the trees and are entitled to 40% of the timber's revenue when sold. The other stakeholders are the land-owners and traditional authority (15%), the Forestry Commission (40%) and the forest-adjacent community (5%). This benefit-sharing arrangement and rights granted to farmers represents a significant amelioration of tenure rights. In order to access the MTS, the farmers must first be in a village where the system has been introduced and are able to access MTS by organising themselves into small groups, be it with other household members, friends and/or neighbours.

#### 6.1.2 *What kind of forest and tree products are derived under MTS and what is the contribution of these products to people's livelihoods?*

The surveys and the PROFOR toolkit as well as general discussion were used to uncover what products are yielded from the MTS. The crops derived from MTS are plantain, cocoyam, maize and vegetables such as onions, peppers, garden eggs and tomatoes. Much of the crops are for the farmer and their own household's consumption, but sometimes farmers reported that they were able to sell some crops as a means of earning income. The PROFOR toolkit revealed the relative extent to which the different forest and tree products contribute to people's livelihoods, showing that both female and male groups are reliant on the MTS as a source of income. However, the women in both study areas are deriving a higher proportion of cash and non-cash income from agricultural products cultivated under the MTS. The full numerical breakdown can be seen in Section 5.3. The tree crops grown under the MTS are mainly Teak (*Tectona grandis*), Cedrela (*Cedrela Odorata*), Ofram (*Terminalia superba*; a tree native to West Africa) and Wawa (*Triplochiton scleroxylon*). Currently the tree crops (as outlined earlier) do not contribute to people's livelihoods; an income will only be derived from the trees once they are harvested.

### *6.1.3 Do people perceive the changes since the introduction of the MTS as an improvement of their livelihoods, and if so, why?*

Prior to the MTS farmers were very dependent on the forest and the surrounding lands, and this natural resource base served as their source of livelihood. As such, people in the forest-fringe communities are very vulnerable to any changes of the environment. As outlined earlier, the households in the two communities rely on farming as their main source of income. During my research, most farmers reported to me the changes brought about by their involvement in the MTS and how the acquisition of degraded land to grow crops serve as an improvement of their livelihoods. The crops grown between the seedlings on the degraded land enable those involved in the scheme to have greater access to food. As seen from the results in Section 5.3 a lot of the income derived from the crops is on a non-cash basis and is consumed within the household or sometimes traded for another foodstuffs. Nevertheless, at certain times of the year the farmers are able to sell some of these crops and generate cash income. Most farmers in the two communities rely on other means of income aside from the MTS, be it cocoa farming, carpentry, working as a driver or as a barber. Although this is speculative, at present farmers perceived that – provided the timber trees from the MTS are harvested and the revenue is shared according to the guidelines – the MTS has the potential to serve as a means to provide sustainable livelihood opportunities. However as I go on to discuss, there are many factors that are problematic and need to be overcome in order for this to come true.

## **6.2 Discussion: relation of research findings to the theoretical framework**

The theories outlined in Chapter two provided a framework through which my research was shaped. Considering that my overall research objective was to uncover the consequences of MTS (thus far) on the livelihoods of people in forest-fringe communities, the livelihoods approach is very much integral to this discussion. As detailed in chapter two, the livelihood approach consists of five capitals: natural, physical, human, social and financial. The most important capital to this study is natural capital and the ability to access it. For those people in communities in the Tano-Offin Reserve, this constitutes the forest, the land and the wildlife. The inhabitants of both villages certainly make use of the forest, for food, for firewood, for building materials as well as it serving a cultural purpose. Indeed livelihoods are built almost entirely on the use of local natural resources in farming, forestry, as well as hunting and gathering of forest products and NTFPs. However in recent years, forest degradation has reduced the amount and ease of accessing products from the forest (for example bushmeat), reducing the ability of the people in forest communities to access these products and negatively impacting their livelihoods. The addition of the MTS to the community aims to shift the focus away from using the forest and instead of encouraging its regrowth, whilst at the same time allowing those in forest-adjacent communities to generate income. If we then consider land as a natural capital, as outlined

in Chapter four, tenure of land is often difficult and ambiguous in Ghana. The MTS offers the people in the selected communities access to land and rights to extract the agricultural products grown on the land as well as part ownership of the timber once it is extracted. From my surveys as well as the PROFOR discussions it emerged that at present the MTS is a major source of livelihood for many of the farmers (in relation to the ability to grow agricultural crops). The crops provide both a cash and non-cash income for the farmers, meaning that they make less expenditure on foodstuffs than previously. However, this reliance on MTS as a livelihood could become problematic when the MTS begins to slow down. The MTS will slow down and be less resonant, firstly, when the farmers can no longer grow the agricultural crops (*i.e.* when the trees have gained a certain height that they cast shade). Secondly, farmers are being allocated plots of land (often yearly), but there is a limited amount of degraded plots that can be allocated for MTS and it won't be long before these run out. Then how will the people in the forest-adjacent communities create a livelihood? There will be no incentive to hinder people's desire to go back to the forest and make use of its products in order to make livelihoods and thus potentially destroy it again. It is therefore important to consider alternative livelihood options to supplement the MTS in the years when the farmers are waiting for the tree crops to mature. Furthermore if we consider the theory of forest-based poverty alleviation, the MTS as an agroforestry scheme has the promising dual aim to both encourage reforestation as well as to provide livelihood options to farmers: in its conception it purports to be a win-win situation. Currently the MTS can be seen to be offering the potential to contribute positively to people's livelihoods, as a result of increased access to land and the ability to grow and earn income from agricultural crops. It is interesting to consider the MTS through the prospective of the FAO's (2003) six strategies that it believes hold promise in terms of the potential of poverty alleviation:

