

Strengthening off-reserve timber resource management in Ghana

ISBN:

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Citation: Tropenbos International - Ghana (2009). Strengthening off-reserve timber management in Ghana. Proceedings of a national workshop held in Accra, Ghana, on the 27th and 28th of September, 2007. Tropenbos International - Ghana Workshop Proceedings 7. Kumasi, Ghana.

Cover Photos: TBI-Ghana

STRENGTHENING OFF-RESERVE TIMBER RESOURCE MANAGEMENT IN GHANA

Editors

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**Tropenbos International - Ghana
Kumasi, Ghana
2009**

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ACRONYMS

AAC	Annual Allowable Cut
AfDB	African Development Bank
CBFM	Community Based Forest Management
CF	Community Forestry
CFC	Community Forest Committee
CFMU	Collaborative Forest Management Unit
CRMC	Community Resource management Committee
DA	District Assembly
DCE	District Chief Executive
DCFLP	Danish Centre for Forest, Landscape and Planning
DFID	Department for International Development (UK)
DFM	Decentralised Forest Management
FAO	Food and Agriculture Organisation
FC	Forestry Commission
FIMP	Forest Inventory and Management Project
FORIG	Forestry Research Institute of Ghana
FORUM	Forest Resource Use and Management Project
FSD	Forest Services Division
GoG	Government of Ghana
HFZ	High Forest Zone
IGF	Internally Generated Fund
LA	Local Authority
LI	Legislative Instrument
MoP	Manual of Procedure
NGO	Non Governmental Organisation
NTPF	Non Timber Forest Product
OASL	Office of the Administrator of Stool Lands
ODA	Overseas Development Assistance
OFR	Off Forest Reserve
PFM	Participatory Forest management
PSI	Presidential Special Initiative
RECA	Rural Environmental Care Association
RMSC	Resource Management Support Centre
SP	Salvage Felling Permit
SRA	Social Responsibility Agreement
TBI	Tropenbos International
TC	Traditional Council
TIDD	Timber Industry Development Division
TIF	Tree Information Form
TUC	Timber Utilization Contract
TUP	Timber Utilization Permit

PREFACE

Over the years, there has been a clear shift in policy with respect to the management of off-reserve timber resources. We have moved from a regime of progressive utilisation without replacement i.e. ultimate liquidation (of off-reserve timber resources) to the realisation that these resources will be needed on a continuous basis to supplement production from forest reserves. There is however, no long-term effective strategy in place to ensure the realization of this objective.

This publication which is the result of a joint effort by TBI-Ghana, the Danish Centre for Forest, Landscape and Planning and Care International Ghana, brings together very insightful presentations by eminent scientists, policy analysts and practitioners on the status and challenges in managing the timber resources outside the permanent forest estate. It also captures the perspectives of different key stakeholders and cautions about the likelihood of the resource crashing. It draws attention to issues that require urgent action and makes recommendations for the way forward. All these considerations are captured succinctly in the synthesis which precedes the main presentations.

The wealth of information contained herein, should greatly contribute to efforts at finding a strategy for managing timber resources outside the permanent forest estate. This publication is therefore a recommended reading for all who are concerned about issues of governance, collaborative forest management and particularly, the management of the off-reserve timber resources in Ghana.

This report is the 7th in the series of proceedings of TBI-Ghana Focus Group Discussions on 'Collaborative forest management: making the policy work'. Previous topics discussed include: *Natural resource management in Ghana: challenges to professionalism; Chainsaw lumber production: a necessary evil?* and *'Equity in forest benefit sharing: stakeholders' views'*. The others are: *'Alternative livelihoods and sustainable resources management; Reconciling policy reforms with forest legislation;* and *'Restoration and sustainable management of forests in Ghana'*.

KSN
February, 2009

ACKNOWLEDGEMENTS

TBI-Ghana and the Danish Centre for Forest, Landscape and Planning jointly planned and hosted the workshop that gave rise to this publication; Care International Ghana kindly contributed some financial resources.

We gratefully acknowledge the contribution of the numerous presenters including some key stakeholders for their invaluable insights on this very important topic. Contributions by participants, especially through the group work also enriched the discussions and the final output.

Dr Kyereh Boateng painstakingly read all the presentations and managed to put together a very comprehensive synthesis and the conclusions which add to the usefulness of the document.

Several people helped in editing the manuscript: Mr Kwame Owusu Appiah transcribed some of the oral presentations and started putting the document together; Messrs Christian P. Hansen, Kwame Okae Kissiedu and Dr Kyereh Boateng carried out the final editing, whilst Ms. Jane Aggrey did the final checks before going to the press. We are grateful to all who in one way or the other helped in getting this publication out.

KSN

SYNTHESIS AND CONCLUSIONS

Introduction

In Ghana, timber is harvested from two main sources, namely: timber production forest reserves and areas outside forest reserves, commonly referred to as off-reserve areas. The first forest policy of Ghana, drawn in 1948, provided for a progressive utilization of the off-reserve timber resource, without replacement and assumed the confinement of forestry practices to the permanent forest estates. However, later developments showed that timber from off-reserve areas will be needed on continuous basis to supplement production from the forest reserves which are capable of an annual production of only 500,000 m³ of wood. The 1994 Forest and Wildlife Policy, therefore, encourages sustainable management of tree resources outside the permanent forest estates. There is however, no long-term effective strategy in place to ensure the realization of this objective; this has given rise to unsustainable practices, decline in the resource base and a lack of confidence in securing the future of the resource. Little opportunity exists for using timber production from naturally occurring trees in off-reserve areas as a livelihood strategy due to laws, and their implementation, that restrict the rights of farmers and limit their share of the accruing financial benefits. As part of efforts to find appropriate strategies to strengthen the management of the resource, a workshop was organised by Tropenbos International-Ghana in collaboration with the Danish Centre for Forest, Landscape and Planning and with financial support from CARE International-Ghana.

The workshop was attended by representatives from the Ministry of Lands, Forestry and Mines, Forestry Commission, Office of the Administrator of Stool Lands, Resource Management Support Centre, Forestry Research Institute of Ghana, Kwame Nkrumah University of Science and Technology, Danish Centre for Forest, Landscape and Planning, the timber industry, local government (district assemblies), NGOs and landowners. The participants analysed the problems related to the sustainable management of the resources and possible solutions to secure the future of the resource so as to make it an important contributor to rural livelihoods in the High Forest Zone.

The workshop participants considered that:

The off-reserve timber resource comprises timber trees outside reserved forest areas. This encompasses naturally regenerated trees on farms and agricultural fallow lands and patches of natural forest stands. Ghana's off-reserve area is represented by a total land area of about 5.482 million hectares in the High Forest Zone. This is made up of 1,618,738 ha in the Wet/Moist Evergreen, 1,559,236 ha in the Moist Semi-deciduous South East, 1,071,758 ha in the Moist Semi-deciduous North West and 1,232,446 ha in the Dry Semi-deciduous (Affum-Baffoe, these proceedings). In 1996, off-reserves supported a total tree standing volume of 95 million m³ which decreased to 37 million m³ by 2005 (Affum-Baffoe, these proceedings).

In the late 1980s and early 1990s, 80 % of recorded timber production was from the off-reserve areas. Presently, about 30% of the recorded harvest originates from the off-reserves. The resource is, however, still important to the timber industry and the treasury of the constitutional beneficiaries. Between 2003 and 2006, the off-reserve

resource generated between 19 and 27% of the annual timber revenue in Ghana (Hansen and Treue, these proceedings). For a number of Stools and District Assemblies without production forest reserves and minerals, revenues from off-reserve timber constitute a significant funding source. Moreover, the off-reserve trees provide a host of services to the farmer, the Ghanaian society and the wider international society, e.g. shade to crops, soil and water conservation, carbon sequestration and biodiversity conservation. These services are presently not valued in the market, but are likely to be in the future.

The management of off-reserve timber resources has suffered greatly due to problems of inequity, legal rights, conflicts and illegal harvesting. The present management system is beset with many difficulties and at best can be described as an attempt to stretch timber exploitation over as long a period as possible, within the existing constraints rather than managing it on sustainable basis. Hence, stakeholders perceive that, the Forestry Commission has failed in the sustainable management of off-reserve forests after receiving transfer duties from the Lands Department. Again, the late distribution of timber revenue to stakeholders by the Forestry Commission or the Office of Administrator of Stool Lands with accompanying problems of transparency as a result of the lack of proper documentation further compound the issue.

The workshop participants recognise inter alia that:

The future of off-reserve timber resources is uncertain. The present legislation and its implementation do not provide appropriate incentives for stakeholders, especially farmers, to engage in sustainable practises. The resource is therefore likely to crash with serious economic and environmental consequences; hence, the following issues need particular attention.

Equity in benefit sharing

The key challenge to the management of off-reserve timber resources is to provide appropriate financial incentives for farmers to engage in tending of off-reserve trees. This brings the benefit sharing regime into question. The operating benefit sharing scheme is in favour of state agencies and landowners but denies local people access to timber resources. Farmers who care for trees on farmlands do not receive any benefit when these trees are harvested. Again, farmers do not receive adequate compensation from timber companies for crop damage as a result of logging activities in farms. This has brought about the neglect of trees and in some cases the deliberate killing of trees on farms by farmers. This is also a primary cause of illegal chainsaw operations which directly and promptly reward the farmer; these illegal activities nevertheless have contributed greatly to the degradation of off-reserve forests.

Proper definition of roles and responsibilities in the management of off-reserve timber

It is important that all stakeholders identified for the sustainable management of off-reserve timber resources should have well defined roles and responsibilities pertaining to their individual territorial and functional interests in the resource. This could serve as a good basis for negotiating equitable distribution of timber revenue.

Continuous discussion for long term solutions to the off-reserve management problem

There is the need to create a multi stakeholder platform for continuous discussion and dialogue for a long term solution to current and potential off-reserve timber management problems. Moreover, an agreed system of communication and information transfer towards a sustainable management regime of the off-reserve timber resource is equally important.

Provision of other incentives beyond equitable benefit sharing

The question of who invests in the raising of timber trees in off-reserve areas points only to the farmer as the only stakeholder who tends and cares for timber trees for their economic and/or ecological benefits. Hence, aside reviewing the current benefit sharing arrangement to cater for the farmer, it is also important to provide him with some other incentives to boost his motivation. This is because trees on farmlands only survive at the mercy of farmers.

Improved governance of timber revenues

Linked to the equity considerations mentioned above, the accountability of the financial management of timber revenues has to be improved. This includes the allocation procedures of logging rights, the pricing of the resource (timber rights fees, stumpage fees and other fees), the distribution and the use of timber revenues by beneficiaries. In relation to distribution, there are instances where timber revenue distribution and use are not backed by any documentation which makes it difficult for beneficiaries to keep track of how much revenue is received and what it is used for. This is perceived to affect the management of off-reserves as the income generated from the resource cannot be stated; this could affect the level of motivation towards management by some stakeholders.

In view of the above, the workshop participants recommended the following:

Policy review - the socio-economic context within which off-reserve timber trees are raised creates a platform for conflicts on tree tenure and benefit sharing which is characterised by the exercise of power. This discourages the farmer who is the investor but has little control over the trees when mature and receives no reward for raising and nurturing the trees. This is a problem for sustainable management and calls for a review of current forest policies to reflect realities of the day, especially tree tenure/benefit sharing and eventual devolution of management to the farmer.

Review of institutional roles - the examination of institutional and communication reforms in the light of present complexities of off-reserve timber resources management are necessary. Again, there is the need for the development of a common platform for information sharing, sensitization and creating a common understanding between landowners and land users in terms of land and tree tenure.

Improvement in techniques for managing off-reserve trees - Research in the management of naturally regenerated trees in off-reserve areas should be improved to enable farmers respond appropriately to the numerous challenges imposed by changes in agricultural technology, the physical and the economic environments.

1. INTRODUCTION

1.1 BACKGROUND

The off-reserve timber resource

The first forest policy of Ghana, drawn in 1948, provided for a progressive utilization of the off-reserve timber resource, without replacement and assumed the confinement of forestry practices to the permanent forest estates. However, later developments showed that timber from off-reserve areas, including farms will be needed on continuous basis to supplement production from the forest reserves, which are capable of an annual production of only 500,000 m³ of wood. The 1994 Forest and Wildlife Policy, therefore, encourages sustainable management of tree resources outside the permanent forest estates. However, there is no effective long-term plan in place to ensure the realization of this objective and time is running out for securing the future of the resource.

The closed forest located mostly in the Western Region, was estimated to be 0.5 million ha in 1995 but its present size is not known. The fallow lands are secondary growth from abandoned farms, with high potential for producing timber trees if adequately managed whilst the farm areas are lands carrying active farms of various cropping systems (most of which contain a good population of trees). The off-reserve timber resource is an important component of the natural resource base of the country. Its contribution to the timber trade, livelihoods, environmental protection and ecological balance is enormous whilst its potential for private timber resource development is huge if the right policies and incentives could be provided. In the 90s, it was contributing between 70–80 % of all timber harvested in the country, though in recent times, this has declined to about 30 %.

An inventory of the off-reserve lands in 1996 showed a stock of about 268 million m³ of standing tree volume of suitable form to be considered as timber. About 38% of this volume was made up of trees greater than the minimum felling limits; signifying possibilities for sustainable management. Also the inventory provided some basis for an indicative annual allowable harvesting of 500,000 m³ nationwide and quotas for various forest districts (FMSC, 1996). Eleven years later, there is a general perception that the off-reserve resource is nearly depleted and that with the exception of trees protected on cocoa farms, most standing trees in the off-reserve landscapes have low timber value. This means, the Forestry Commission (FC) has not been able to regulate the cutting of the off-reserve timber as planned and the future for the remaining stocks is very uncertain.

The controversy

Off-reserve timber originates from trees retained or nurtured by farmers for their ecological and subsistence benefits. Farmers manage the trees to ensure their compatibility with the cropping system and the overall objective of land conservation. However, when such trees are mature for timber, they are treated as naturally occurring resource and rights to their harvesting is, by law, vested in the State who allocates felling rights to timber contractors. The accruing benefits are shared among stakeholders excluding the farmer. Thus, off-reserve trees are raised by one group of people to be regulated and harvested by others who have no investment in the trees. This seems to

have grievous consequences on sustainable tree management as aggrieved parties in the benefit-sharing scheme find their own means of benefiting from the resource, normally through illegal sale of timber trees to unauthorized people like chainsaw operators. Others also deliberately destroy seedlings and juvenile timber trees to ensure the protection of their crops from adverse effects of logging. The regulation of tree harvesting is done through quotas and minimum felling limits, which are not well respected by timber contractors with the result that a large proportion of the resource is harvested outside official knowledge.

The problem

It is quite clear that the off-reserve timber resource management operates in a socio-economic context which is not compatible with sustainable resource management. First of all, it is managed solely by farmers who do not have permanent stake in the trees nor incentives to manage it. Secondly, its utilization generates complex issues of equity, rights, illegalities and conflicts between people as well as between forestry and agriculture. Analysts believe that unless the sector policy and attitude towards the resource is improved, there is no hope for the off-reserve timber resource in the future.

The needs

The requirements for sustaining the management of the resource include, a clear policy and legal framework acceptable to all stakeholders, especially farmers, updated information on the status of the resource, determination of what is equitable in terms of benefits and improvement in the technical requirements for managing secondary forests and on-farm trees as well as regulatory systems that are transparent and fair.

Strategy

The change that is required to bring off-reserve timber resource management in line with principles of sustainability, will involve a long process that requires the commitment and resources of all relevant stakeholders. As a first step, a stakeholder dialogue has been arranged to look at options for more effective and holistic ways of approaching the issues confronting the management of the resource so that in the end, the necessary policy recommendations can be made to secure its future. This platform is being provided by TBI-Ghana in collaboration with the Danish Centre for Forest, Landscape and Planning and CARE International.

1.2 PLATFORM OBJECTIVE

To identify options for strengthening the management of off-reserve timber resource in the forest zone.

1.3 EXPECTED OUTPUTS

- Options and a roadmap for stakeholder consensus on decentralization of off-reserve timber resource management.
- Interim policy recommendations.
- Research priorities.

2.0 SPEECHES

2.1 CHAIRMAN'S OPENING REMARKS

Prof. S. O. Asiamah

The issue of forest resource management outside forest reserves has become topical lately. As a land economist, I find very serious problems affecting timber resources outside forest reserves. But I hope, for today and tomorrow, stakeholders gathered here will be able to come up with a road-map to give direction to forest managers in managing the forest resources outside the forest reserves.

I want to give just one caution; we should remember that in all these discussions, it is the farmer out there who is bearing the brunt of all these policy decisions. We should look at poverty alleviation as the core of whatever we do. If we achieve all the brilliant policies but leave the farmer poorer at the end of the day, we have not done much to further the cause of society.

Therefore, it is my hope that by the next day you and I will put our heads together and come up with very concrete policies and steps that will help us achieve the objective of properly managing our resources outside the permanent forest estate whiles at the same time ensuring that we give our farmers the best. (Video 03:54 – 04:08)
Thank you very much for the opportunity given me to chair this workshop.

2.2 KEYNOTE ADDRESS

Hon. Adjei Yeboah, the Deputy Minister of Lands, Forestry and Mines

Mr. Chairman, members of the diplomatic corps, distinguished participants, members of the press, ladies and gentlemen, I am indeed very glad to be here this morning to participate in this important workshop, which focuses on **strengthening the management of off-reserve timber resources in Ghana**. Permit me to first of all express my gratitude to the organisers for the invitation and also for creating a platform to discuss such a crucial issue with a broader stakeholder group today.

The off-reserve timber resource is an important component of the natural resource base of the country. Its contribution to the timber trade, livelihoods, environmental protection and ecological balance is enormous while its potential for private timber resource development is huge. In the 90s, it was contributing between 70-80 % of all timber harvested in the country, though in recent years, this has declined to about 30 %.

Over the years, there has been a serious assault on these resources (both flora and fauna), particularly from wild fires, chainsaw operators, farmers and excessive surface mining operations. The current rate of destruction of the resources off-reserve is so alarming that if the situation is not reversed, there will be no trees left in these area in a few years to come. The situation is a major source of worry to us as resource managers and has prompted a section of the forest industry and civil society to suggest increasing the annual timber harvest from the off-reserve areas as a means of salvaging the timber before they are all lost.

In view of the above and other concerns, the Ministry of Lands, Forestry and Mines has over the years taken several bold initiatives to ensure the sustainable management of the resources outside the reserved forests. I would like to mention a few of them as follows:

Change in policy focus

The first forest policy of Ghana, drawn in 1948, provided for a progressive utilization of the off-reserve timber resource, without replacement and assumed the confinement of forestry practices to the permanent forest estates. However, later developments showed that timber from off-reserve areas including farms will be needed on continuous basis to supplement production from the forest reserves, which are capable of an annual production of only 500,000 m³ of wood. It is on the basis of this that the 1994 Forest and Wildlife Policy recognize the need for sustainable management of tree resources outside the permanent forest estates.

Change in forest administration

The regulation of the off-reserve resource which used to be in the hands of the then Land Department was transferred to the then Forestry Department (now Forest Services Division of the Forestry Commission) for more effective management. But even with this institutional change, the management of the off-reserve areas has been rather challenging.

Promotion of collaborative resource management

The ministry has created a unit within the Forestry Commission to develop mechanisms for collaborative resource management. This, together with the Modified Taungya System (farmers grow food crops and tend tree seedlings on the same piece of land till tree canopy closes), we have instituted for the rehabilitation of degraded forest reserves, will hopefully, help us evolve models which can satisfy all stakeholders and thereby lead to sustainable management of the resource.

Plantation development initiatives

Apart from the National Plantation Development Programme, there are several other initiatives geared towards forest landscape restoration outside the reserves. For example: the Forest Resource Use and Management Project (FORUM) in the Volta Region; the Community Forest Management Project, funded by the AfDB; the Participatory Forest Management Project in the Transitional Zone. All these projects are community-based and encourage resource management outside reserves including tree planting.

Benefit sharing/incentives

Again, in a bid to ensure greater equity in the distribution of the revenue from the resource, the Ministry has reviewed the sharing ratio. The proportions have now been reversed from 60:40 in favour of the Government to 60:40 in favour of Landowners (i.e. off-reserve revenue). Similarly, within the reserved areas, the proportions have been reversed from 60:40 in favour of Government to 50:50. We do realize that this distribution still does not take account of the farmers who in most cases nurture and tend such trees. This issue is however under discussion with the view to evolving a system which is more equitable to all stakeholders.

It is apparent that the ministry is very much aware of the challenges of managing the off-reserve resource, and has also put in place some measures to tackle the problem. Nevertheless, a lot still remains to be done. It is for this reason that I see this workshop as an appropriate forum to discuss the issue very dispassionately and also draw on lessons from other countries, to develop a roadmap for the way forward. Judging from the agenda of this workshop and the calibre of participants gathered here, I am very confident that at the end of the day, very objective and practical recommendations will be made to guide the Ministry in its efforts towards sustainable resource management, off-reserve.

In conclusion, I want to express my gratitude to the organizers once again for bringing together all the technical experts in this field to discuss the subject. I wish you very fruitful deliberations and look forward to the outputs of the workshop.

3. PRESENTATIONS

3.1 TIMBER RESOURCES OUTSIDE THE PERMANENT FOREST ESTATES OF GHANA'S HIGH FOREST ZONE – STATUS AND TRENDS

*Kofi Affum-Baffoe, Forest Inventory and Mensuration Manager,
Resource Management Support Centre, Forestry Commission, Ghana*

Introduction

Outside forest reserve areas in Ghana provide an important source of timber resource for the wood industry. Estimates vary but in the 80s and 90s when previously unexploited timber species gained demand resulting in increase in logging off-reserve, between 70-90 % of timber production was derived from outside reserves (Planning Branch, 1994). Official harvesting figures indicates that more than half of the nation's annual timber exploitation has come from off-reserve areas since the introduction of the felling quota system as a means of regulating timber harvesting off-reserve.

Traditional management of forest resources particularly timber as practiced inside reserves are not applicable to off-reserve areas. This is simply because there is no identifiable unit of management like compartment and timber operations may extend over a vast area which results in poor monitoring approaches. Different land use options in off-reserve areas coupled with the fact that natural regeneration in mixed tropical forest is supported by under storey vegetation which is lacking in most off-reserve areas make sustainable management of tree resources questionable. However, the then Forestry Department, now Forestry Commission instituted measures in mid 90s to regulate timber harvesting off-reserve in an attempt to secure timber trees in these areas for an appreciable number of years. This presentation assesses the status of timber resources off-reserve in the last ten years after the management of off-reserve tree resources came under direct jurisdiction of the Forestry Commission.

Extent of the Off-Reserve within the HFZ

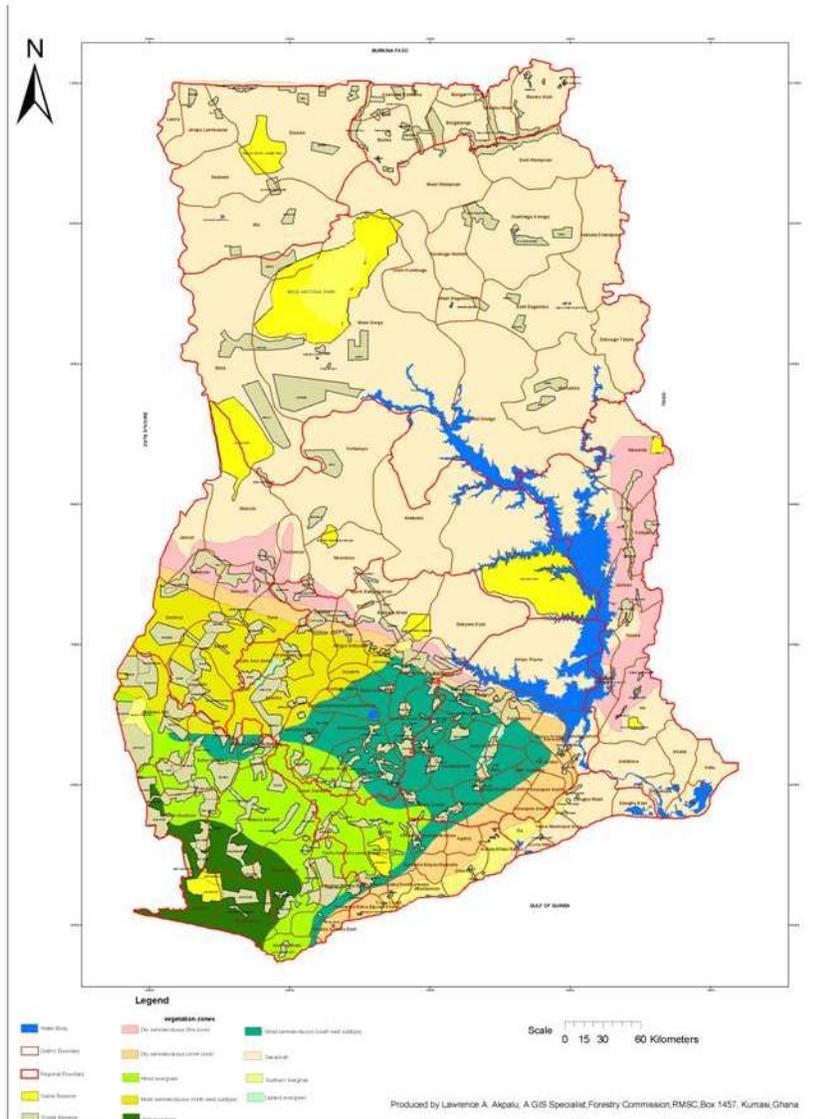
Ghana covers an area of about 23.9 million hectares spanning two major ecological zones. The south-western third of the country is the High Forest Zone (HFZ) while the savannah dominates the north and east (Map 1). The HFZ which produces the bulk of timber resources is approximately 8 million hectares out of which 1.76 million hectares are permanently protected and managed by both Forest Service Division (1.63 million hectares) and Wildlife Division (0.13 million hectares) of the Forestry Commission.

The HFZ has five main ecological zones (Hall and Swaine, 1981) and these zones greatly influence the type of tree species and agricultural crops growing across the forest area. These zones range from the evergreen rainforest of the western

coasts through to the dry semi-deciduous forest of the forest-savannah transition zone. A total of about 5.482 million hectares of the HFZ constitutes the off-reserve area where timber is produced but here the resources vary in nature from scattered individual trees in farms and fallow areas to patches of intact forest. Table 1 shows the net total area off-reserve within each ecological zone and for the purpose of this presentation, the Wet Evergreen and Moist Evergreen have been merged to a single zone.

Table 1: Total area off-reserve within the high forest zone of Ghana.

Vegetation Zone	Total Area Off –Reserve (Ha)
Wet/Moist Evergreen ME/WE	1,618,738
Moist Semi-deciduous South East (MSSE)	1,559,236
Moist Semi-deciduous North West (MSNW)	1,071,758
Dry Semi-deciduous (DS)	1,232,446



Map 1: Map of Ghana showing vegetation zones, forest & game reserves.

Methodology

Under a Forest Inventory and Management Project (FIMP) sponsored by Overseas Development Administration (ODA) now DFID of UK, a national off-reserve inventory was conducted between 1995-1996 in an attempt to quantify the existing timber resources in the off-reserve areas of the HFZ. The inventory covered plots totalling about 420 ha of the five major ecological zones. In 2004, sixty-seven (67) off-reserve areas scattered within the HFZ identified as off-reserve Timber Utilization Areas (TUCs) were also assessed of its potential timber stocking prior to bidding. A total of 238 ha sample size was covered. Data from these two national inventories were pulled together, edited and their volumes (m^3) and stem numbers generated from the two datasets. Again, official harvesting levels off-reserve between 1998 and 2004 were compiled from the Production Unit of Resource Management Support Centre.

Currently, number of commercial timber species stands at 82 (Affum-Baffoe, 2002) and they have been classified into three depending on the level of exploitation (Hawthorne and Abu-Juam, 1993). These are the Scarlet Star, Red Star and Pink Star. The Scarlet Star is fourteen (14) in number and includes those that have undergone serious pressure from heavy exploitation. Logging has been curtailed for some of the species or it is approved only by permit. The Red Star is also fourteen (14) in number and they are relatively common within the HFZ but under pressure from exploitation as a result of good market. Hence, logging must be controlled in order to sustain their usage. Pink Star species are those that are common and moderately exploited. They are sub divided into two, the Actual Pinks (28) and the Promotable Pinks (26). The Promotables are those Pink species that are barely exploited despite the extensities promotion for their increased exploitation with the view to encouraging their usage. They constitute the bulk of yield that are exploited by Timber Utilisation Contract Holders. All the eighty two species were grouped according to their star ratings for the analysis.

Differences in stocking between 1996 and 2004

Mean volume (m³) per ha for the various stars \geq 30 cm dbh together with their standard errors from 1996 to 2004 is presented in Figure 1. It could be seen that the stocking of all the star groups have been depreciated over the period. However, in spite of the downward trend, there is no significant difference between 1996 and 2004 volume estimates. Figure 2 is a similar graph using stem numbers. It could be seen that stem numbers of the scarlet star \geq 30 cm dbh in 1996 is much higher than that of 2004. An analysis of variance between 1996 estimates and that of 2004 show a significant difference ($P < 0.000$) between the two. A similar downward trend with significant differences ($P < 0.000$) was realized among the pink stars while the red star is just at the threshold with a p-value of 0.057 indicating that all the three groups of timber species have significantly reduced in stem numbers over the period. The trend in the higher diameter classes of the three main groups of timber species (Figures 3 and 4) is not different from all stems \geq 30 cm dbh in both volume and stem numbers except that here, differences in volume per ha for scarlet star species is insignificant even though there is a downward trend from 1996 to 2004. This indicates that though the scarlet star species have dwindled over the period, the higher diameter classes in this group seem to have relatively enjoyed some protection.

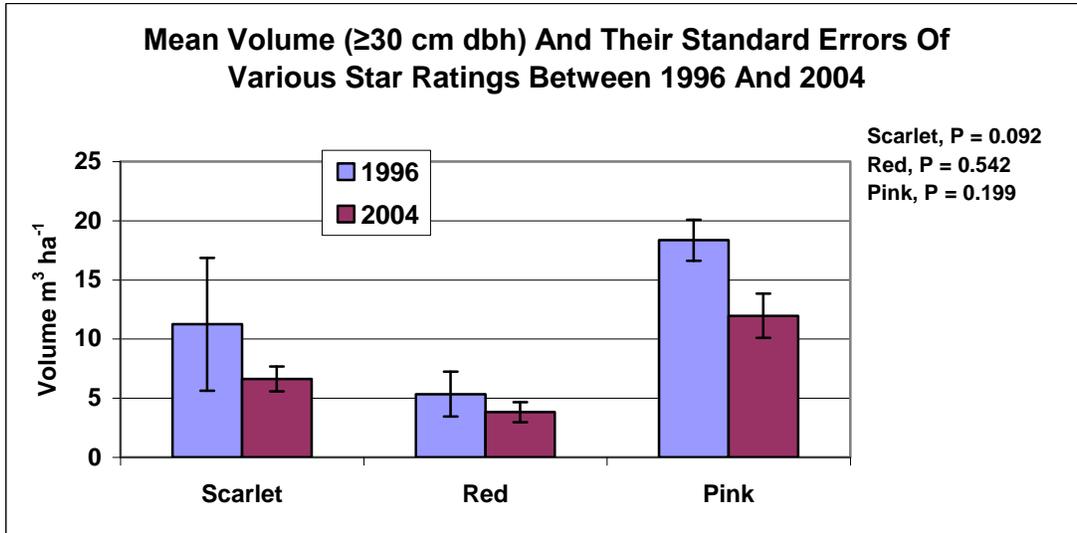


Figure 1: Mean volume (≥ 30 cm dbh) and their standard errors of various star ratings between 1996 and 2004.

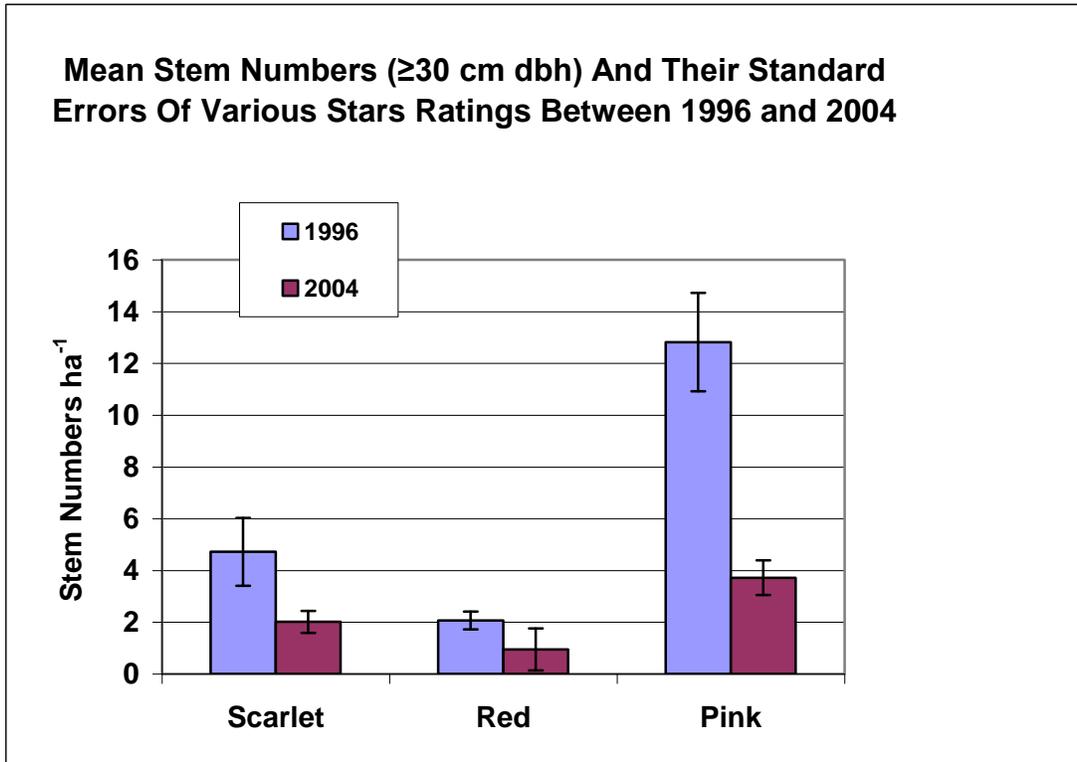


Figure 2: Mean stem numbers (≥ 30 cm dbh) and their standard errors of various star ratings between 1996 & 2004.