1. People-centred forestry;
2. Improvement of tenure and regulatory systems;
3. Improvement of marketing arrangements;
4. Partnerships (between small holders or communities and the government, NGOs, the private sector);
5. Redesign of transfer payments (for example payments for conserving forest, could go to those in the forest-fringe community as opposed to government agencies);
6. Integration of forestry into rural development and poverty reduction strategies.

The MTS in its design is very much in keeping with these notions, particularly with regard to it being borne of people-centred forestry and in its altered approach to tenure rights. At present, feedback does suggest that it is possible for forest degradation to be reversed, however, I don't believe that MTS in the long run can both support the livelihoods of those people in forest-fringe communities alongside continual conservation or reforestation. There will come a time when the people in the community are likely to return to making use of the forest and thus I see MTS as having the potential to contribute to poverty

mitigation as opposed to elimination of poverty. Moreover Kusters (2009) points out that caution should be erred when advocating conservation for parts of the land, as it does not necessarily result in prevention of encroachment on remnant patches of natural forest.

Finally if we consider the notion of forest governance, such innovations were important in the founding of the MTS. There has clearly been a collaboration of different actors and stakeholders to reach the agreement and to allow greater access rights to forest and tree resources, which in turns has enhanced to some extent the ability of forest and tree-based components to contribute to their livelihood. However at present it seems there is still a tendency to favour the actors with more backing and resources and there is need for further innovations, transparency and insurance to ensure the forests are able to truly provide sustainable livelihood options.

### **6.3 Suggestions for further research**

As mentioned in Section 3.4.1, I would have liked to have spent more time in the villages and to get a fuller picture. In terms of further research, in the next few years the impact of the MTS will really be seen, and it will be a very different story when the payments from the MTS come to be divided up. It would be interesting to conduct research in these same villages in 5 years' time – when few (if any) crops are grown among the trees, and in say 10–15 years' time when the trees are harvested. It would also be interesting to profile a village over an extended time frame, in order to truly see what the village was like and the livelihoods strategies were before involvement in the MTS. A certain amount of data and perspective were gleamed from discussion, but a much fuller picture could be built if data could be collected over a longer time frame.

I liked the PROFOR tool and it would be interesting to use this again, once the payments have been received from the timber harvest. I would adapt features of it slightly. It also became a bit complicated when the villagers divided up their pebbles in whether they were talking about the previous year's income or a general notion of income. The gender dynamics and differences of the MTS became clearer when I was near the end of my research. I felt that I didn't at the time probe deeply enough as to women's involvement in the decision-making processes. I think this is very interesting, particularly in view of Ardayio-Schandorf's 2007 research.

I also would be interested in the outcome of the cassava spacing research and seeing how the MTS could be ameliorated if cassava was permitted. Not to mention the possibility of creating an MTS system that also incorporates alternative livelihood strategies. Also, despite stemming from a central policy, different forest guards and district assemblymen will have a different approach to enacting to MTS. Differences could be seen in terms of the manner in which the plots are divided, the extent to which both plots and farms are under surveillance, different notions of when food crops are impacting trees. As well as different success rates depending on the relief and quality of the land, so of course investigation of a wider spread of villages would be interesting.

Two final things interest me, which I only glimpsed at the closing stages of this research. One is the potential that Kalame (2009: 106) speculates: harnessing the carbon credit potential of the MTS, whereby income from European countries offsetting their carbon could be reinvested into the MTS. Secondly, at present there is no definition of who precisely the FC will sell the timber to when it is harvested, and who will negotiate the price. I think it is important to research more and come up with a strategy which allows the communities to be involved in deciding who the timber is sold to, to ensure a fair price is given. Indeed a strategy needs to be in place to guarantee a minimum price for the timber. If suddenly all of the timber from the different communities comes onto the market, there is every likelihood the price will be driven down.

#### **6.4 Recommendations for policy and practice**

Whilst the experience of research has led me to believe that at this stage the MTS can have a positive influence on people's livelihoods, there is going to be some difficulty for the farmers and the community in the years between the last plots getting used up and income being reaped from the sale of the timber. It is also important to reiterate that at present only the impact of the income crop component of the MTS is being considered. It remains to be seen what is the impact of the MTS after all of the land is allocated and too when the time comes for the timber to be sold. Although it can be seen that there is substantial contribution of the MTS to people's livelihoods at present, the process is hindered by a lack of clarity and security and confidence in the future of the arrangement.

At present the problem, as highlighted, is that the agreements haven't been signed by a lot of the communities. There is a real and pressing need for this to be done, albeit it relies on a lot of resources. Moreover the signing of agreement between government and stakeholders is a legal issue as set out in the Timber Resources Management Act of 2002 and the Voluntary Partnership Agreement (VPA) signed between Ghana and the EU in 2009. This legalisation stands to greatly minimise disagreements about sharing benefits from the timber's sale and reduce the incentive to engage in illegal lumbering (Kalame 2009: 106). As well it is evident that there is the need to instil some insurance and some validity into the arrangement. With a secure notion of the system functioning then full involvement can be ensured. In the communities there was a real nervous worry of what exactly the future would entail in the event of illegal logging, dividing up the crops, and the event of fire or death – with a strong insurance this can be addressed.