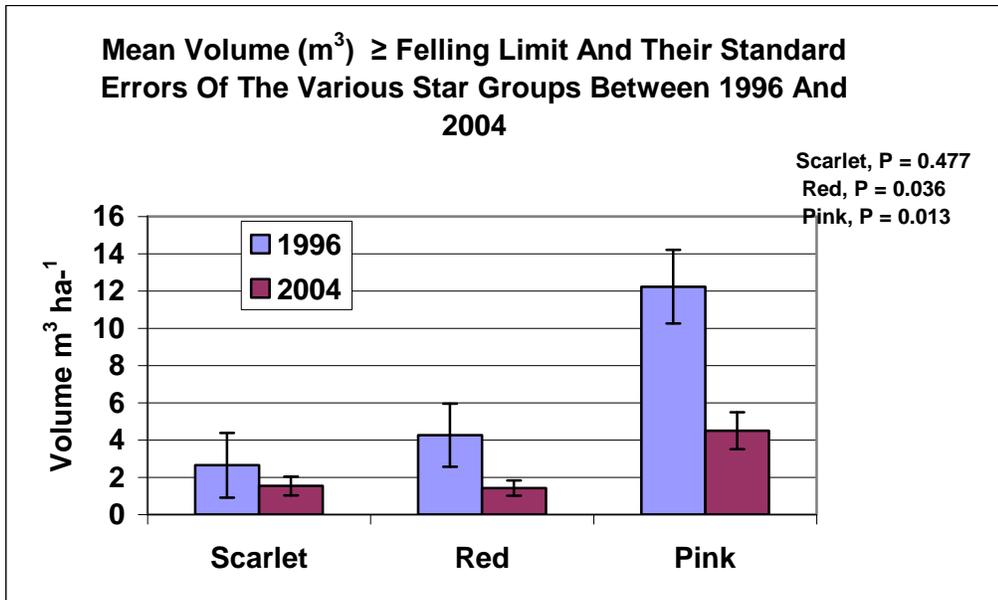


Figure 3: Mean volume (m³) ≥ felling limit and their standard errors of the various star groups between 1996 & 2004.

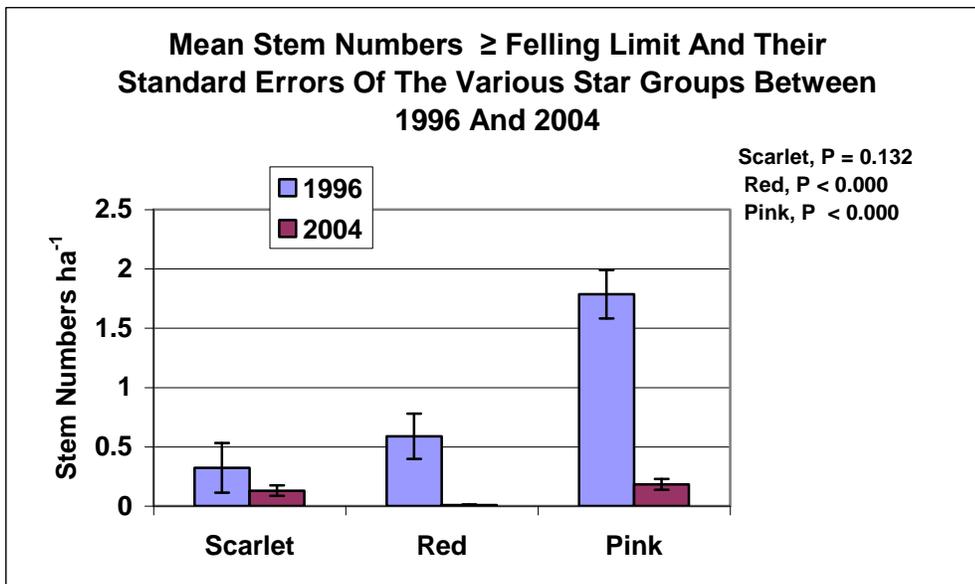


Figure 4: Mean stem numbers ≥ felling limit and their standard errors of the various star groups between 1996 & 2004.

Harvesting levels from 1996 to 2004

Timber harvesting off-reserve that was officially recorded from 1996 to 2004 grouped into various stars is presented in Figure 5. It shows that the scarlet star was heavily harvested (about 380,000 m³) in 1998 but started dropping steeply to less than 150,000 m³ in 2000. The harvesting levels plateau between 2001 and 2002 and then started declining again from 2003 to 2004.

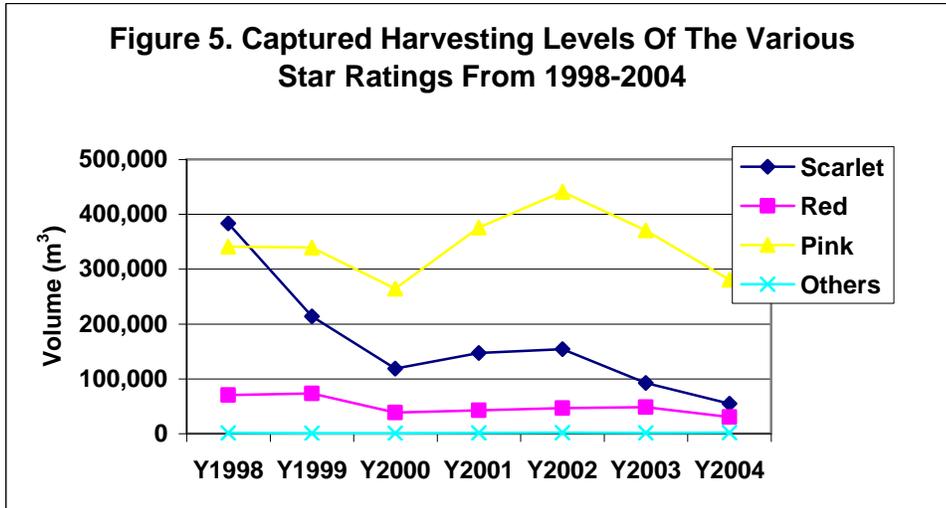


Figure 1: Captured harvesting levels of the various star ratings from 1998-2004.

Harvesting levels of the red star species remained below 80,000 m³ per year since 1998. The graph also shows that the heaviest exploitation among the species group is the pink star, with harvesting levels exceeding 250,000 m³ per year from 1998 to 2004. Figure 5 also depicts a downward trend for all the star groups since 2002.

Standing volume (m³) ≥ felling limit of timber from 1996 to 2005

The standing volume (m³) of the three main star groups from 1996 to 2005 is presented in Table 2. The standing volume is based on net total area within off-reserve of the high forest zone which stands at 5,001,385 ha. The total standing volume ≥ felling limit as at 1996 was 95,667,245 million m³ and this figure reduced to 37.225 million m³ in 2005. It shows a downward difference of over 5.5 million m³ for the scarlet, 14.1 million m³ for the red and 38.6 million m³ for the pinks, over the nine year period giving an overall difference of 58.442 million m³. However, since it was assumed during the calculation of off-reserve AAC that only half of the pinks (30,578,811 m³) would be available for exploitation, the anticipated difference between 1996 and 2005 for the pinks is 8,099,587 m³, giving a cutting rate per year over the nine year period as 899,954 m³.

Table 2: Off-reserve rate of decline in economic timber species over a nine year period.

Star	Standing Volume (m3) ? Felling Limit			Total
	Scarlet	Red	Pink	
1996	13219223	21296400	61151621.93	95667244.88
2005	7652119	7096965	22476224	37225308
Difference	5567103.96	14199435	38675397.93	58441936.88
Cutting Rate/Yr	618567.107	1577715	4297266.436	6493548.542
%AAC			899954	619.2472212

The table indicates that the higher diameter classes of all the economic timber species in off-reserve areas have suffered massive exploitation over the period. The implication of the results is that the timber species are declining at a rate of 6.2 times the anticipated rate (taking national AAC as 500,000 m³).

Table 3: Annual allowable cut (m³) off-reserve between 1996 & 2004.

Star Rating	1996 – 2004 AAC Estimates	Estimated AAC Based on Current Species Ratings
Scarlet Star	157,033	101,544
Red Star	134,614	163,588
Pink Star	208,353	234,868
Total	500,000	500,000

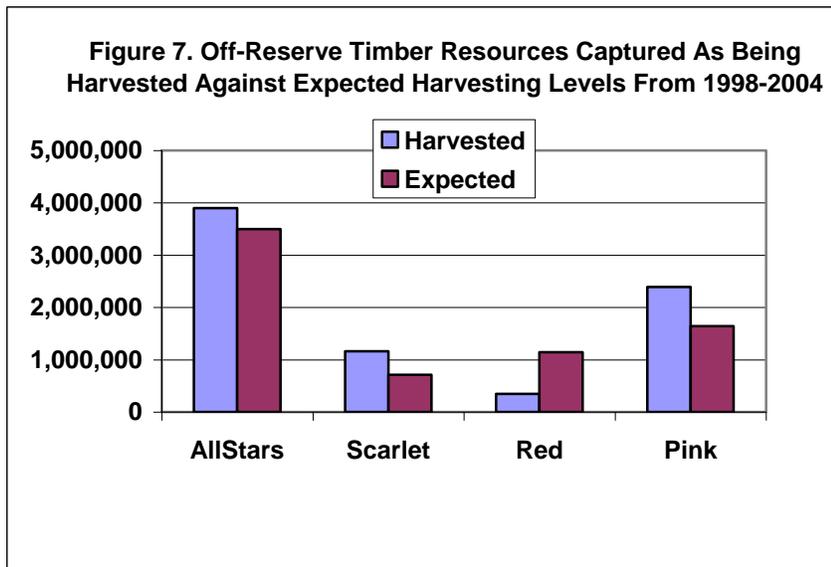


Figure 7: Off-reserve timber resource captured as being harvested against expected harvesting levels from 1998 to 2004.

Comparison between Annual Allowable Cut (AAC) and harvesting levels off-reserve

As part of measures to regulate the utilization of off-reserve timber resources for an appreciable length of time, an off-reserve annual allowable cut of 500,000 m³ was estimated immediately after the 1996 national inventory. This figure was arrived at using a life span of 55 years for all three major commercial timber

species groups. The breakdown according to species groups is shown in Table 3 column 2 while column 3 of the same table shows the adjusted values based on new star ratings (Appendix 2) and the inclusion of all data from the 1996/7 surveys.

Figure 7 is a comparison between total volumes (m³) of commercial trees officially recorded as been harvested in off-reserve area from 1998 to 2004 and expected harvesting levels based on 1996 AAC estimates, within the same seven year period. It could be seen that all the star groups exceeded their harvesting levels except red star which fell below expectation. The graph also shows that exploitation of the pink star species have gone up considerably.

Estimate of unaccounted volume of timber harvested per year

Volume estimates of timber trees lost per year together with those captured by Forest Services Division (FSD) of the Forestry Commission Tree Information Form (TIF) over the seven year period is presented in Figure 8. The TIF contains information (e.g. tree location, species name, volume, etc) recorded on spot of a tree that has been felled as timber by FSD as part of timber exploitation monitoring. The results indicate that more than half of timber harvested (767,104 m³) per year are not reflected on FSD TIFs.

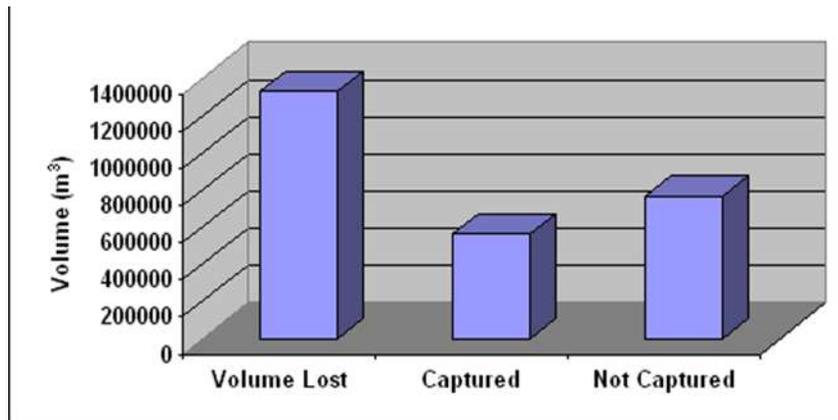


Figure 2: volume estimate of commercial timber lost per year in off-reserve areas.

Discussion and Conclusion

The overwhelming evidence of a decline in commercial timber trees in off-reserve areas as shown from the analysis indicates that the measures put in place in the mid 90s immediately after the inventory have not worked effectively. The estimate of standing volume within off-reserve area used in 2004 analysis could be on the higher side because these estimates were generated from TUC areas off-reserve. These areas were initially identified by various District Offices of the FSD as having appreciable stock of commercial trees before they were mapped out and inventoried, unlike the 1996 inventory in which sample area was the entire HFZ and sampling units were selected randomly irrespective of the stocking. An average rate of 767,104 m³ of commercial timber harvested in off-

reserve areas is not accounted for per year. This is primarily due to illegal exploitation which is very common in off-reserve areas by chainsaw operators. A review of harvesting requirements off-reserve should be done immediately to forestall huge loss of revenue to land owners, farmers, Forestry Commission and all other stakeholders.

The primary objective to include management of off-reserve forest resources in FSD's operations in the mid 90s was to regulate timber exploitation in off-reserve areas, as a means of reducing pressure of commercial timber exploitation within permanent forest estate for a considerable length of time. It was envisaged at that time that a comprehensive plantation programme would be put in place over the period to cater for our wood needs once the off-reserve resource was depleted. A diminishing rate of 6.2 times the proposed rate coupled with the fact that plantation development in this country was delayed until 2001 calls for a stiffer measure if the increasing pressure on the permanent forest estate resources could be arrested. However, we should be mindful of the fact that the high rate of decline is not emanating from timber exploitation alone but predominantly from destruction of remnant forest for new farms and increasing rate of wildfires off-reserve.

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3.2 DECENTRALIZED FOREST MANAGEMENT: THE CASE OF DEDICATED FORESTS AND SACRED GROVES

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Introduction

Early 20th Century, Ghana was richly blessed with forest cover at the beginning of formal forest management. Population was low and consequently, demand for forest goods and conversion of forested lands into other uses was insignificant in relation to the resource. Emphasis on forest management was therefore, placed on creating permanent forest estates to offer conducive micro-climatic conditions for agriculture and to supply timber for the export market. It was therefore, no wonder that the first Forest Policy of 1948 mainly emphasized the sustained supply of timber for the wood industry and promoted the exploitation and eventual demise of unreserved forests.

Owing to a tenfold increase in population with attendant high and diverse demand for forest goods and services, the revised Forest and Wildlife Policy of 1994 makes claim to the development of an integrated national land use plan, aimed at the suitable use of all natural resources, including particularly the dedication of various land categories with potential for nature protection and production of timber and other products under section 5.3.1 of the Policy. Consequently, since 1995 the then Forestry Department has been implementing strategies to explore the possibility of conserving existing forests and expanding tree cover outside the permanent forest estates. Apart from supporting tree planting, one of the strategies has been the promotion of the dedicated forest concept. The Dedicated Forest Scheme seeks to institutionalize community and individual ownership and management of forests outside forest reserves. The basic tenets of the scheme are:

- community or individual ownership and management of land for forestry purposes;
- an approved technically feasible management plan by the Forestry Commission;
- technical, legislative and material support from government, and,
- community control over harvesting rights in accordance with existing legislation.

This paper seeks to explain the circumstances, approach, lessons and recommendations from the Fosu Dedicated Forests as a case study, together with a host of other initiatives on decentralized management of off-reserve forests.

A case study of the Fosu Dedicated Forests

To exhaustively explore the issues on dedicated forests, the Forestry Commission through the Collaborative Resource Management Unit used two community forests in the Fosu District of the Central region as a field laboratory to pick up useful lessons to guide the proper institutionalization of the scheme. Lessons from the study have helped in shaping the policies, legislation and practices on off-reserve forest management in Ghana. The local initiatives towards the conservation of two community forest patches started in the Fosu District of the Central Region of Ghana. In spite of the various threats of deforestation, three communities, namely, Akropong, Worakese and Akenkansu all in the Fosu District, have collectively preserved two patches of tropical high forests, perhaps the biggest chunk of such forest in the country outside forest reserves. The two

forests, named Adwenase and Namtee, cover a land area of 171 hectares and 190.5 hectares respectively.

History of the Fosu Forests

Folklore states that during the turbulent years of tribal conflicts in times past, the two communities migrated to Fosu area to avoid the foraging warlike tribe of Ashanti. The first settlers were few in numbers and occupied the present site of the forests. Having gained some respite, the people proceeded to build up their society. In view of the relative peace they enjoyed, they might have lost their guard. Therefore, following an attack from the Ashantis, it was reported that the settlers incurred heavy casualties. They had to flee from their safe haven and eventually came to settle at their present locations. They, however, gained their peace after a treaty with the Ashantis. In order to remember their lost ancestors, they decided to preserve their former settlement site as a memorial. Subsequently, they adopted traditional rules to prevent anyone from amongst their kith and kin from undertaking any destructive activities in the forests apart from the performance of socio-religious rites at annual occasions.