Furthermore the policy needs to be clearer so that is understandable by all and can be communicated to all. Indeed this is one of the most noticeable problems. Currently, documents are simply too complex and incomprehensible to be understood by the stakeholders. Moreover, good clear policy is no good if it is just tied up in offices. The lack of communication creates a real feeling of uncertainty and not commitment to the scheme. It is evident that many of the farmers have limited access or even no access to forestry policy information. As discussed there are already Community Taungya Committees, but at present they don't seem to fully function, and many farmers discussed

feel to be left out of the decision-making process and unable to voice their concerns. This should be the place where the rights are translated to all actors. There needs to be a better channel or forum through which communication can flow, for example through the provision of workshops, radio, press and/or local forestry meetings.

When all parties will have a comprehension of the responsibilities, there is much more incentive for the programme to work. Moreover, a cohesive community is one of the best defences against illegal logging, which is a massive threat to all of the hard work of the MTS (Kaimowitz, 2003). There are forest guards but they do not seem overly inspired, and lack incentives to catch and arrest illegal loggers. The implementation of more strategies such as this one, or perhaps alternative livelihood strategies, could possibly begin to deter people from illegal logging – so that people can earn an income without needing to resort to stealing trees.

In addition, with Ghana's involvement in the VPA and REDD (Reducing Emissions from Deforestation and Degradation) schemes it will only become more important to secure communication channels to encourage involvement and define rights for forest-fringe people<sup>14</sup>. The complicated and contradictory nature of the formal institution highlighted earlier needs to be simplified so that people in the forest-fringe communities avoid conflict and will be enabled to have a clear understanding of their rights. It may not be simple to amalgamate traditional customs with statutory imposed laws, but there is a need to iron out the numerous contradictions regarding access, tending, growing, and ownership rights.

Furthermore, a more immediate concern in the villages is that there is an absolute need for release of some of the money from the timber, after perhaps 5 or 10 years. There is no doubt that it is easier said than done to access more funds and to find the capacity to implement a structured release of the revenue prior to the final harvest. However it is a simple reality in the villages: farmers cannot afford to tend, to weed and to spend time on tree seedlings that don't give them any benefit for at least 10 years. If the farmers receive benefit as they are destined to at present: in a lump sum at the time of harvest, I have a lot of concerns. I feel a lump sum after such a long wait, would not be helpful to the community or the farmers unless it is accompanied by financial advice and support and could be quite detrimental and used up quickly. A much more feasible approach would be instalments every few years after the last crops are harvested. Indeed, after seeing the amount of farmers who reported that they consider the MTS to be their main source of livelihood, it is worrying what will happen when they can no longer derive income from the crops. Perhaps another option is the possibility of alternative livelihoods, somehow tied into the relationship. There are various papers that detail the positives of the likes of bee keeping, grasscutter rearing, snail rearing and small ruminant rearing as a means of an income (Sawyer & Opoku, 1992; Annor & Kusi, 2008). For example, sheep or goat rearing provide sources of food, income generation and short-term cash reserve whereas food for the animals is abundant with the likes of leftover crop parts and household wastes –

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<sup>14</sup> [html: http://www.vpa-livelihoods.org/vpa\\_ghana.aspx](http://www.vpa-livelihoods.org/vpa_ghana.aspx)



returns are seen quickly (Saadullah *et al.* 2005: 4). If these alternative livelihoods were established alongside the MTS it creates a back-up, an increase in resilience if there is for example, an unreliable harvest or flooding, as well as some income in the years before the timber's revenue comes.

Upon reflection of this study it emerges that the MTS at present is beginning to fulfil its potential as a means of both leading to the reforestation of degraded forest and providing livelihood options to those within the forest-fringe communities. Much remains to be seen, though, and only when the benefits of the tree are divided will the full story be known. A lot of the failure of the previous scheme was blamed on a reluctance of farmers to enable the trees to grow (instead of crops) as well as corruption amongst officials. I hope the promise of the eventual benefits proves strong enough for farmers to continue to tend the trees once they are no longer reaping the benefit of the agricultural crops. The Forestry Commission for their part needs to ensure that the remaining agreements are signed and thus legalised quickly, and that payment is made when it is due. Furthermore, a lot of the problems such as the inequitable distribution of plots, fear that farmers are not pulling their weight, and illegal chainsaw lumbering are never going to be fully overcome without an infinite budget and a deluge of strict surveillance measures. The MTS is not a perfect solution; there are always loopholes and people wanting to exploit them and always an element of the tragedy of the commons. What is more important is to garner enough drive, enthusiasm and trust in all parties, so that people are mobilised to work hard to defend and respect the MTS and, too to be flexible in the coming years to address the challenges that those in each unique community may face.

## VII. References

- Agyeman, V. K. (1994). *Land, tree and forest tenure systems: Implication for forestry development in Ghana*. African Development Foundation Research Report Series.
- Agyeman, V.K., Kasanga, K.R., Danso, E., Marfo, K.A., Whiteman, A., Asare, A.B., Yeboah, O.M. & Agyeman, F. (2003a). *Equitable revenue sharing from costs and benefits on plantation development: A case study of public, private and local community partnerships in Ghana*. Draft Report of the Community Forest Plantation Management Programme.
- Agyeman, V.K., Marfo, K.A., Kasanga, K.R., Danso, E., Asare, A.B., Yeboah, O.M., & Agyeman, F., (2003b). *Revising the taungya plantation system: new revenue-sharing proposals from Ghana*, Unasylva 212, Vol. 54, 2003.
- Agyenim-Boateng, J., Koomson, F., Tenkorang, E. Y., Ntiri-Oppong, R., (2002). Effective stakeholder collaboration in forest policy and management in Southern Ghana. Ghana.
- Annor, S. Y., and Kusi, C.. (2008). Factors influencing the adoption of grasscutter production in the Brong Ahafo region of Ghana. Mampong-Ashanti, Ghana.
- Appiah, M., Blay, D., Damnyag, L., Dwomoh, F.K., Pappinen, A., & Luukkanen, O., (2009) *Dependence on forest resources and tropical deforestation in Ghana*, Volume 11, Number 3 / June, 2009. Springer.
- Ardayio-Schandorf, E., (2007). Gender mainstreaming in forestry in Africa: Ghana. FAO
- Arko-Adjei, A., De Jong, J., Zevenbergen, J., Tuladhar, A.M., (2009). Customary land tenure dynamics at peri-urban Ghana: implications for land administration system modelling.
- Arnold, M., & Townson, I. (1998). *Assessing the potential of forest product activities to contribute to rural incomes in Africa*. Overseas Development Institute. London
- Asante, M. S., (2005). Deforestation in Ghana: Explaining the chronic failure of forest preservation policies in a developing country. United Press of America, Maryland, USA.
- Asare, A. (2000). The Concept and Role of Community Forest Management Committees, CFMU, Kumasi, Ghana.
- Atuguba, R., & Dowouna-Hammond, C., (2006). Compilation and Gender Analysis of Laws. Affecting Land and Property Rights in Ghana. A Research Report Prepared for the World Bank and the Ministry of Justice, Ghana.
- Bebbington, A., (1999). Capitals and Capabilities: a Framework for Analysing Peasant Viability, Rural Livelihoods and Poverty, World Development, vol. 27 (12): pp. 2021-2044
- Birdlife International. (2009). Important Bird Area factsheet: Tano-Offin Forest Reserve, Ghana. (Accessed from <http://www.birdlife.org/datazone/sites/index.html?action=SitHTMDetails.asp&sid=6333&m=0>)
- Blay, D., Appiah, M., Damnyag, L., Dwomoh, F.K., Luukkanen, O., Pappinen, A., (2006). Involving local farmers in rehabilitation of degraded tropical forests: Some lessons from Ghana.
- Blocher, J., (2006). Building on Custom: Land tenure policy and Economic Development in Ghana. Yale.

- Boakye, K.A., and Baffoe, K.A., (2006). *Trends in forest ownership, forest resources tenure and institutional arrangements: Case study from Ghana*. Prepared for the regional workshop on Trends in Forest Ownership, Forest Resource Tenure and Institutional Arrangements in Africa, held in Nakuru, Kenya from 19 to 21 October 2006.
- Byron R.N. and Arnold J.E.M. (1999). What futures for the people of the tropical forests? *World Development* 27(5): 789-805.
- Carney, (1998). Implementing the Sustainable Rural Livelihoods Approach. Sustainable Rural Livelihoods: What contribution can we make? D. Carney. London, DFID: 3-23.
- Chambers, R & Conway, G., (1992). Sustainable rural livelihoods: practical concepts for the 21st century. IDS Discussion Paper No. 296. Brighton, IDS, p. 7 -8
- Crotty, M., (1998). *The Foundations of Social Research: Meaning and Perspective in the Research Process*. London: Sage.
- DFID(1999). *Sustainable Livelihoods Guidance Sheets* .<http://www.nssd.net/pdf/sectiont.pdf>
- Donkor, B. and Vlosky, R. (2003). A Review of the Forestry sector in Ghana. Louisiana Forest Products Development Centre, Working Paper 61.
- Dubé, Y.C., Schmithusen, F.(2007). Cross-sectoral policy developments in forestry, CABI, Oxford. Pp. 95-120.
- Dubois, O.,(2003). Forest-based poverty reduction in less developed countries: some facts, figures, challenges and possible ways forward, Forestry Policy and Institutions Branch, FAO, 0315-A2, Rome
- FAO. (2001). Global Forest Resources Assessment 2000 – main report. FAO Forestry Paper No. 140. Rome
- FAO. (2002). Forestry Laws & Regulations <http://www.fcghana.com/publications/laws/index.htm>
- FAO. (2003). *State of the World's Forests*. Rome.
- Freire, P. (1972). *Pedagogy of the Oppressed*, Harmondsworth: Penguin.
- Gardner, K., and Lewis, D., (1996). *Anthropology, Development and the Post-Modern Challenge*. London: Pluto Press.
- Gray, D.E., (2000). *Doing Research in the Real World*. London: Sage.
- Hawthorn, W.D., & Abu Juam, M (1995). Forest production in Ghana. Forest Conservation Series no. 14, IUCN, Gland.
- Higman, S., Mayers, J., Bass, S., Judd, N., Nussbaum, R., (2005). *The Sustainable Forestry Handbook*, Second Edition. Earthscan. UK.
- Hiremath B.N., Raju, K.V., Livelihood Security: A Prerequisite for Sustainable Natural Resource Management ON Srivastava (ed.) (2004). *Management of Natural Resources for Sustainable Livelihoods and Poverty Alleviation, Volume I 1* Hyderabad: National Institute of Rural Development, pp 95-111.
- Kaimowitz, D., (2003). Forest law enforcement and rural livelihoods. *International Forestry Review*.