The preserved forests thus, remained protected from the onslaughts of the factors of deforestation associated with lands outside forest reserves. The collective citizenry regarded the existence of the forests as a symbol of pride and devotion towards their ancestors. No one dared to perform any act leading to the degradation of the forests. It was thought of that any untoward act would attract the curses of the gods, thus, the victim would be afflicted with diseases and misfortune. Perhaps in the absence of formalized institutional forms of punishment for such offences, beliefs were the only means available to the traditional authorities to keep citizens in check. The citizens became less afraid of such threats with increasing enlightenment and the onslaughts of modernization. The people rather, begun to visualize the immense economic potential the exploitation of the forest will confer. This was against the background of the scarcity of fertile lands outside forested areas and the increasing value of timber.

The few daring ones among the indigenous people started encroaching on the forests for farming purposes. Some also sold portions to migrant farmers. Since the forests were richly stocked with prime commercial timber, the leaders of the communities decided to secure some revenue, by offering timber exploitation rights to timber contractors. In summary, the continued existence of the forests remained threatened as a result of the overwhelming pressure to put the forest to economic use. Fortunately, not all the citizenry were happy with the state of affairs. Desirous of ensuring the preservation of such an important heritage, some of them approached the local representatives of the Forestry Department circa 1992 to help them protect the forests in a manner consistent with the original intentions of the community.

The main emphasis of the unit's programme on the Fosu forests has been to:

- determine existing conditions associated with the community forests;
- initiate processes to enable the communities to adequately protect and manage the forests;
- pick lessons to enable the replication of the process in the country as a whole; and,

- provide an enabling environment in terms of policy and legislation to give backing to such forests.

The initial situation

The Fosu forests fall within the Moist Semi-Deciduous (Southeast subtype) forest category, from where the nation obtains the bulk of its timber supplies. It is therefore no wonder that in spite of the encroachments, the forests were still richly endowed with commercial timber trees such as: *Milicia excelsa*, *Entandrophragma cylindricum*, *Triplochiton scleroxylon*, etc. At the start of the programme, some of the fauna identified were snails and, quite rarely, civets. Rivers and streams transverse the forests, thus, re-enacting those humid conditions associated only with tropical rain forests.

Although a few of the inhabitants were carrying out illegal tree felling and cultivation activities, it must be remembered that they were strongly frowned upon. No one dared to undertake such activities in the open. In spite of that, due to the gradual breakdown in traditions, coupled with the economic advantage of appropriating common property resource to the advantage of the perpetrator, it was becoming the norm for others to cash in on the unauthorised exploitation of the forests. Widespread unauthorised use of the forests together with corrupt practices in negotiations for the grant of timber felling rights on the part of the elders and chiefs ensued. The forest, which was regarded as a common property resource, was degenerating into an open access one. In effect, only the elders and those who were cheating on collective resource were amassing wealth at the expense of others. Given the prevailing circumstances, the forests would have been destroyed within a short period of time. It would, however, have brought in its trail a chaotic situation of everyone trying to grab as much as possible of either the land or the produce, since the original low population of the settlements had with time grown into large ones. There would not have been any approved system by which to apportion the forest resources equitably for all the citizenry to enjoy. This would also have contributed to further reduction in the forest cover of the country.

Consolidation Processes

One can cite the inability on the part of the traditional authorities to make interventions, was also partly due to the erosion of their powers as a result of western political structures of administration, which have the advantage of full backing of statutory laws.

Stakeholder analysis

The CFMU, in conjunction with the communities, undertook a situation analysis. As a first step, stakeholder identification and analysis was made. As well as a compilation of information on all those with territorial and functional interests in the forest was made. The jurisdictional powers, roles, responsibilities and rights of each stakeholder were compiled.

Sensitization and Problem Analysis

A forum for engaging in dialogue with the stakeholders was created. One of the most difficult stages was in sensitizing the people to appreciate the problems on the ground. To constitute appropriate forums for disseminating and receiving information proved elusive. As usual, the first point of contact for such projects in a typical set-up like that is the chief, elders, assemblyman or the unit committee chairperson. Beyond sensitization

stage, a problem analysis based on the future scenario for the forest given the threats was simulated for all to appreciate. Suggestions for reversing the problem were then invited.

Goal Setting, planning and implementation

The people, first of all, agreed to commit themselves to restore the original forest cover and to reverse the forest degradation process. To achieve these, they outlined the following steps as a guide:

- Resource assessment and social surveys;
- Forest management planning;
- Forest operation execution;
- Resource mobilization;
- Agreements on benefits and responsibilities; and,
- Monitoring and Evaluation

The different stakeholders within the society were assigned roles, and responsibilities with correspondent benefits. Some of the locals were trained in species identification and enumeration to lead their people to inventory the forests. Based on the inventory data, series of management planning formulation sessions were held and culminated in the first community prepared forest management plan in Ghana. The plan specifies zones, operations, benefit sharing, roles & responsibilities, monitoring mechanisms and revision procedures. Annual programme of work is always drawn up to guide implementation of activities. Apart from the elders who exercise the ultimate authority over decisions, community forest committees were set-up to supervise daily activities. Some natives have offered themselves as 'volunteers' to assist in executing operational activities.

Outcomes

The result of the wholesale adoption and implementation of the forest management plan is that there has been substantial improvement in the condition of the Fosu community forests. Illegal farming and logging has been completely eliminated. The incidence of wildfires has reduced to minimal levels.

Today, the forest cover has reverted to the initial boundaries of the forests as originally set aside by the communities. Subsequent inventories in recent times indicate gradual increase in the stocking density of trees. The severely degraded portions have been planted up with both indigenous and exotic species, such as *Triplochiton scleroxylon* and *Tectona glandis* respectively. To cater for the domestic needs of the community, non-timber forest products (NTFPs), such as canes and *marantaceae* (food wrapping leaves) have been cultivated and are being harvested. Wildlife (flora and fauna), which hitherto could not be found, is now being sighted in increasing frequency. Socially, all the people are now at peace. Revenues accruing from forest management activities have been paid into a bank account and being used to fund forest management activities.

The uniqueness of the programme drew both local and international visitors to the site. In terms of visiting dignitaries, one can count Ministers of State, the then Chief Conservator of Forests, and several important people from countries such as Cameroon and Uganda. Also, the programme has been used as the subject matter for various academic studies. Several projects have been sited there. One can count projects

sponsored by CIFOR, IUCN and most notably DFID. Owing to the increasing number of visitors, it is anticipated that a burgeoning tourist industry would materialize within the foreseeable future.

Lessons

The lessons learned out of this programme can be categorized at the three levels of forest management, namely:

- Forest policy and legislation;
- Strategic and operational forest management planning; and,
- Forest operation implementation and monitoring.

In terms of policy input, this programme gives credence to the fact that communities can viably manage permanent forest areas. This represents what is truly referred to as community-based natural resource management. Plans are therefore afoot to expand the scheme as a viable option to government reservation. It is foreseen that any future policy revision will place emphasis on community managed forests.

Conducive policy environment which acts as incentive for communities to initiate the process is the best approach to ensuring success in the scheme. Unclear legal regime has the potential of promoting and prolonging conflicts amongst those with rights over the forest.

Through the case study and others such as the GTZ sponsored 'legal framework on collaborative forest management in off-reserve areas', several proposals have been made to revise legislation to support dedicated forests. Currently, the only notable legislation which appears to enforce the rights of dedicated forest owners is Act 617, the Timber Resources Management Act 617 (Amendment) Act, 2002, which states under Section 1 (3) (b) that "No timber rights shall be granted in respect of land with any timber grown or owned by any individual or group of individuals". This provision at least gives some respite since government shall not arbitrary grant timber rights over recognized dedicated forests. This is to serve as an incentive and to put the message across that communities and individuals stand to receive all the benefits that are due if they invest their energy in managing dedicated forest. For Fosu, the CRMU is currently facilitating the use of the Logosol Mobile Mill in timber conversion with trees released on permit by the Forestry Commission.

Also, government and the district assemblies are to provide incentives to communities that embark on such ventures. In view of these new measures, requests have started streaming in from communities to the CFMU to help them also start such ventures. In the Central Region, for example, three communities with not less than 14 sacred groves have approached the CRMU to assist them to convert them into dedicated forests. Already, some NGOs such as RUDEYA have picked up the initiative and are collaborating with the CRMU to support the conservation of a sacred grove at Adwumakasekese in the Ashanti region.

At the forest strategic planning level, the modus operandi for formulating such community managed forests is now known. Another important outcome is the

requirement for district assemblies to incorporate district forest plans as part of district development plans. These plans will serve as a guide for the protection, management and development of forest resources within the entire district including both reserve and off-reserve forests.

In terms of implementation of activities, the lesson is that given a little training and facilitation, local communities can undertake their own forest management programmes. The professional comes in only on the rare occasion that the unusual is required such as training in new systems. At the broader level, formal structures of governance and traditional structures should reinforce each other in the implementation of dedicated forests

Recommendations

- There is the need for political commitment to the dedicated forest provisions in the Forest and Wildlife Policy.
- The Dedicated Forest provisions in the draft consolidated forest act must be revised and passed into law.
- Structures such as community resource management committees must be reinforced and their capacity built to take charge of dedicated forests.
- In terms of meeting certification standard, dedicated forests offer the best bet for off-reserve timber since they can more easily satisfy the tenets.
- The Forestry Commission must establish an Outside Forest Reserve Management (or Forest Extension) Unit to cater for dedicated forests as well as trees on farms and woodlot plantations.

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3.3 COMMUNITY ACCESS TO TIMBER TREES ON FARMLANDS TO IMPROVE LIVELIHOOD AND MINIMIZE ILLEGAL EXPLOITATION: A CASE STUDY

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Background

The wood based industries of Ghana have made significant contributions towards the socio-economic development of the country. This is evidenced by the fact that timber and its associated products constitute an important foreign exchange earner for the country. In Ghana, concessionaires and owners of firms in the timber industry who live in the cities and other urban areas harvest and process timber. However, most of these products are exported or sold in the urban areas to the neglect of the domestic market, particularly in the local communities. Therefore, people in the local communities who live near the resource do not have access to timber products neither do they benefit from any major income from the harvesting of timber or from the royalties which are paid by the concessionaires since these go to the paramount and other chiefs. As a result, though these local communities who live near the forests are the best people to protect the forests from damaging activities (including illegal logging), they care little about what happens in the forests.

By constitutional provisions, revenue from logging operation is shared among Forest Services Division of the Forestry Commission, District Assemblies and Stool Land owners principally the paramount and other local chiefs; very little if any, benefits the ordinary members of the local community.

Thus, due to the need to have lumber and income to support their livelihood, illegal logging has increased as local people desperately attempt to compete with concessionaires to gain access to forest resources. In Ghana, chainsaw logging and milling is an important enterprise among the deprived rural communities but the operation as a whole has been blacklisted in Ghana because their working methods have been characterized with wasteful practices that are environmentally unfriendly. Again, the milling accidents are very common and fatal and are not conducted under any standard working procedures. Despite a decade of the ban on chainsaw lumber production in Ghana, the production still persists and is on the ascendancy. This has been detrimental to the national economy due to non-payment of stumpage and other statutory fees by chainsaw operators. Since 2003, about 12.8 million US dollars of forest revenue are lost annually through illegal chainsaw activities (World Bank, 2005). Ofosu-Asiedu *et al.* (1992) in ITTO Project PD 74/90 established that for every tree that is felled in Ghana, 50 % of the tree volume is left in the forest in the form of branch wood, crown wood and stumps. Although trees on farmlands are harvested in Ghana, much benefit does not get to the farmers who cater for the trees.

An ITTO Pre-project (PPD39/02 (I)), that used portable mills, concluded that the collecting and processing of logging residues was socially acceptable, economically viable and environmentally friendly to collect and process logging residues by local communities. During the implementation of this project, some members of the local

communities (both beneficiary and non-beneficiary communities) expressed the desire for trees on their farmlands to be extracted and processed into lumber. Their main reason was that timber companies who operate on their farmlands do not pay any compensation to them for the crops they destroy during their activities. Because of this, some of the farmers were either burning timber trees on their farms or felling them to rot since there is no definite policy on the extraction of trees on farmlands by communities. Meanwhile, these communities travel to the cities to acquire timber for their constructional purposes and the manufacture of school/room furniture. So having been successful in the pre-project, the local communities requested for a full project which will consider the processing, utilization and marketing of not only logging residues but trees on their farmlands from which they can derive some revenue .

In Adam *et al.* (2006), of 357 households in forest communities in Ghana interviewed, 31 % obtained wood for their construction from chainsaw operations, 28 % got it from farmlands and 0.6 % obtained wood from wood residues in logged areas. This, compared to 48 % who indicated they obtain their wood from the conventional sawmills. In terms of difficulties these households face in getting the wood, 10 % mentioned transportation of wood arising from the fact that, most of these mills are located far away from these local communities. Coupled with the high poverty level of these communities it is quite difficult for them to be able to afford these transport charges. In addition to this, 9 % indicated fear of arrest and fines, which probably pointed out that they obtained their wood from chainsaw operators whose activities have been banned. Therefore, it is quite obvious that local communities face enormous difficulties in getting wood for their uses.

In the same study of Adam *et al.* (2006), more respondents earn income in chainsaw operations than in large scale logging activities in these local communities, though few households in these local communities succeeded in earning income from these activities. For instance, out of 360 households in the local communities interviewed, only 22 earned incomes from chainsaw operations compared with 9 that earned income from large scale logging. Comparatively, earnings from chainsaw operations was higher than that from large scale logging activities for these local communities, though the frequency of earnings are different in these two activities. Further, annual income from chainsaw operations as a share of respondent's annual income from primary occupation was fairly significant, particularly for households that participated in this chainsaw activity. This again points out to the fact that local communities are not deriving the desired benefits from these logging activities, though this could be a significant source of livelihood to them. This project is, thus, being implemented to enable larger population of these local communities to increase the benefits they derive from these timber resources.

With the involvement of local communities in legalized production of logging residues using refined portable and efficient machines, local employment will be generated and the sale of the sawn products will generate revenue to improve the local economies. These benefits will directly go to the local communities and will affect their social and economic lives. Subsequently, another way of stimulating the interest of local communities to protect forest, is to enable them have some income from the forest while at the same time having timber products for their needs.

Project Objectives

Developmental Objective

- To increase the benefits that local communities derive from forest resources and enhance their contribution to sustainable forest management.

The development objective emphasizes the point that forest resources of Ghana are vital for the livelihood of the local communities and as a result they are also key stakeholders in the sustainable management of these resources. This is in compliance with the development goals of Ghana as stated in the GPRS document.

Specific objective

- To promote processing of logging residues and trees on farmlands and thereby, provide increased timber products as well as generate employment and income to local communities and some individual farmers.

With local communities being major stakeholders and main beneficiaries of the forest resources, the specific objective focuses on working with them to extract, process and utilise lumber and lumber products from logging residues and trees on farmlands, which will give them the confidence and the zeal to assist both the timber industry and the Forestry Commission in the sustainable management of the Ghanaian forest. Their activities and outputs could demonstrate to other communities to learn to also become beneficiaries of the forest.

Project strategy

Inventory of trees on farmlands

To ensure the sustainability of the project and to ensure that the owners of trees that are to be processed are known, inventory of trees on farmlands of individual community members was undertaken. This inventory listed the owner of the farm and the species and their dimensions on the farmland.

Participatory planning and monitoring

Inception workshops: - Lack of communication between project planners, implementation agencies and communities ranks high as a major cause of failures in many projects. Policies and plans designed must always be clearly understood by community members and representatives so that they can be responsive to project needs and desires.

To ensure sustainability of the project and ensure that the communities had ownership of the project, an inception workshop was organized for the participating communities, Forest Services Division staff as well as concession holders who have logging residues on their concessions in the project areas. The inception workshop, a) briefed the stakeholders about the project, b) specified the benefits to be gained from the project, c) negotiated and agreed on the roles and responsibilities and, d) explained the modalities of operation of the project.

MOUs and working rules

Following this workshop, MOUs were signed with the local communities represented by the local chiefs and the Assembly men in order to commit and entice the stakeholders to the project. Financial benefits in the form of sale of the lumber to be produced from trees on farmlands or logging residues for the local communities were jointly negotiated between project team and community members, agreed on and detailed out in this MOU documents. The MOUs were also signed with Forest Services Division and Concessionaires who are collaborators of the project. In addition to these, rules and regulations meant to serve as the working document or guiding principles to enhance the execution of the project's activities were also drawn in a participatory manner with the local communities. The MOUs requested local communities to select trainees for the Logosol processing machine and also to select people to be responsible for the marketing of the lumber as well as trustees for the management of the finances.

Acquisition of Logosol processing machines

Logosol machines that are to be used for processing of trees and logging residues have been acquired from Swedish manufacturers.



Figure1: Milling of logs using Logosol machines.

Capacity building

The capacity of people selected as trainees for the Logosol stakeholders have been built on the operation and maintenance of the portable log milling machine.



Figure 2: Operators under practical training on the use of Logosol machines.

The local communities are to be trained in the erection of sheds to air dry the lumber that will be produced. They will also be trained in the basics of marketing of the tree products.

Impacts of the processing, utilization and marketing of lumber and lumber products on the livelihood of the local communities

The Impact of the project on the livelihood of the local communities will be determined in the course of the project. As at now, the baseline information on the socio-economic and livelihood activities is being established through surveys and focus groups with project communities.

Governance

Good governance will be promoted by the project through the identification of gaps in current policies and legislations, especially as related to the processing of logging residues and trees on farmlands. Recommendations on legislations and policy framework would be made to benefit local communities.

Results

Environmental Aspects

Data on trees on farmlands and logging residues

The species in abundance on farmlands in the project areas are shown in Table 1

Table 1: Some inventory Results.

Community	Trees	Most abundant species	Farmers	DBH
Twifo-Kyebe (Dunkwa district)	190-440	<i>Terminalia ivorensis</i>	43-79	50-150
Japa (Dunkwa district)		<i>Terminalia superba</i>		
Ankasie (Asankragwa district)		<i>Ceiba pentandra</i>		
Dominase (Asankragwa district)		<i>Alstonia boonei</i>		
Total		1,250		
Average	313	<i>Pycnanthus angolenses</i>	61	
		<i>Bombax spp.</i>		
		<i>Petersianthus macrocarpus</i>		
		<i>Antiaris toxicaria</i>		
		<i>Triplochiton scleroxylon</i>		
		<i>Albizia ferrugenia</i>		

It was also determined that there is an average of 313 trees on farmland per community with an average dbh of 75 cm. There is also an average of 61 farmers who own these trees. Some results of the inventory are attached as Appendix 1.

The risk that is being faced is that since there is no yield regulation and each farmer will want to maximise his or her financial gains, it is possible that more trees per year will be felled than what environmentally might be permissible. The project will therefore conduct an environmental impact assessment to determine the thresholds for the trees that need to be felled and which will promote sustainability.

Economic aspects

From the specification of the benefit sharing agreed upon in the MOUs, it is expected that in the long term, participating local communities will earn 70 % of their income from this activity of processing logging residues and trees on farmlands. There will be over 80 % savings on transport charges to travel to the wood processing markets to obtain wood for household use by local communities. It is expected that they will make an average of US\$ 3500 per month for the marketing of the products to be made from this project. This is based on the fact that the manufacturer of the Logosol Mobile Mill estimates that it can process 3–4 trees per day without specifying their dimensions. However, in Ghana, it is estimated that trees on farmlands have a minimum merchantable volume of 2.61 m³. Assuming that the Logosol will have a minimum 50 % lumber recovery even under difficult field conditions, it is estimated that 1.306 m³ of lumber per day could be obtained. However, during the pre-project phase, lumber produced under field conditions sold for ₵40,000 for lumber of .0331 m³. Therefore, for lumber volume of 1.306 m³ per day, an amount of ₵1,575,000.00 could be achieved; hence in a month (20 minimum working days) a total of ₵31,500,000 (26.12 m³) could be realized, which translates into US\$ 3,500 at an exchange rate of US\$ 1 to ₵9000.00.

Table 2: Benefits to be accrued.

TREES ON FARMLANDS		LOGGING RESIDUES	
Beneficiary	% of benefits	Beneficiary	% of benefits
Farmer	40	Local Chief	20
Local Chief	10	Paramount Chief	20
Paramount Chief	10	Community	30
Maintenance	15	Maintenance	20
Community	15	Miscellaneous fund	10
Miscellaneous fund	10		



Figure 3: Stacked lumber produced with Logosol machine.

Social aspects

The project has trained and employed fourteen (14) chainsaw operators, who have admitted being involved in illegal felling activities, in the operation and maintenance of the Logosol machines thus, reducing the illegal business in these communities. The activity will also employ 10 % of local communities through their involvement in diverse activities, from processing to carrying of processed lumber to being involved in the sale of processed products and thus, reduce rural unemployment and minimize rural-urban drift. In addition, people will be provided with basic skills in marketing and accounting. The project will make available in the local communities lumber and other processed products, which hitherto had been completely lacking. The local members, having also realized that they have a lot to gain from trees processed, are prepared to support the process. Thus, for every tree processed, every member in the community stands to benefit and thus, they have enough reasons and incentives to protect and prevent illegal operators from processing trees on their farmlands. In addition to this, the externalities that would be generated towards the environment is that farmers attitude towards trees on farmlands would be changed towards proper management of trees on their lands to ensure that they get the benefits on sustainable basis and therefore, maintain good environmental/forest health.

Expected outputs

- Output 1: Processing of logging residues and trees on farmlands into products determined
- Output 2: Capacity of local communities in processing, utilization, and marketing of lumber and lumber products built
- Output 3: Livelihood impacts of the processing, utilization and marketing of lumber and lumber products determined
- Output 4: Manual on extraction, processing and utilization of trees on farmlands and logging residues published
- Output 5: Governance and policy implications for the extraction, processing and utilization of logging residues and trees on farmlands established

Lessons

- Collaboration of the forest services division who are known by the local communities went a long way to make the project to be accepted by the communities.
- The inception workshop held had created awareness of the project and its expected benefits in the project areas.
- The encompassing benefit sharing arrangements which are endorsed by all stakeholders including traditional authorities and local community representatives has also increased community participation in the project.
- The project has been accepted by local communities because they know it has a direct bearing on their livelihoods.
- The project design might have overlooked some field aspects, which are very important or any other aspect which are deemed important would be welcomed and brought to the attention of the project team for consideration.

Recommendation and Conclusion

Recommendation

- Participatory planning of projects through various means such as inception workshops should be mandatory for all projects in the forestry sector since it allows local communities to understand and contribute significantly to project implementation.
- Projects implemented in local communities should have a component that seeks to improve their livelihood, i.e. to have clear potential to deliver tangible and short-term benefits such as lumber and other timber products (Blay *et al.*, 2004.)
- The model of collaboration between FORIG and Forestry Services Division, which has so far contributed to the success of the project, could be replicated in other projects in the forestry sector.

Conclusion

This project, if successfully completed, could serve as an antidote to illegal logging activities while at the same time promoting sustainable livelihood in forest dependent local communities. Since illegal logging has been described as a bane for the forestry sector and the GPRS stresses on the improvement of livelihood for local communities, it behoves on everybody in the sector to contribute to the successful completion of this project so that it could be replicated in other places.

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3.4 THE SHARING OF FINANCIAL BENEFITS FROM TIMBER TREES IN GHANA: ISSUES OF EQUITY AND ECONOMIC INCENTIVES WITH EMPHASIS ON THE OFF-RESERVE SITUATION

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Introduction

This paper analyses the economic incentive structure and equity of the current benefit sharing arrangement pertaining to natural timber. Based on the analysis, the paper outlines two models for future benefit sharing and management arrangements, with emphasis on the off-reserves. The paper is structured as follows: it commences with an overview of the present benefit sharing and how it has developed over time. It then discusses the issue of equity and the economic incentives for tending timber trees that it offers. The final section outlines two models for the way forward and briefly discusses their pros and cons. The paper draws on preliminary results of an on-going PhD research project on benefit sharing and economic incentives for on-farm management of timber trees carried out by the first author.

How are the financial benefits from timber shared?

An overview of benefit flows

Figure 1 summarises the main financial benefit flows from timber. The right hand side of the figure illustrates the sharing of benefits that is based on rights (property), i.e. laws, custom and conventions. That is the *de jure* benefit sharing, which will be further elaborated in the next section. However, not only rights determine the sharing of benefits. Ribot and Peluso (2003) define access as “the ability to benefit”. Access includes rights (property) as well as other means by which a person or institution is able to appropriate economic benefits, e.g. through technology, capital, markets, labour, knowledge, authority, identities and social relations (Ribot and Peluso, 2003). Access thus, considers “abilities” vis-à-vis rights, and it is access that shapes the *de facto* distribution of economic benefits.

In Figure 1, the value of the timber resource is equal to the economic rent, which is the financial value of the standing annual harvest (on stump). In Ghana, a large proportion of the annual harvest is provided for by chainsaw operators, who do not pay any formal fees, and hence, this harvest does not result in any formal revenues for distribution. Birikorang *et al.* (2001) estimated the annual chainsaw lumber consumption to be approximately 460,000 m³, equivalent to approximately 1.7 million m³ of raw wood. Hansen *et al.* (2007) estimated the actual timber harvest in Ghana to be approximately 3.3 million m³, i.e. chainsaw lumber constitutes more than half of the harvest. Little is known about how the economic benefits are distributed along the commodity chain, which may involve farmers, chainsaw operators, carriers, transport agents, organizers, whole sellers and retail sellers. It may be hypothesized that the major profits are “downstream”, i.e. in transport and sale and not in the initial stages (the farmer and the chainsaw operator), but no empirical data is available to either support or reject it.

Moreover, timber companies (formal operators) appropriate a share of the timber value. First, a share of the harvest by the timber operators goes unrecorded, i.e. without payment of stumpage fees. Hansen *et al.* (2007) estimated this share to be in the order of 600,000–700,000 m³ per year. Secondly, various studies have documented that the forest fees are below the actual willingness to pay for the timber, see e.g. Birikorang *et al.* (2007), Richards (1995) and Treue (2001). This means that a share of the actual value is distributed to the industry, rather than being captured in the form of forest fees. The low pricing of the resource is suspected to be a result of industries’ influence (“lobbying”) on the forest fiscal regime (policy and implementation).

It follows that the *de facto* distribution is quite different from the *de jure* distribution, i.e. the present benefit sharing is probably capturing less than half of the actual value distributed annually. In the following sections, we focus primarily on the *de jure* distribution but return to this fundamental problem in the benefit sharing arrangement in the last section of the paper.

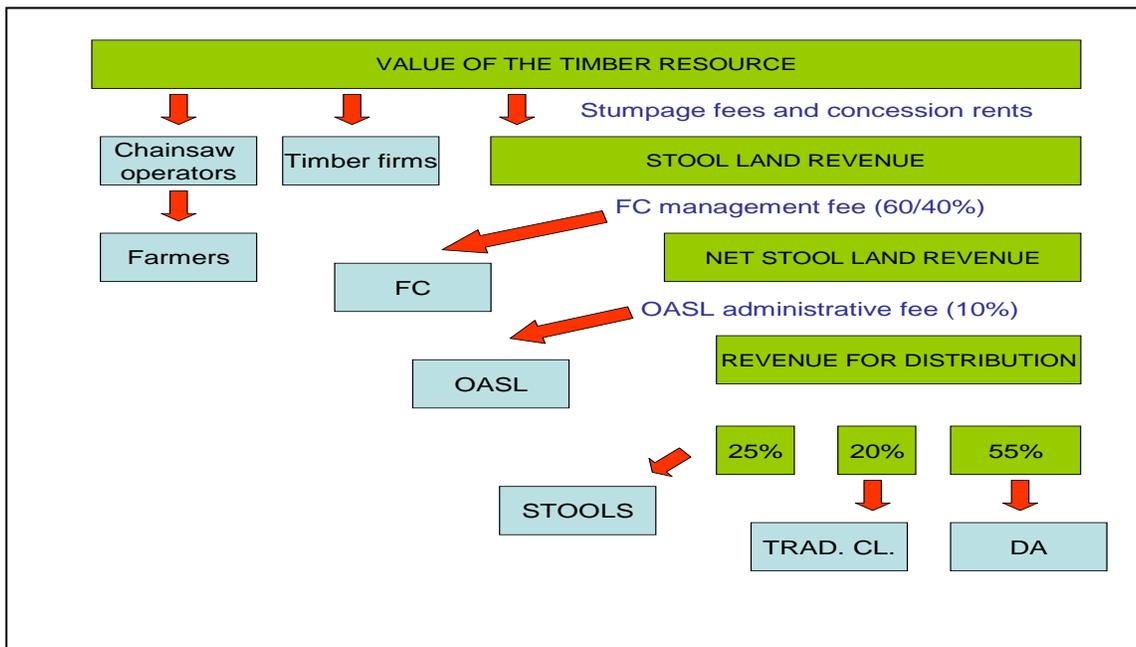


Figure 1: A simplistic illustration of the major benefit flows and recipients of timber benefits in Ghana (off- and on-reserve)

Current rights to financial benefits from timber

The arrangement

The present benefit sharing arrangement is guided by the Constitution of Ghana of 1992, which states that:

“Ten per cent of the revenue accruing from Stool lands shall be paid into the office of the Administrator of Stool Lands to cover administrative expenses, and the remaining revenue shall be distributed in the following proportions: twenty-five percent to the Stool through the Traditional Authority for the maintenance of the Stool in keeping with its status; twenty percent to the Traditional Authority; fifty-five per cent to the District Assembly, within the area of authority of which the Stool lands are situated” (Constitution of Ghana, 1992; 267 (6)).

The Constitution does not define “stool land revenue”; this definition presumable being referred to lower level legislation. For timber, the Timber Resources Management (Amendment) Regulation, LI 1721, defines the stumpage fee (Section 21(3)) and the concession rent (Section 27) as “revenue accruing from Stool lands”. It is worth noting that the legislation is remarkably silent about the sharing of the proceeds from the Timber Rights Fee (TRF), introduced with competitive bidding for timber rights through the Timber Resources Management (Amendment) Regulations (LI 1721) in 2003. For unknown reasons, TRF revenues have not been considered as stool land revenue and the proceeds have not been shared in accordance with the Constitution¹. The stumpage fee is a species-specific volume based fee, charged on each cubic meter of timber felled. The concession rent is a fixed annual hectare based fee, (ref. Timber Resources Management Regulations, Schedule 4)

The Forestry Commission deducts 60 %² of the collected stumpage fee revenue from forest reserves and 40 % of the revenue from the off-reserves as payment for its regulatory and management functions. The off-reserve deduction was reduced from 60 % to 40 % in 2002 to reflect the fewer regulatory functions and lower management intensity off-reserve, compared to the forest reserves (Bamfo, 2005). The *de facto* distribution of gross stumpage revenue off- and on-reserve is summarised in Figure 2. It should be noted that no management fee is deducted from the concession rent revenue. The FC’s management fee is charged with reference to the Timber Resources Management Regulations, 1998, which state that:

“There shall be paid to the Forestry Department [now Forestry Commission] for timber management services, such amounts as shall be determined by the Minister in consultation with the Forestry Commission, Forestry Department and the Administrator of Stool Lands in respect of Stool lands” (Timber Resources Management Regulations, 1998 (LI 1649); s. 26 (1)).

As will be further discussed in Section 2.3, there is a long tradition in Ghana to deduct expenses for regulatory and management services from the gross stool land revenue. What we find peculiar with the current model is that it has legal basis at the LI level. It appears more appropriate, if the provision that authorizes the Minister to determine the management fee had been placed in the parent law (the Timber Resources Management Act) rather than in a LI issued by the very same Minister.

¹ For 2004, it appears as if the revenue from Timber Right Fees (natural timber) has been transferred in full to the GoG Consolidated Fund. For 2005 and beyond there have been insignificant, if any, revenues because the process of competitive bidding for natural timber rights has been stalled. However, the issue is important in relation to the sharing of future timber revenues. The Forest Fiscal Reform Support Group has proposed the following distribution of revenue from Timber Rights Fees: 25 % GoG Consolidated Fund, 12.5 % industry incentive programme, 25 % afforestation programme, 37.5 % forest owners (FSDP-II, 2004).

² Information received at the time of writing of this paper (September/October 2007) suggests that the on-reserve management fee has been reduced to 50 %, but official confirmation is still pending

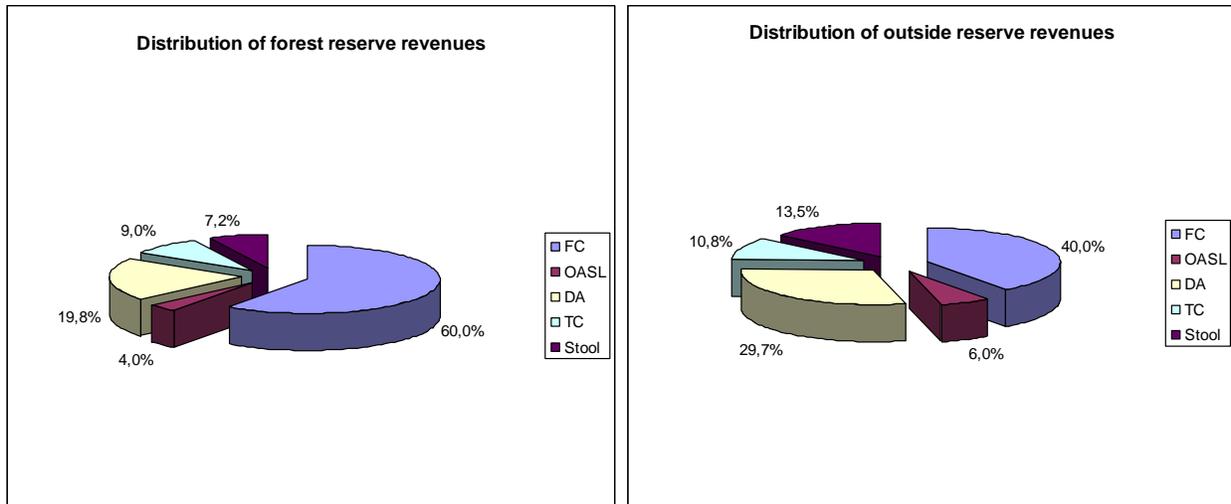


Figure 2: the current sharing of timber revenues among beneficiaries in forest reserves and off-reserves, respectively

Use of timber revenues, importance and accountability

Table 1 summarises the timber revenues that have been distributed among the beneficiaries during the period 2003-6. The information has been compiled from the six-monthly Stumpage Distribution Reports issued jointly by the Forestry Commission and the Office of the Administrator of Stool Lands. The total timber revenue from stumpage fees and concession rents is currently about 80 billion cedis annually (approximately US\$ 9 million). It is largely dominated by revenues from the stumpage fee; the concession rent only contributes about 3 % of the total revenues. Note also the downwards tendency of the off-reserve revenue; in 2006 the off-reserves only accounted for 18 % of total timber revenues, amounting to less than US\$ 2 million.