- Kalame, F, (2009). The Modified Taungya System in Ghana's transitional zone. Forests and Climate Change: adaption and mitigation, November 2009. ETFRN. pp101-106
- Kasanga, K., (2003). Current land policy issues in Ghana: Land Reform, Land Settlement and Cooperatives. FAO
- Kasanga, K., & Kotey, N.A., (2001) Land management in Ghana: Building on tradition and modernity. IIED, London.
- Kooiman J, Bavinck M, Jentoft S, Pullin R (Eds), (2005). *Fish for Life: Interactive Governance for Fisheries* MARE Publication Series, No. 3., Amsterdam University Press, Amsterdam. Interactive Fisheries Governance: A Guide to Better Practice
- Kotey, N.A., Francois, J., Owusu, J.G.K., Yeboah, R., Amanor, K. & Antwi, L. (1998). Falling into place. Ghana country study. Policy that Works for Forests and People series no. 4. London, UK, International Institute for Environment and Development. (IIED).
- Krantz, L., (2001). The sustainable livelihoods approach to poverty reduction. SIDA
- Kusters, K. (2009). Non-timber forest product trade: a trade-off between conservation and development: assessing the outcomes of non-timber forest product trade on livelihoods and the environment, with special emphasis on the damar agroforests in Sumatra, Indonesia. Rozenberg Publisher, Amsterdam, Netherlands.
- Kwansah-Aidoo, K. (2001). "The Appeal of Qualitative Methods to Traditional Agenda-setting Research: An Example from West Africa." *Gazette*, 63 (6): 521-37.
- Kyereh, B. (2007). Tano Offin Globally Significant Biodiversity Area: Management Plan 2007 – 2011. Forestry Commission of Ghana and the Global Environment Facility. Forestry Commission: Accra.
- Mamo, G., Sjaastad, G., Vedeld, P (2007). Forest Policy and Economics, Economic dependence on forest resources: A case from Dendi District, Ethiopia. Elsevier
- Marfo, E., (2009). Security of Tenure and Community Benefits under collaborative forest management arrangements in Ghana: A Country Report. CSIR-INSTI: Accra.
- Marfo, K., Anchirinah, V., Wiggins, S., (2002). Environmental policies and livelihoods in the forest margins of Southern Ghana. CSIR, Ghana.
- Mayers, J., Bila, A., Khaukha, S., Opoku, K., Simwela, W., (2006). Forest governance and social justice: practical tactics from a learning group approach in Africa. *International Forestry Review*.
- Microsfere: [Http://www.microsfere.org/en/ghana/index.htm](http://www.microsfere.org/en/ghana/index.htm)
- MLF (Ministry of Lands and Forestry) (1994). Ghana – Forest and Wildlife Policy, 1994
- Opoku, E. (2009). Enhancing Collaboration in Plantation Development Using Information Systems (Version 1.1).
- Opoku, K. (2006). *Forest Governance in Ghana: An NGO Perspective*. A report produced for FERN by Forest Watch Ghana, March 2006. [www.fern.org](http://www.fern.org). FERN: Brussels.
- Owubah, C.E., Le Master, D.C., Bowker, J.M. and J.G. Lee. (2001). Forest tenure systems and sustainable forest management: the case of Ghana. *Forest Ecology and Management* 149(2001), pp. 253-264.