Table 1: The distribution of timber revenues to beneficiaries 2003-2006 in cedis.

Beneficiary	2003	2004	2005	2006
On- and off-reserves total				
Stools	5.302.368.838,03	8.187.085.088,77	8.163.504.208,26	8.479.672.121,30
Traditional Councils	4.178.992.041,64	6.478.409.208,52	6.528.938.927,58	6.708.183.462,97
District Assemblies	11.378.979.994,58	17.692.993.758,80	17.895.580.640,83	18.279.510.993,30
OASL	2.317.815.652,69	3.595.387.561,79	3.620.891.530,74	3.718.596.286,40
Forestry Commission	26.182.826.148,55	39.713.986.831,97	42.482.408.251,81	45.842.277.971,50
Grand total	49.360.982.675,49	75.667.862.449,85	78.691.323.559,22	83.028.240.835,47
On-reserves				
Stools	3.306.109.134,43	4.770.294.383,09	5.474.669.463,52	6.225.255.018,10
Traditional Councils	2.644.887.307,54	3.830.830.734,47	4.391.091.627,79	4.952.992.532,41
District Assemblies	7.273.440.095,75	10.512.486.254,78	12.075.502.576,42	13.495.910.335,95
OASL	1.469.381.837,52	2.123.734.596,93	2.437.918.185,30	2.741.573.098,50
Forestry Commission	21.174.964.047,05	30.706.100.176,80	35.496.583.482,05	39.944.994.361,28
Total on-reserve	35.868.782.422,30	51.943.446.146,06	59.875.765.335,08	67.360.725.346,24
Off-reserve				
Stools	1.996.259.703,60	3.416.790.705,68	2.688.834.744,74	2.254.417.103,20
Traditional Councils	1.534.104.734,10	2.647.578.474,05	2.137.847.299,79	1.755.190.930,56
District Assemblies	4.105.539.898,83	7.180.507.504,02	5.820.078.064,41	4.783.600.657,35
OASL	848.433.815,17	1.471.652.964,86	1.182.973.345,44	977.023.187,90
Forestry Commission	5.007.862.101,49	9.007.886.655,17	6.985.824.769,76	5.897.283.610,22
Total off-reserve	13.492.200.253,19	23.724.416.303,79	18.815.558.224,14	15.667.515.489,23

Source: FC/OASL Stumpage Distribution reports.

The data presented here has been corrected for calculation errors in the Stumpage Distribution Reports, and therefore do not match with the information in the reports.

What do the beneficiaries use their share for and how important are the timber revenues, and are the stakeholders upwards and downwards accountable for the received funds?

FC considers its share as internally generated funds (IGF). The revenues are used for the general operation of the organisation. According to the Forestry Commission's Annual Reports for 2003 and 2004, the stool land revenues contributed 3.7 and 4.3 billion cedis, respectively to overall FC income, which is about 40 % of the total IGF and about 20 % of the total FC expenditures for these years (FC, 2004; FC, 2005). It is noted that the figures do not correspond with the revenue figures presented in Table 1. Further research will look into these discrepancies. The Forestry Commission is in principle upwards and downwards accountable for the revenues. Yet, the FC Annual Reports are issued with considerable delays, and as noted above, the accounting/reporting is not consistent.

The District Assemblies (DAs) consider the timber revenues as IGF. The revenues are used to finance the general operation of the DAs (recurrent costs). A small share may be used for development projects (capital projects), but preliminary results of on-going research suggests that the share is small. Moreover, such development projects appear not to be targeted towards the forest communities where the revenues originate. Capital projects (development projects) are primarily funded from the District Assemblies' Common Fund. The results further suggest that in districts with rich forest resources,

timber revenues may constitute 30-40 % of the annual IGF expenditure³, i.e. a very significant revenue source. DAs are in principle downwards and upwards accountable. Downwards to the Finance Committees of the DAs and the General Assemblies, upwards to the Regional Government and Central Government audit system.

The Traditional Councils (TCs) follow a similar pattern; preliminary results suggest that the timber revenues are primarily used for recurrent costs like allowances, water, electricity, telephone, costs of ceremonies/festivals. Costs of court cases (land litigations) are also frequently mentioned. Where capital projects are implemented, they are typically related to construction and renovation of palaces. TCs rely heavily on stool land revenue; apart from a small government contribution this is the sole revenue source. Hence, in forest rich areas, timber constitutes a very important revenue source. TCs are downwards accountable to the constituents. They are upwards accountable towards the Government with accounts being audited by Government.

Revenues to Stools are supposed to be distributed through the Traditional Councils (ref. Section 267 of the Constitution of Ghana). However, it appears that at least in some instances, e.g. when there are land disputes between Stools, that revenues are distributed directly from OASL to the Stool. When revenues are distributed through the TC, it appears that the TCs (or the Paramount Chief) frequently retain a share of the revenues in accordance to customary sharing arrangements. At the Stool, various customary sharing arrangements may be applicable. A typical arrangement may be one-third to the Chief, one-third to the Stool (administered by the Stool Treasurer) and one-third to Stool elders (advisors to the Chief). It appears that most revenues are used for, using the words of the Constitution, – “the maintenance of the Stool and Chief in keeping with its status”. That is, allowances for chief and elders, recurrent costs of palace, ceremonies and festivals. Capital projects are primarily in the form of palace construction/renovation. Costs of land litigation cases are also frequently mentioned. It appears as if little revenue is used for development projects in communities. There appears to be very limited downwards accountability towards the subjects of the Stool (the local communities). Stools (chiefs) may be upwards accountable towards the TC (Paramount Chief). However, many stools are not under a TC. Government does not place any accountability requirements on Stools.

Preliminary results suggest that the distribution of revenues to stakeholders from FC/OASL is significantly delayed, compared to the time of invoicing/collection. Secondly, transparency in distribution is an issue. It appears that timber revenues are frequently bulked with other Stool land revenues and distributed in one, bulked payment. No documentation, e.g. copies of invoices to timber firms, is provided as part of the distribution. This makes it impossible for the beneficiaries to check the amounts received against amounts due. The on-going research project will look further into these issues.

Rights to benefits from timber in a historic perspective

Over time, the timber benefit sharing arrangement in Ghana has changed. At least four distinct regimes may be identified: (i) early regime (ii) post-war regime (iii) 1962-1992 regime and (iv) current regime (1992-today).

³ IGF deducted Government’ contribution to salaries

According to customary law, the Stool occupant (the Chief) holds stool land and resources (including timber) in trust for the entire community. The trustee is the representative of the landowning community empowered to act on behalf and in the interests of the community (England, 1992). Members of the community (the subjects of the Stool) could initially develop farms on any unoccupied land. They could expand their agricultural land by disposing and burning trees. They had the right to fell trees for personal use or for sale in a pitsaw, normally by providing a share of the timber products to the Stool as a contribution towards its expenses (Amanor, 1996). Timber had little commercial value, as the market (export and domestic) was small. Large scale timber export only gained importance after the Second World War. Prior hereto, timber extraction for export was insignificant and confined to coastal areas in the Western Region, along rivers and railways (Amanor, 2005).

With timber gaining importance as a commodity, Chiefs began granting concessions to timber firms. The quote below summarizes the rights to timber trees and the benefit sharing arrangement in the period after the Second World War:

"He [the farmer] may fell and burn timber trees standing on the land; but if he wishes to utilise timber after conversion in a saw pit, he is traditionally required to surrender to the stool one third of the boards produced. Meanwhile, the sale of a tree from the farm is usually the prerogative of the stool, though the merchant may find that first he must purchase the right from the chief and then pay the farmer for permission to exercise the right" (Gordon, 1955. Here quoted after England, 1992).

The Concessions Ordinance Cap 136, (1939) had *inter alia* the goal of regulating the Stools' granting of timber rights. This period is also associated with a changing role of the chieftaincy institution. During the colonial era, alliances developed between chiefs and the colonial administration, generally known as 'Indirect Rule'. It resulted in a changed role of the chief. From being primarily a trustee on behalf of the community, the chieftaincy institution evolved towards an institution with individual rights (Mayers and Kotey, 1996). This included timber revenues, i.e. chiefs increasingly saw revenues from timber as personal revenue.

The year 1962 is a milestone with regard to rights to timber trees and benefit sharing from them. In 1962, the newly independent government passed the Concessions Act "vesting all rights with respect to timber or trees in the President in trust for the stools concerned" (Concessions Act, 1962, Section 16(4)). While the stools maintained formal ownership to trees, the state appropriated the right to manage and regulate the resource, including the right to decide the benefit sharing arrangement. For forest reserves, the stools had in fact already had their rights to benefits reduced since 1927. The Forests Ordinance (Cap. 157) of 1927, provided for "...a sum not exceeding one third of the gross yearly revenue may be reserved by the Conservator of Forests for expenditures for the improvement of the forest" (Forests Ordinance, 1927, Section 18 (2)). The remaining revenue, i.e. minimum two-thirds of the gross-revenue, was to be distributed to the stools.

The Administration of Lands Act (1962) prescribed a revised benefit sharing arrangement. For forest reserves, all revenues after deduction of "authorized expenses for exploitation and silvicultural works" should be transferred to the Stool Land Account (Administration of Lands Act, 1962, Section 17 (3) and (4)). Often, nothing was left after deduction of these costs, so it was later administratively decided to pay a minimum share

of 30 % of the gross timber revenues into the Stool Land Account (Treue, 2001). For timber outside forest reserves, all revenues were to be paid into the Stool Lands Account (Administration of Lands Act, Section 18). It is interesting to note here that the Administration of Lands Act does not provide for a management fee from the outside reserve areas. From the Stool Land Account, the Minister "... may by order determine the amounts to be transferred to local authorities⁴ in whose areas the lands are situated" (The Administration of Lands Act, Section 19 (1)). Remaining sums were to be used for the "maintenance of the Stool and other traditional authority, including a Traditional Council and in the making of grants for projects (including scholarships) for the benefit of the people of the area" (The Administration of Lands Act, Section 20). The actual sharing ratio of the revenues in the Stool Land Account were 60 % to the local authority (District Assemblies), 20 % to the Traditional Council, 10 % to the Stool and 10 % retained for administrative purposes (IIED, 1993).

The collection of timber revenues in forest reserves was done by the then Forestry Department (now Forestry Commission) and off-reserve by the Lands Commission. For the forest reserve revenues, while collection may have been efficient, distribution was irregular. E.g. there was no distribution of on-reserve revenue from the Brong Ahafo region in the period of January 1979 to December 1995 (Treue, 2001). For the off-reserves, both the collection and distribution appears flawed. Treue (2001) reports that the Lands Commission was unable to produce any account for timber royalties collected from 1962-1994; a period where off-reserve timber harvest significantly exceeded the on-reserve harvest.

In 1992, this regime was replaced with the present rights to benefits as described in Section 2.2.

It follows from the above that the rights to benefits from timber trees have changed over time as a result of revisions of customary as well as formal laws. Farmers have over time lost their right to convert trees to lumber for own use and for selling trees standing on their land (by virtue of providing a share of the proceeds to the Stool). The alienation of farmers reached its final stage in 1962 with the vesting of all trees in the President, and depriving farmers from any share of the timber revenue. The 1962 regulation obviously also reduced the rights of the landowners, the Stools, who had their right to grant timber rights removed and formal timber revenues at the discretion and controlled of the Government. Finally, the 1962 legislation introduced the local governments as the key beneficiary of timber revenues, a right that has been cemented by the 1992 Constitution.

Is the present benefit sharing arrangement equitable?

The benefit sharing arrangement has evolved over time as discussed in the previous section. These changes are perceived to be the result of a constant "power struggle" between the stakeholders. The changes in the benefit sharing over time are thus seen primarily to be as a result of changes in the political powers of the various stakeholders at different points of time. The current benefit sharing arrangement represents some sort of "equilibrium" between present powers. A common feature of present and earlier benefit sharing arrangements is that timber trees are considered as a nature given resource (like gold and other minerals), which just happens to be there, i.e. a static

⁴ District Councils (now District Assemblies)

approach to the timber resource and its benefit sharing. An exception may be the FC's management fee, which we will discuss in further details below.

This approach is increasingly creating problems, especially in the off-reserves. Here, the timber trees are increasingly found on-farm and in fallows (ref. Planning Branch, 1999) and are, increasingly, the result of human decision-making and inputs in the course of farming activities. The farmer implements decisions on trees and tree cover on the land where he/she has the farming right. These decisions include elimination or maintenance of timber trees, the seedlings/saplings to retain and nurse. Moreover, the farmer is in charge of the protection and conservation of the trees from e.g. fire and illegal logging. Currently, the farmer is not redeemed for these inputs. The farmer is not a beneficiary of timber revenues directly and preliminary results of on-going research suggest that no share of the revenues appropriated by other stakeholders "trickle down" to the farmer. The only direct financial benefits that may reach the farmers from natural timber trees are from Social Responsibility Agreements, and these benefits are insignificant (compared to the value of the resource) and for the entire community, i.e. not specifically directed towards the farmers, who have nurtured the timber trees. The absence of a financial reward of farmers' inputs is considered a fundamental problem of the present benefit sharing arrangement. Further discussion of this issue follows in the next section.

The only way that the present benefit sharing arrangement rewards inputs is through the FC's management fee. In actual fact, this is more a fee to finance control than actual management, especially in the off-reserves, where the FC predominantly is tasked with regulating and controlling the commercial exploitation of the resource (ref. FC, 1998), and not the actual resource protection and enhancement, which is basically left with the farmer. Various issues circumvent the management fee. Firstly, it is set by the Minister in consultation with the Forestry Commission and the Administrator of Stool Lands (ref. Timber Resources Management Regulations 1998, Section 26), i.e. there is no requirement for a dialogue with the landowners. Secondly, it is virtually impossible to undertake an objective assessment of what resources go into FC's control and management activities; the FC's accounting system does not allow a break-down to activity level, and there are fundamental problems associated with determining the relevant overhead costs (administrative costs). Finally, broadening the discussion to the broader issue of management, it may be seriously questioned if all control measures in their present form are really required, and if the present set-up is the most appropriate (value-for-money).

The main beneficiaries of timber revenues, Stools, Traditional Councils and District Assemblies presently primarily play an indirect role in management of timber trees. They may be involved in negotiations of Social Responsibility Agreements (SRA) between local communities and timber operators, in mediating conflicts between farmers/local communities and timber operators on compensation payments and SRAs and in the granting of timber rights. These are not substantial activities, and they are basically passive recipients of timber revenues, or receive timber revenues (Stools and Traditional Councils) as a reflection of their role as "landowners". In this regard, it is noted that there is a huge discrepancy between the benefit sharing arrangement for natural timber compared to plantations in forest reserves (modified taungya system), where the Stools

and Traditional Councils are entitled to 8 and 7 %, respectively against 25 and 20 % for natural timber (Agyeman *et al.*, 2003).

In conclusion, based on the roles, inputs and investments in tree management, the present off-reserve benefit sharing arrangement is not equitable. This is hardly surprising, as equity has not been a prominent factor in the sharpening of the present regime. With timber trees increasingly being a result of human inputs, the benefit sharing arrangement is increasingly "out of balance", especially in the off-reserves.

Does the present benefit sharing arrangement provide incentives for tending and conservation of natural timber trees?

Farmers are not considered as beneficiaries of timber revenues, nor does any revenue "trickle down" to them. There is thus, no direct financial incentive for farmers to engage actively in the tending and conservation of timber trees on-farm. Moreover, the present benefit sharing arrangement creates perverse financial incentives for the farmer to plant (exotic) trees rather than tending natural timber trees on the farm. For planted trees in the off-reserves, it is much easier for the farmer to prove that he has planted the trees, and depending on the land tenure situation, he is entitled to the full financial benefits or must share the benefits with the landowner. For natural trees, he will face much larger problems securing his tenure, and under the present benefit sharing regime there is a high risk that he will receive no financial benefits, even for trees that the farmer has tended from the seedling stage.

Rather than being an asset, timber trees may be considered by many farmers, a liability. Preliminary results of on-going research suggests that farmers' rights to be consulted prior to felling by loggers and appropriately compensated for damage caused by logging and hauling, are frequently violated. Farmers frequently remove, by felling and burning, timber trees from their farms in order to avoid future problems. Alternatively, they may engage with chainsaw operators, who while illegal, provide (small) direct monetary payments, a share of the produced boards or other services, e.g. removal of unwanted trees.

Farmers may have other reasons to tend trees than timber revenues; trees may increase the agricultural production and hence provide financial benefits indirectly, i.e. through their ecological service functions, e.g. shade, protection against wind and heavy rain, nutrient recycling, water retention, to prevent soil erosion. Farmers may also benefit directly from non-timber products (fuel, wood, medicinal products, fodder) that may be consumed on-farm or marketed. Nevertheless, without a direct financial incentive, it is feared that few farmers in the future would be interested in tending natural timber trees on-farm because they could derive larger benefits from exotics or same level of benefits (but without the negative effects) from tending trees with no timber value. The on-going depletion of the resource base appears to support this fear.

Under the current benefit sharing regime, the Forestry Commission is directly rewarded for timber harvest control functions through a share of the invoiced timber revenue. It is thus obvious, that FC has a direct financial incentive to focus on such activities, and indeed this is where FC is engaging most of its present focus. Other activities, e.g. activities relating to enhancing the future resource base, receive less attention, because they, at least in the short run, will not result in revenues. A contributing factor is that FC

in reality is fairly free to decide its own focus; there is no institution in reality to oversee or monitor the activities of the FC.

The DAs, Stools and TCs are all recipients of timber revenues, and as such they should in principle have a positive incentive to engage actively in tending and conserving timber trees. In actual fact, the incentive is reduced by not transparent, error-prone and delayed disbursement of the timber revenues, and by the fact that the revenues are shared between relatively many institutions, thereby reducing the individual shares, and the future benefits of own possible inputs. Furthermore, virtually all functions (planning, allocation of timber rights, monitoring of operators, post harvest control and financial management) are placed with the FC. Thus, it is difficult for the DAs, Stools and TCs to engage actively in timber management, even if they wanted to. The bottom-line is that the DAs, stools and TCs are basically passive recipients of timber revenues.

In conclusion, the present benefit sharing arrangement does not offer the appropriate incentives to engage in tending and conservation of natural timber trees.

The way forward

It follows from the above discussion that the present benefit sharing arrangement is not considered fair and does not provide the appropriate incentives for stakeholders. We consider the benefit sharing a key factor in the fast depletion of the timber resources in Ghana over the past decades, not least in the off-reserves, with associated negative consequences on climate, water and soils as well as agricultural production and rural livelihoods. A change is required! We see two alternative models emerge:

1. Revision of the present benefit sharing regime to reflect roles and inputs of the stakeholders;
2. Devolution of the rights to timber trees.

The first model takes departure in the present regime for management, regulation and control of timber resources (on- and off-reserves), but revises the sharing arrangement to better reflect the roles and inputs of the various stakeholders. Accordingly, FC will maintain its role in regulation and control, and will maintain responsibility for revenue collection. Concessions and permits will be granted to timber operators, who will pay fees. Off-reserve, the farmer will manage and protect timber trees on-farm, and will receive a direct reward for these functions in the form of a share of the timber revenue (a direct share or a share of the share presently going to the FC as management fee). Landowners will be rewarded for their direct role in management and protection and for their role as land owners (capital inputs). Inspiration can be sought in the benefit sharing in the revised taungya system. The model addresses the issues of equity and incentives. Provided that the revised scheme internalises all inputs by all stakeholders, it will result in a fairer regime and a regime that provides incentives to engage in timber tree management and protection.

The second model goes beyond a revision of the benefit sharing arrangement and basically implies a complete revision of the present management regime of timber resources in Ghana (on- and off-reserve). It stipulates revoking the Concession Act, 1962, Section 16, which vests all timber trees in the President in trust for the Stools. On reserves, we envisage a system where the forest reserves are managed by user groups

responsible for the management in accordance with national laws and regulations. The user groups are upwards accountable to the government and downwards accountable to communities for costs and revenues. The user groups could consist of representatives of land owners, local communities and district assemblies. The user groups may choose to undertake the management of the reserve or to sub-contract it, or parts of it, to various types of "contractors" (could be a timber company, a local community or other). In case of mismanagement, the user groups can be fined or, in grave cases, have their management right withdrawn.

Off-reserves, user groups similar to the ones on-reserves could manage remaining (secondary) forest patches. However, off-reserve, the typical situation will be timber trees found scattered on farms and on fallow lands. The second model stipulates that the rights to such trees are devolved to the farmer. The farmer will thus have the right to manage the trees, i.e. to decide what trees to maintain, when and how to harvest them. Likewise, the farmer will have the right to sell the trees and appropriate the resulting income. In this way, naturally generated trees are treated in exactly the same way as planted trees.

Model two devolves much of the management decisions to the stakeholders (landowners, District Assemblies and farmers). The main task of the Forestry Commission will be to monitor (control) that regulation is followed. The model implies significant changes to the revenue flows. In forest reserves and off-reserve forests, the revenues will flow to the user groups, who will decide on how to use them. This is envisaged to lead a focus on projects/activities targeting the resource and forest-fringe communities rather than the present use of the revenues predominating on maintenance of institutions. For on-farm trees, the farmer will be the beneficiary. Depending on land tenure arrangement, the landowner may appropriate a share of the revenue in the form of land-rents according to customary arrangements. The on-farm natural timber trees are thus, considered as any other crop grown on the land. The government (central and/or local) may choose to tax the timber coming from on- and off-reserves. As a direct income tax is not considered a feasible option at the time being, this could be in the form of a tax on raw wood. The control functions of the Forestry Commission could be financed from this tax, or from performance-based service charges, or a combination of the two.

It is outside the scope of this paper to make a full assessment of the models, i.e. their pros and cons, and overall, their potential impact on sustainable forest management in Ghana. However, below, some tentative observations are made in relation to the feasibility and key challenges associated with the two models.

In our view, the key challenge associated with the first model lies in an objective determination of the inputs and costing them. Because the stakeholders have vested interests, we fear that such a process could result in 'endless' discussions on the basis and assumptions for this determination. Accordingly, the revised regime might be a compromise between a benefit sharing arrangement based on rights (like the present regime) and a benefit sharing based on inputs. Especially for the off-reserve situation, this would place naturally tended trees at a disadvantage compared to planted trees, which would be very unfortunate. Moreover, the model fails in addressing a number of problems associated with the present benefit sharing. Firstly, the model in itself does not provide a solution to the present not transparent distribution of timber revenues.

Secondly, the model does not provide a mechanism for solving the problem with an under-priced resource (fees will still be decided centrally). Finally, we see a risk of the model being undermined by illegal logging, as is the case in the present benefit sharing regime. The main advantage of the model probably lies in an easier adoption, because it builds directly on the foundations of the present regime.

The devolution model (model two) is expected to solve problems associated with the not transparent revenue distribution, because revenues will be disbursed by bodies (user groups) where transparency can be secured (the members will watch over each other) or payments directly to the farmer. Secondly, problems with the pricing of the resource would be avoided as user groups and farmers are responsible for negotiating the price. An obvious issue here, at least in the initial stage, would be user groups' and farmers' restricted access to price information. Thirdly, in relation to illegal logging, we believe that the devolution of the rights would result in much improved incentives for the stakeholders (user groups and farmers) to protect the resource, i.e. a much more effective control will be implemented. The key challenge for the devolution model is its implementation as it implies rather drastic changes. The FC will have their role diminished and they will lose access to their present share of the timber revenues. For the current beneficiaries of timber revenues, the total level of revenues may go up (depending on how well they are able to negotiate prices and depending on the level of future government taxes) but they will face increased requirements for transparency as compared to today. This especially holds for the Stools.

In summary, both models are expected to increase equity and economic incentives to tend natural timber trees; model two to a larger extent than model one. A common challenge to both models is that they will face resistance from losers. The devolution model is expected to be met with more resistance because of the more fundamental changes that it suggests. This tentative assessment thus, suggests that the devolution model is the preferable model in the long run but may be difficult to implement, at least in the short run. The way forward may therefore be a combined solution where the first model is implemented as first steps in a longer process that eventually will lead to a devolved system. We recommend a process which includes further considerations (more detailed studies) of the models and stakeholder consultations.

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3.5 OPTIONS FOR DE-REGULATING TIMBER TREE MANAGEMENT ON FARMS AND FALLOW AREAS: FEASIBILITY AND CHALLENGES

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Introduction

Tree resources outside the permanent forest estates play significant role in the economic, social and environmental needs of the country. Key among these is timber production. In the 90s it was contributing between 80–70 % of all timber harvested officially in the country though in recent years this has declined to about 30 %. Majority of trees harvested outside official knowledge nonetheless, still comes from off-reserve areas.

The need to manage timber trees outside forest reserves on sustainable basis has long been recognized but not much effort has been made to make this a reality. Consequently, the resource base has suffered serious depletion and to most people, especially resource users, it is a resource in transition whose future cannot be secured. However, the potential for timber production in off-reserve areas is so huge that efforts must be made to minimise the constraints working against its sustainability. Besides, raising forest trees in agricultural production systems brings along important benefits in terms of enhanced agricultural production, environmental stability and biodiversity conservation which must be safeguarded for national economic development.

Timber is a high-value resource and therefore, useful for wealth creation. Its production is also one of the few opportunities that can be made available for improving rural livelihoods, especially where it can be conveniently combined with agriculture. Timber production should therefore be captured as a livelihood option and supported with relevant policies and laws to make it an effective poverty reduction strategy.

At the moment however, the context within which timber is produced, regulated and revenues accruing from it shared, is neither compatible with sustainable production nor poverty reduction in rural areas. Most people share the view that unless the sector policy and attitude towards the resource are improved, there is little hope for sustaining continuous production of timber through natural regeneration in areas outside forests. Policy makers in the forest sector, therefore, need to find alternative options that can satisfy the multi-criteria for sustainable production and ensure that timber trees become relevant in local people's livelihoods.

Naturally regenerated trees on farms and agricultural fallow lands

Trees on farms and fallows may result from two main possibilities, which are the growing of crops under selectively thinned forest and the nurturing of mostly pioneer tree seedlings into mature trees alongside agricultural crops. Popular with humid zone agriculture, the first option was more appealing to farmers who had to deal with the task of removing big forest trees to make way for crop cultivation at the time when only the axe was the available tool. Under that constraint, a lot of trees were left standing after land preparation once the farmer had been able to thin the forest to allow enough light

unto the floor for crops to grow. In practice, some of the standing trees would be killed with fire as part of a shade management strategy after farmers had planted their crops.

With the advent of the chainsaw machine, big trees are no longer difficult to remove, besides most cultivation now takes place in secondary forests where few original primary forest species exist, therefore farmers mostly clear-fell the forest rather than cultivate within the matrix of the thinned forest. This is the second and more common practice. Here seedlings and coppices from stumps are encouraged and directed by farmers to grow and provide shade and other benefits as part of the agronomic practices for cultivating most of the forest zone crops. The knowledge for this practice is well developed among farmers and constitutes the basis for sustaining the agro-ecosystem in the forest zone.

The practice, though primarily meant for managing the agro-ecosystem, in the end results in significant numbers of trees in the agricultural landscape (active farms, young fallows and secondary forests) some of which are harvested for timber.

Past and present policy governing timber trees on farms and fallow lands

In 1962, an act of Parliament called the Concession Act of 1962 was passed which vested all trees in Ghana in the office of the President to manage on behalf of land owning communities represented by chiefs. Prior to this, ownership of timber trees on farms varied depending on the locality. In the Eastern and Ashanti regions where large proportion of the land had been converted into cocoa plantations, before the expansion of timber exports, timber resources on farms were largely recognised as belonging to the farmer who had the right to transact it with pit sawyers. In the Western Region however, chiefs claimed ownership of trees on farms and sold them to timber companies. This was because unlike the other regions, the opening up of the cocoa frontier coincided with the expansion of timber export and the chiefs took advantage of this to maximise their revenue from the lands they sold or leased to tenant farmers (Amanor, 2005).

The 1962 Concession Act curtailed both arrangements and gave government the exclusive right of timber allocation whilst stools represented by chiefs were given recognition as owners of timber trees. Nonetheless, until 1994 the forest policy did not anticipate sustainable management of timber outside forest reserves and therefore, a policy of extended utilisation without replacement was pursued. In 1994, a new policy ushered in a regime of sustainable management of off-reserve forests which has been interpreted to include trees on farms. However, as pointed out by Adam *et al.* (2006), there is ambiguity in the interpretation of this policy, besides the subsequent plans (starting with the Interim Measures) for dealing with on-farm tree resources by the FC seem to point towards a strategy of stretching the harvesting of timber for the longest possible time rather than attempting to sustain yields in perpetuity.

Irrespective of the policy intentions, many people saw the 1994 Forest Policy as an opportunity to revolutionalise tree management outside forest reserves in a manner that will ensure continuous production of timber and other tree benefits in harmony with agricultural production and environmental conservation. However, nothing has so far changed except for the involvement of the FC in regulating timber harvesting and sharing of benefits while the state as a whole continues to reap where it has not sown. This is a reflection of the fact that the FC has no long term commitment to on-farm tree

management and is only taking advantage of the policy to expand its influence and control in an area best reserved for others. The increase in the off-reserve AAC from 500,000 m³ to 1.5million m³ is a salvage felling policy, which once again demonstrates the FC's lack of confidence in the sustainable management of the off-reserve timber resource.

Whilst the State institutions may not believe in the feasibility of managing off-reserve timber resources on sustainable basis, experts think that with the right policy and incentives, farmers are capable of raising timber trees in the context of farm forestry that can match timber yields from the natural forest or plantations (Amanor, 1997).

Need for policy reforms

At the moment, timber trees are raised in a socio-economic context which is incompatible with sustainable management. This is because the ownership of land carrying the trees, the process of raising the trees up to maturity, control of exploitation and the right to harvest timber combine to create an obligatory multi-stakeholder partnership, characterized by the exercise of power and benefit accruals which do not reflect the levels of inputs and contributions made by the stakeholder groups (Chart 1).

Stakeholder	Exercise of power		Benefits	
	Immature timber trees	Mature timber trees	Immature timber trees	Mature timber trees
Farmer	● ● ●		● ● ●	
Landowners		●		● ● ●
FC		● ● ●		● ●
District Assembly				● ●
OASL				●
Timber contractor		● ●		

Chart 1: An estimation, showing how power is exercised and benefits accruing from stumpage are shared among stakeholder groups concerned with timber production on farms and agricultural fallow areas. The number of dots denotes the extent of power or benefit.

The land carrying the trees is leased to farmers by stool landowners, the trees are raised entirely through the effort of farmers and their harvesting is controlled by the FC. Meanwhile, the revenue is shared among the FC, Office of the Administrator of Stool Lands, District Assemblies, Traditional Councils and Stool Landowners with nothing to the farmers.

The consequence of this policy is that farmers have a withdrawn interest in raising timber trees on their farms and will prefer to kill young timber trees rather than encourage them to grow and become a liability in future. There are serious conflicts between farmers and loggers who often would not like to pay compensation commensurate for crops destroyed through felling of trees and skidding of logs through farms (Marfo, 2006). Because trees on farms have a 'remote' owner they are often stolen by timber contractors and chainsaw operators, which also results in conflicts between these users and the FC. The overall effect of the off reserve timber management is that it results in unsustainable use and does not serve any stakeholders interest in the long term. There is, therefore, a need for other policy options that are more equitable and effective in managing the resource on a sustainable basis.

Defining the requirements for sustainable policy options

Sustainable timber production in off-reserve areas is here defined as a timber resource management situation in which, regular yields can be obtained from off-reserve areas each year in perpetuity unless there is interruption by natural disasters or transformation of agricultural technology that makes tree incorporation a non option. The form of sustainable production which is suitable for the people and should therefore be aimed at is the kind most effective in contributing to the achievement of the Millennium Development Goals; the kind that reduces state control and encourages private access or property rights and makes rural populations the focus of policy attention.

The sustainable management of any natural resource must satisfy certain criteria often defined within the confines of economics, social and the environment context. In this wise policy options with potential for sustainable use, should be economically rewarding to all relevant stakeholders, socially acceptable and environmentally compatible with local and national standards.

Economic needs

Good forestry needs good investment and from the economic point of view, a policy option that can achieve sustainable off reserve tree management should be able to encourage investment including knowledge application in tree nurturing and reward investors with dividends. Though trees are not normally planted by farmers, they are carefully selected, nurtured and managed as competitors with agricultural crops. They take up much space in small farms and can serve as sources of diseases and pests. They cast shade on crops and can break and cause damage. These are all investment cost to the farmer for having trees on his farm. Therefore, farmers can be expected to continue bearing these costs only if they reap rewards either in kind or cash which results in an overall positive dividend. At the moment, this is not the case because farmers benefit only from the environmental role of trees which is not commensurate with the cost of raising the tree and keeping it on a farm, especially high-value farms like cocoa plantations where the risk of logging damage is very high. It should also be remembered that the farmer has a choice to invest in non-timber trees which he can solely own and control. There must, therefore, be a perceived additional benefit for him to raise species which can be harvested for timber. To sustain timber production on farms, raising crops with timber trees should be more profitable than raising them with non-timber trees.

Another important issue to consider is the question of who (apart from farmers) is prepared to invest in raising timber trees outside forests and in so doing ensure the

economic compliant of off-reserve timber resource management. So far, none of the stakeholders has shown any commitment in this respect not even the FC who exercises the greatest control over the resource. The FC's investments in off-reserve tree management have so far gone into strengthening its control and influence on the resource, especially in keeping off illegal operators. Discussions on incentives for farmers to boost their morale in timber tree tending started within the FC way back in the mid 90s but nothing concrete has so far happened, a clear demonstration of lack of commitment to invest in resource creation.