- Palumbo, B., (1992). *Marriage, Land and Kinship in a Nzema Village*. University of Rome.
- Rakodi, C. (2002) *A Livelihoods Approach - Conceptual Issues and Definitions*, in: C. Rakodi and T. Lloyd-Jones, *Urban Livelihoods, a People-centred Approach to Reducing Poverty*, Earthscan, London, pp 3-22
- Redwood, M. (ed.)(2009). *Agriculture in Urban Planning, Generating Livelihoods and Food Security*. Earthscan, London.
- Ros-Tonen, M.A.F., Zaal, F., Dietz, T., (2005). *African Forests Between Nature and Livelihood Resources: Interdisciplinary Studies in Conservation and Forest Management*. Lewiston NY: The Edwin Mellen Press. 3-29.
- Ros-Tonen, M. A. F., Derkyi, M., Insaadoo, T., Bell, A., Ledger, J., (forthcoming 2010). Governance for sustainable forest-related livelihoods in Ghana's High Forest Zone, Presented at Governance for sustainable forest-related livelihoods in Ghana's High Forest Zone-IOI Project workshop in Ghana. 8 - 9 October, 2009. Erata Hotel, Accra.
- Ros-Tonen, M.A.F and Kusters, K. (in press). Pro-poor Governance of Non-Timber Forest Products: The Need for Secure Tenure, the Rule of Law, Market Access and Partnerships. In: S. Shackleton, B. Campbell, P. Shanley, D. Mitchell and C. Shackleton (eds.) *Non-Timber Forest Products in the Global Context*. Tropical Forest Series. Heidelberg: Springer Verlag.
- Ros-Tonen, M.A.F. and Wiersum, K.F. (2005). 'The Scope of Improving Rural Livelihoods through Non-Timber Forest Products: An Evolving Research Agenda'. *Forests, Trees and Livelihoods* 15(2): 129-148.
- Saadullah, M., Hossain, M.M., Akhter, S., (2005). Experiences with goat project as a tool in human development: goats for poor women in Bangladesh. Bangladesh Agricultural University, Mymensingh, 2202, Bangladesh.
- Sawyer, L.C. and Opoku, K.A. (1992). *Practical Guide to Snail Farming*. Accra, Ghana.
- Scoones, I., (2009). *Livelihood Perspectives and Rural Development*. Journal of Peasant Studies. Vol. 36, No. 1, January 2009.
- Shackleton, C.M., Shackleton, S.E., Cousins, B. (2001). The role of land-based strategies in rural livelihoods: the contribution of arable production, animal husbandry and natural resource harvesting in communal areas in South Africa.
- Shackleton, S.E., Campbell, B., Lotz-Sisitka, H. Shackleton, C. (2008). Links between the Local Trade and Natural Products, Livelihoods and Poverty Alleviation in a Semi-arid Region of South Africa, *World Development*, Volume 36(3), p 505-526.
- Sunderlin, W.D., Angleson, A., Wunder, S., (2003). *Forests and Poverty Alleviation*. Center for International Forestry Research. Development Southern Africa, Volume 18, Issue 5 December 2001 , pages 581 – 604.
- Sunderlin, W.D., Angleson, A., Belcher, B., Burgers, B., Nasi, R., Santos, L. and Wunder, S. (2005). Livelihoods, Forests, and Conservation in Developing Countries: An Overview. *World Development* 33(9) pp. 1383-1402.
- Treue, T. (2001). *Politics and economics of Tropical High Forest Management: a case study of Ghana*. Dordrecht, Springer, pp. 1-50.

- [www.tropenbos.nl](http://www.tropenbos.nl) Last accessed 12 February 2010.
- Tropenbos International Ghana (2005). (Inkoom, K.B., Kissiedu, K.O. OwusuJnr, B. (eds)
- Tulane Company Reports (2007). Responsible, sustainable cocoa farming. Last accessed Feb 2010 [www.confectioncanada.com/Controls/ViewAttachment.aspx?No=302](http://www.confectioncanada.com/Controls/ViewAttachment.aspx?No=302)
- UNCCD report (author not known) (2002). *Republic Of Ghana: Second National Report to the conference of parties to the united nations convention to combat desertification*. Available: [www.unccd.int/cop/reports/africa/national/2002/ghana-eng.pdf](http://www.unccd.int/cop/reports/africa/national/2002/ghana-eng.pdf). Last accessed 12 August 2009.
- Wagner, M. R., Cobbinah, Bosu, P.P., (2008). *Forest Entomology in West Tropical Africa: forest insects of Ghana*. Dordrecht, Springer.
- Wiggins, S., Marfo, K., Anchirinah, V., (2004). Protecting the Forest of the People? Environmental Policies and Livelihoods in the Forest margins of Southern Ghana. *World Development* Vol. 32, No. 11, pp. 1939-1955, 2004. ODI, UK.
- World Commission on Environment and Development (WCED) *Our Common Future*. Oxford: Oxford University Press, 1987.
- Zhang, D., & Owiredue, E., (2007). *Land Tenure, Market and the Establishment of Forest Plantations in Ghana*. Forest Policy and Economics.

## Referenced Ghanaian laws and Document

NFPDP Annual Report 2003

[http://www.fcghana.com/publications/forestry\\_issues/plantation/nfpdp\\_annual%20report\\_2003.pdf](http://www.fcghana.com/publications/forestry_issues/plantation/nfpdp_annual%20report_2003.pdf).

NFPDP Annual Report 2008

[http://www.fcghana.com/publications/forestry\\_issues/plantation/nfpdp\\_annual%20report\\_2008.pdf](http://www.fcghana.com/publications/forestry_issues/plantation/nfpdp_annual%20report_2008.pdf).

The Constitution of the Republic of Ghana, 1992

The Forest and Wildlife Policy, 1994

The Forest Plantation Development Fund (Amendment) Act 2002

Timber Resource Management (Amendment) Act 2002, (Act 617)

## VIII. Appendices

### Appendix I: Survey distributed at Chirayaso and Kunsu Dotiem=

Interview Number	Date	Interviewer	Time Start	Time end	Village	Region

We would like to invite you to take part in an academic study, you have been selected as someone who is a key forest actor and involved in the Modified Taungya System. We are students from the University of Amsterdam, Tropenbos Ghana, and Kwame Nkrumah University of Science and Technology, our research is part of partnership that has the aim of generating insight and formulating recommendations on governance arrangements that enhance forest-related livelihoods. No one will be able to see the responses you have made and we won't take your name. You are very welcome to ask questions if there's anything you do not understand.

<b>Q1</b>	<b>Gender:</b>						<b>Age:</b>		
<b>Q2</b>	<b>Education Level :</b>	Primary	JHS	SHS	Voc	Tertiary	Non-formal	None	
<b>Q3</b>	<b>Origin:</b>		Migrant			Native			
<b>Q4</b>	<b>If Migrant:</b>		Home Town		District		Years settled		
<b>Q5</b>	<b>If Migrant reason for migration:</b>		Family		MTS		Other		
<b>Q6</b>	<b>Household size (inc self):</b>		Nucleus		Others		Total		
<b>Q7</b>	<b>Sources of Income:</b>	Farming	Collection of NTFPS		Petty trading	Reforestation <i>e.g.</i> MTS, HIPIC			
	Remittances	Forest reserve boundary maintenance	Formal Employment (specify)		Others				

<b>Q8</b>	<b>What type of forest/ tree use schemes are you involved in?</b>	MTS	Gov't HIPIC	Commerical			On farm-tree planting		Other
<b>Q9</b>	<b>What year did you get involved in MTS?</b>	2002	2003	2004	2005	2006	2007	2008	2009
<b>Q10</b>	<b>What size of land have you covered with trees since you started?</b>								
<b>Q11</b>	<b>Number in household involved in MTS (&amp;gender)</b>								
<b>Q12</b>	<b>Are you involved in MTS as an individual or a group?</b>	Village organisations/Saving groups/Cooperative arrangements with friends & family/ Tree farmers association/ Other							
<b>Q13</b>	<b>If so does your group have</b>								

	regular interactions with supporting institutions? If so what kind?	
Q14	Why did you get involved in MTS?	Land/Livelihood/ Food Crops/ Preserve Environment/ Other
Q15	What crops are integrated in the tree farm? (MTS/ on farm tree planting)	
Q16	What crops would you plant if you had the choice and why?	
Q17	What tree species are recommended by the forestry staff for planting?	
Q18	What tree species would have planted if you had the choice and why?	
Q19	Do you consider MTS as a livelihood (occupation)? Why yes/no?	
Q20	What was your main livelihood before MTS?	
Q21	Do you consider MTS as a reliable source of income or as a subsistence (safety net) source of income?Why?	
Q22	Since the introduction of MTS what changes have you seen in your standard of living (livelihoods)?	
	Income:	
	Crops:	
	Food:	
	Shelter:	
	Access to Trees:	



Q23	<b>What benefits or advantages do you gain from MTS?</b>	Employment/land for farming/food/firewood/income from food crops/ long term income from trees		
Q24	<b>Standard of living:</b>  <b>How would you describe ease of achieving the following, before and after MTS?</b>		Before MTS	Since MTS
		i)getting farm produce		
		ii)children's education		
		iii)putting up a building		
		iv) household's daily care		
		v) access to land for farming		
Q25	<b>What are your responsibilities as a farmer in the MTS scheme?</b>			
Q26	<b>Are you content with the benefit sharing arrangements within the MTS that you're involved with?</b>			
Q27	<b>Currently what mechanism is in place to share the 40% benefits among members ?</b>			
Q28	<b>How do you think benefits from timber-tree-products should be shared among individual farm families without problems?</b>			

Q29	What things do you think can be a threat to the success of the MTS scheme?	
Q30	What mechanisms are in place to ensure the safety of trees until maturity?	
Q31	What arrangement or innovations do you think could be put in place to encourage farmers to go into these schemes, and use them as secure livelihood strategies.	
Q32	What problems do you have with MTS?	

Thank you for taking part.

Appendix II: PROFILE OF MODIFIED TAUNGYA SYSTEM (MTS) IN TANO OFFIN FOREST RESERVE IN NKAWIE FOREST DISTRICT

MTS BENEFICIARY COMMUNITIES	YEAR COUPE	TARGET (HA)	AREA PLANTED	NO.OF FARMERS	FOREST RESERVE COMPT. NO.
Chirayaso (6km from Kyekyewere )	2007	30	30	100	221/272
	2006	30	30	170	270
	2005	17	17		270
	2004	5	5		270
Asuntaa	2006	12	12	54	283
	2005	5	5		283
	2004	5	5		283
Kramokrom	2006	20	20	91	282
	2005	11	11		282
	2004	12.5	12.5		
Desireagya	2006	15	15	83	163
	2005	10	10		
	2004	10	10		
Kwadwotire	2006	11	11	78	256
	2005	8	8		256
	2004	5	5		
Akantansu	2007	15	15	32	182
	2006	24	24	102	149/182
	2005	22	22		182
	2004	20	20		182
	2003	26	26		182
	2002	40	23		182
Bofaso	2007	10	10		271

Awesasu	2006	13	13	50	201
Nyinahin	2006	15	15	72	
Adiembra	2006	16	16	68	93
	2005	11	11		93
	2004	4	4		
	2003	3	3		
	2002	10	10		
Mpasaaso1	2006	25	25	102	88
	2004	15	15		
	2003	5	5		
	2002	40	20		
Mpasaaso11	2006	38	38	78	90
	2005	20	20	67	90
	2004	10	10		
	2003	10	10		
	2002	20	10		
Oforikrom	2006	10	10	33	44
	2005	10	10		
	2003	3	3		
	2002	10	10		
Koojourkrom	2006	10	10	60	44
	2005	10	10		44
	2004	5	10		
	2003	2	2		
Domeabra	2006	32	32	105	11

	2005	12	12		11
	2004	15	15		
	2003	25	25		
	2002	40	40		
<u>Awaduwa</u>	2007	12	12	31	4
	2006	10	10	46	4
	2005	10	10	35	4
	2003	10	10		4
	2002	10	10		3
<u>Nyinanufu</u>	2007	10	10	56	7
	2004	10	10		
	2003	5	5		
	2002	10	10		
<u>Bonkrom</u>	2006	21	21	69	18
	2005	17	17		18
	2004	10	10		
	2003	10	10		
	2002	10	10		
<u>Dotiem Kunsu</u>	2007	20	20	55	37/38
	2006	38	38	106	37/38
	2005	22	12		37
	2004	20	10		
	2003	20	10		
	2002	20	10		
<u>Enyehwee</u>	2006	30	30	54	18

Saakrom- performance	2007	20	20	97	60
	2006	22	22		60
	2005	10	10		60
	2004	12	10		60
	2003	10	10		60
Nyamebekyere	2007	10	10	43	7
	2006	30	30	105	7
	2004	10	10		
	2003	10	10		
	2002	10	10		
Apenemadi	2004	10	10		
	2003	10	10		
Wioso	2002	20	20		
Adadekrom	2004	5	5		
	2003	3	3		
	2002	30	30		
Ofirikrom	2003	3	3		
Oseikrom	2003	2	2		
	2002	10	10		

Species mostly planted are; Exotic-Cedrela; Indigenous species: Ofram, Mahogany. Planting Designed used; MS (3\*12) for 2006 and 2007 planting season

Source: Nkawie FSD Plantations unit (2008).

Appendix III Example of raw data results from PROFOR tool 4 : **Chirayaso Women Non Cash**

	1	2	3	4	5	6	7	8	9	10	
<b>Natural Forest Products</b>											
PESTLE											0
TIMBER											0
FIREWOOD/CANE					2	2					4
CHEWING STICK					1					2	3
WRAPPING LEAVES				1			2				3
SIBRE											0
GAME											0
<b>TOTAL</b>											<b>10</b>
<b>Products from MTS</b>											
PLANTAIN	6	3	1	2	9	1	1	2	6	5	36
FIREWOOD											0
COCOYAM											0
VEGETABLES	3	2	3			2	1	5	5	1	22
FRUITS		2		3				3		2	10
YAM		1						1			2
SUGAR CANE											0
MAIZE	1	3	7	8			4	6	4	5	38
<b>TOTAL</b>											<b>108</b>
<b>Sole Agric</b>											
MAIZE					2		5			2	9
COCOA		4				6			2		12
VETABLES		3	3	1		2		2		2	13
OIL PALM											0
FRUITS	3		3	5							11
YAM	1				2						3
PEAR											0
SUGAR CANE											0
PLANTAIN		2				3	3				8
CASSAVA	2				4		4		2		12
GINGER											0
COCOYAM											0
<b>TOTAL</b>											<b>68</b>
<b>Fallowlands</b>											0
CASSAVA						2					2
COCOYAM						2					2
PLANTAIN											0
OIL PALM											0
MUSHROOM	2		2					1	1		6
SNAIL	2		1							1	4
GRIFFONIA											0
<b>TOTAL</b>											<b>14</b>
PETTY TRADING											0
REMITTANCES											0
<b>TOTAL</b>											<b>0</b>
<b>GRAND TOTAL</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>200</b>

## Kunsu Dotiem Women Cash

	1	2	3	4	5	6	7	8	9	10	
<b>Natural Forest Products</b>											0
PESTLE											0
TIMBER											0
FIREWOOD/CANE											0
CHEWING STICK											0
WRAPPING LEAVES											0
SIBRE											0
GAME											0
<b>TOTAL</b>											<b>0</b>
<b>Products from MTS</b>											0
PLANTAIN											0
FIREWOOD	3		5		2		2	4	5	3	24
COCOYAM	6		4		3		2	2	3	2	22
VEGETABLES	3		2		1			2	3	1	12
FRUITS										2	2
YAM							2		3	1	6
SUGAR CANE							2		2		4
MAIZE											0
<b>TOTAL</b>											<b>100</b>
<b>Sole Agric</b>											
MAIZE				8	2	3	1	3		3	20
COCOA		5				2		1			8
VETABLES		2				2	2				6
OIL PALM											0
FRUITS		3			2		2	2			9
YAM						6					6
PEAR		2					1	1			4
SUGAR CANE							1				1
PLANTAIN		4			2		2				8
CASSAVA		4					1			3	8
GINGER											0
COCOYAM				6	1						7
<b>TOTAL</b>											<b>77</b>
<b>Fallowlands</b>											0
CASSAVA											0
COCOYAM											0
PLANTAIN											0
OIL PALM											0
MUSHROOM											0
SNAIL											0
GRIFFONIA											0
<b>TOTAL</b>											<b>0</b>
PETTY TRADING	4			3	4	3					14
REMITTANCES	2			3		4					9
<b>TOTAL</b>											<b>23</b>
<b>GRAND TOTAL</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>200</b>