In terms of knowledge which is an economic asset, farmers are known to have a well developed body of knowledge on tree management on farms. This asset should be protected and encouraged to expand, an attainment which is possible only if someone is prepared to pay farmers for applying this knowledge. Studies show that farmer's willingness to apply their knowledge of tree management diminishes with their encounter and experience with timber contractors and FC over timber harvesting on farms. Thus the policy on timber management on farms undermines the smooth running of the very economic machinery that is supposed to produce the timber.

Social needs

For the off-reserve policy to be socially acceptable, it needs to comply with some basic social requirements which are lacking under the present policy. In that wise, there ought to be progressive transition from the present situation of unfairness in benefit sharing into a state of equity and power balance or better still power bias towards the investor. A partial or full ownership of timber trees is anticipated to be the climax of the social compliance aspects of sustainable on-farm tree management.

Equity is one of the key governance issues in natural resource management and where people feel aggrieved by state policies and other arrangements controlling the ownership or access to resources, there are always conflicts and acts that undermine sustainable use. It has been emphasised many times that the situation in Ghana, where farmers have no control over trees on their farms and do not enjoy any direct economic benefit from timber trees, is inequitable and constitutes a serious disincentive for tree management (Treue, 2001). According to Amanor (2005), the existing laws on timber trees outside forests enable and justify the appropriation of the benefits of forestry by a narrow sector of society, who are rich, powerful and politically well connected rather than providing a framework for sustainable management of the resource.

In the long term, a policy that goes beyond equity in benefit sharing should be considered as a requirement for sustainability in tree resources outside forests. Equity in benefit sharing will certainly be an improvement over the present arrangement but to get the full commitment of farmers to sustainable tree management, they ought to be empowered legally to the extent where they control the utilization of trees on their farms. There is very little reason why naturally regenerated trees cannot be accorded the same ownership status as planted ones that are regarded as full private property. Private property ownership is not only an economic incentive; it also enables individuals to measure their levels of accomplishment and achievement and thus, delivers a social satisfaction that leads to motivation and commitment.

Environmental needs

Trees on farms are nurtured and managed in a way that is alien to conventional forestry practices. Its emphasis is on environmental management rather than building up of biomass for harvesting in future. The main tree culture is based on nurturing saplings rather than planting seedlings and the focus is on pioneer forest species that regenerate freely in open canopy conditions. Most of these pioneers are short to medium-lived trees and are selected, retained and removed based on their net ecological benefit to the agro-ecosystem at any particular time. For example, when the farming cycle is approaching the fallow phase, more saplings are encouraged to grow because the ecological functions of trees become more critical at this stage which corresponds to the building up and improvement in soil nutrients and physical properties. Thus, the objectives for raising trees are complex and often change with time but invariably the environmental role of trees take precedence over other benefits, a situation which must be acknowledged and respected by any policy option developed to govern trees on farms.

In principle, policy options designed for sustainable management of timber resources on farms must not only be compatible with the agricultural land use, but have a positive influence on the production system mediated through a general environmental amelioration, especially microclimate and soil conditions. The right policy should, therefore, be able to meet the local environmental standard which is essentially the proper integration of trees and crops as a single unit without necessarily maximizing the potential timber earnings of farm units.

Proposed policy options

Four distinct policy options including what is in operation at the moment can be identified. These options are more or less rankings or developmental stages of managing the resource where one progresses from a less favourable state of 1 to the most favourable state of 4. The stages correspond to a shift from a restrictive benefit sharing arrangement and state control to private property ownership and control.

Option I: Farmer manages but without recognition/reward, FC controls (*master servant relationship*)

Option II: Farmer given official management responsibility and rewards, FC controls (*pseudo mutualism*)

Option III. Management and control responsibilities devolved to the farmer with FC as monitor (*farmer emancipation*)

Option IV. Management and control responsibilities devolved to the farmer with no direct responsibility for FC (trees treated as agricultural crops) *total independence*

The proposal that a systematic shift from State control to farmer control will result in better management of timber trees on farmlands is based on the assumption that farmer management will encourage investment in resource creation and better control of timber harvesting, which are the two most important issues affecting the sustainable management of the resource.

A complete devolution of tree management has the highest likelihood to reward good performers financially or otherwise, and a reward system is a requirement for good conservation practices. Privatisation unlocks the value of resources and attracts investments, especially from actors naturally bound to the resource. Whilst small holders like farmers seek the least investment opportunities, large investors like the FC are interested in only well proven safe investments like forest plantations. This probably explains why the FC has not yet provided any incentives to farmers to encourage them nurture trees. It can even be argued that providing incentives to farmers to manage trees on behalf of FC presupposes that the state has the exclusive right to manage trees in Ghana which is not the case. The best thing to do then is for the State to pull out and leave matters in the hands of private individuals i.e. farmers.

It is widely believed that extending the benefit sharing arrangement to include farmers will ensure better management of trees but it is also known that sharing of user rights does not necessarily ensure conservation, rather sharing of power and authority is a more effective conservation strategy (Abu, 1997). Therefore, an improved benefit sharing that takes care of farmers but still leaves decision making in the hands of the FC will not be a very effective option of managing trees on farms. It is liable to State abuses and manipulations that result in weak controls and eventual demise of the resource. *Decentralisation* of decision making to the lowest level (the individual farmer) is the ultimate condition for better control. The Global trend in natural resource management is towards indigenous ownership and control and larger areas of tropical forests are being devolved to some form of community tenure. Policy shifts to recognise traditional and indigenous rights are becoming more popular basically on the assumption that it results in better resource management, though there are exemptions (Tacconi, 2007).

According to the principle of subsidiarity, land use management should be centralised to the lowest level possible unless allocating it to a higher level unit would result in a higher efficiency or effectiveness (Follesdall, 1998). The history of timber management in off-reserve areas show that even if the farmers fail, their failure cannot be worse than that of the government.

Expected outcomes, feasibility and challenges

The hypothetical expected outcomes are as shown in Table 1. The overall expectations are that as farmers gain more control over the trees on their lands, the prospects for better economic, social and environmental compliance and, therefore, sustainable use increase.

Table 1: Hypothetical expected outcomes of four options for managing timber resources on farms and fallow areas in the forest zone of Ghana.

Options /Developmental stage	Expected Outcomes		
	Economics	Social	Environmental
1 Farmer manages without direct reward; FC controls	Low investment, negative returns, depressed innovativeness and high leakage of revenue	Low political compliance, weak controls, wide range of conflicts and high rate of illegalities	Weak local environmental accountability and unstable agro-ecology
2 Farmer manages with reward; FC controls	Moderate farmer investment, positive returns, moderate innovativeness and reduced levels of revenue leakages	Low political compliance, moderate controls, reduced levels of conflicts and illegalities	Weak local environmental accountability and unstable agro-ecology
3 Farmer manages and controls; FC monitors	Enhanced farmer investment, positive returns, enhanced innovativeness and enhanced revenue	High political compliance, moderate controls and minimum conflicts.	Strengthened local environmental accountability in the long term and stable agro-ecology.
4 Farmer manages and controls; FC has no direct responsibility	Optimum farmer investment, optimum returns, optimum innovativeness and enhanced revenue	Maximum political compliance, optimum controls and minimum conflicts	Optimum local environmental accountability and stable agro-ecology

The first option appears to have the least feasibility. It will work only if maintaining timber trees on farms is obligatory for agricultural production otherwise, farmers will have no good reason to keep trees on their farms. Its challenges include, deliberate suppression of tree populations by farmers, wide range of conflicts and weak control over timber harvesting. The second option will rely on effective collaboration between farmers and the FC and therefore, for it to succeed, a demonstration of acceptable levels of transparency and accountability by the FC will be required to win the support of farmers. These can be strengthened by a strong civil society voice, especially on aspects related to monitoring of the conduct of FC officials. The main challenge for this option is the legal definition of a legitimate farmer entitled to benefit from the scheme. This is because in many instances, a number of farmers might have contributed to the raising of a timber tree before it reaches maturity for felling.

For the third and fourth options, the critical issue is about farmers being responsible and accountable to landowners. For that matter, mutual respect and trust between the two stakeholders will be a prerequisite for the success of these options. For the first time, farmers will exercise full control over the trees on their farms and this will present its own challenges. The key challenges which can be anticipated at this stage are legal reforms to transfer tree rights, farmers being accountable to landowners, charging the right prices for timber and once again, the legal definition of a legitimate farmer who is entitled to the tree. The fourth option may have additional challenges in the form of weak timber statistics and reduced efficiency in the monitoring of timber harvesting from forest reserves since suspected offenders can always claim their goods were sourced from off-reserve areas.

Conclusions

It will require a great commitment from government to move from the present situation into any of the other options, especially Options III and IV due to perceived losses of timber revenue to the state agencies. However, further delay will not serve the long-term interest of the State nor any of the stakeholder groups. Therefore, an agenda has to be developed to pursue the desired changes: a stepwise approach with Option IV as the ultimate will be a good strategy for such an agenda.

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3.6 PRACTICES OF MANAGING TREE RESOURCES ON FARM LANDS

Dr. K. Asamoah Adam

(Available as Power point presentation on page 74)

3.7 COMMUNITY-BASED NATURAL RESOURCES MANAGEMENT – SOME FIELD EXPERIENCES.

CARE International, Ghana

(Available as Power Point Presentation on page 80)

3.8 EXPERIENCES FROM DECENTRALIZED FOREST MANAGEMENT IN OTHER AFRICAN COUNTRIES

Thorsten Treue

(Available as Power Point Presentation on page 83)

4. STAKEHOLDER PRESENTATIONS

4.1 FORESTRY COMMISSION'S STATEMENT ON MANAGEMENT OF FOREST OUTSIDE FOREST RESERVES ON-FARM TIMBER TREES ON SUSTAINABLE BASIS

Ashie Kotey, Chief Executive of Forestry Commission

The National Forest and Wildlife Policy of 1948, favoured reservation and envisaged "progressive utilization without replacement of the remainder of forest resources not dedicated to permanent forestry...prior to their destruction to farming" (Clause 2, 1948 Forest Policy).

The ensuing salvage felling of these areas resulted in huge loss of forest resources within these areas until 1962 when the passage of the Concessions Act vested the rights to all timber trees in the President. The traditional authorities and farmers lost all rights to utilize trees standing on their farms.

The off-reserve inventory in 1996 revealed the fact that there were more trees standing in farming areas than in the natural off-reserve. Reasons for this include provision of shade for cocoa and other environmental, spiritual, medicinal, environmental, and livelihood values. There are also patches of forest left as sacred groves, ancestral dwelling burial grounds and for NTFPs. By 1980, it was clear that the off-reserve forest resources could not be managed sustainably. The areas were plagued by problems such as illegal logging, bushfires, lack of benefit to farmers and lack of capacity by Forestry Department to manage the areas. The policy allowed timber men to salvage, fell and saw timber resources in the off-reserve areas. It did not support any farmer initiatives.

New Policy and Legislation Initiatives

- The 1994 Forest and Wildlife Policy emphasizes on sustainable multiple use values, efficient commercial utilization and participation.
- The new policy signifies a shift in policy outside reserves from liquidation to sustainable management of the unreserved forest resources.

New legislation to support the management of off-reserve areas has been passed and notable among which are provisions;

- to involve farmers in and benefit from the felling of trees off-reserve
- on restriction on the cutting and removal of timber trees on farm or cultivated areas without prior permission of the farmer or cultivator.
- on payment of compensation for damaged crops as a result of road construction, felling and extraction of timber.
- for District managers not to issue Conveyance Certificate unless compensations are paid.

Current Position of Forestry Commission on Forest Outside Forest Reserve

- The 1994 Forest and Wildlife Policy require forests whether outside or inside forest reserves to be managed sustainably.
- The off-reserve area contributes and will continue to provide the bulk of timber of the annual round wood production.
- The off-reserve areas are owned by stools, individuals, families and communities and that there are a lot of interest groups such as farmers, contractors, district assemblies, gatherers of NTFP, etc., who have a stake in these areas.
- To be able to manage the resource off-reserve, all the interest groups should work together to ensure the sustainability of resources in these areas.

The Strategic Objectives for Off-reserve Management

The management of Off-reserves has strategic objectives which continue to be:

- ensuring sustainable supply of forest resources from off-reserves for domestic and commercial purposes;
- maintaining benefits for farmers who tend trees on their farms and also plant trees, and,
- ensuring that all communities are aware of the benefits to be gained from off-reserve forest and ensure that illegal activities in off-reserves are reduced.

These will be achieved through: (a) ensuring DAs include in the 5-year Development Plans, the strategic objective for maintaining and sustaining the off-reserve resources and (b) reviewing and implementing the interim measures for harvesting timber within off-reserve areas including:

- pre-felling inspections of trees to be felled;
- issuance of felling permit for approved trees by Forest Services Division (FSD);
- post-felling inspection to insure compliance of laid down regulations and payment of compensation to farmers for damaged crops, and,
- issuance of Log Measurement and Conveyance Certificate.

Develop partnership and shared responsibilities with DAs, landowners and farmers. Involve the partners intensively in the management of the off-reserve areas by training and equipping community based organizations to monitor forest operations in these areas.

- Forestry Commission to improve on the permit system to ensure optimal collection and distribution of timber revenues to its stakeholders.
- Individuals/groups to take advantage of the following to establish tree plantations as commercial crop on off-reserve areas.
 - Attractiveness of the market for teak poles.
 - Increasing land degradation across the country.
 - Demand for timber trees.

The long standing proposal of ensuring direct financial benefit to farmers to tend trees on their farms need to be explored to come out with mechanisms for its implementation. Lastly, the issue of decentralizing or devolving authority to District Assemblies/Landowners on the control and monitoring of timber on farm will have to be further researched, consultations started, and implemented.

4.2 A VIEW FROM A SECTION OF THE INDUSTRY

Anthony Asare, Sawn Lumber Seller

The national Chainsaw Operators and Sawn Timber Sellers Associations humbly appeal to the Ministry of Lands, Forestry and Mines to repeal L.I.1649, and the regulation banning the use of chainsaw for commercial purposes. The policy has brought untold hardships on our members. Even though we deeply appreciate the government's concern over the fast depletion of our forests and the devastating effect on our economy and environment, the ban on Chainsaw without any alternative arrangement has brought untold hardship to us. The L.I.1649 is in the best interest of the security agencies but not for government who enacted the law as it has paved the way for extortion. Since the ban, more than two hundred (200) of our members have been killed from harassment by personnel from Forestry Commission and security agencies. Most of our operations do not occur in the forest reserves as we have been accused of. Rather, we operate in secondary forest and cocoa farms with the consent of their owners. We think that, the FC whom the government has mandated to protect our forest has no plan for our forest since their name was changed from Forestry Department to Forestry Commission. They have technical officers and other workers who have to protect our reserves but all of them are on our roads for money.

In the light of the forgoing, we wish to make the following passionate proposals which are in the national interest for positive consideration:

- modalities by which sawn mills supply lumber to the local market should be launched immediately, to coexist side by side with chainsaw lumber
- government should ban the export of lumber for sometime
- chainsaw operators to be formed into cooperatives and introduced to simple and modern machines.
- due to poverty in our country chainsaw cannot be stopped. The youth should be employed to plant trees and be given something at the end of the month.

4.3 A VIEW FROM A DISTRICT ASSEMBLY

Asumadu-Sakyi, District Coordinating Director, Offinso District Assembly

From the assemblies' point of view, the operations of the Forest Services Division (FSD) leave much to be desired. At the national level, timber concessions are awarded to timber firms without notification to the assemblies. The beneficiary firms do not inform the assemblies when they enter communities to start operations. Thus, negotiations with respect to social responsibility, which is a thorny issue, are done without the involvement of the assemblies. However, when the negotiations get stalled, the assemblies are brought in to sort things out.

Payment of compensation to farmers whose crops are damaged is another thorny issue, which the Assemblies are always called upon to deal with.

On chainsaw operations, the staff of FSD either refuses to take cognizance of the key role the assemblies play in the overall development of the districts, for which the forestry sector is a major component or they just decide to sideline the assemblies. Military personnel are brought into the districts, without the knowledge of the assemblies, to stem the chainsaw menace. This development has the potential to bring conflict between the military and the police and therefore poses a security risk.

Another source of worry is that assembly staff and community members who assist in the tracking of lumber seized from chainsaw operators are not involved in the disposal of the lumber, neither do they benefit from the sale. This is a major disincentive to the community members, since they face a lot of risks in their efforts to stem the menace of chainsaw operations. The FSD must, therefore, give such public-spirited people the recognition they deserve to encourage more people to get involved in checking illegal chainsaw operations.

The division must also take steps to assist in determining how much beneficiary communities must receive in social responsibility payments.

Lastly, the FSD must assist communities which initiate projects intended for public use to get lumber at affordable costs.

In conclusion, the nation will derive maximum benefits if the stakeholders in the forestry sector recognize district assemblies as partners in the efficient management and use of timber resources.

4.4 MANAGEMENT OF OFF-RESERVE AREAS –THE VIEWS OF A TRADITIONAL RULER

Kasapreko Kwame Bassanyin III, Omanhene of Wassa Amenfi Traditional Area
(Transcription from PowerPoint presentation)

Background

The existing forest resources may be placed within two categories:

1. The reserved forests which are legally constituted under Central Government Legislation, namely the Forests Ordinance (Cap 157) and the Wildlife Reserves Regulations, 1971, (LI 710 as subsequently amended) to be permanently set aside and managed as forests reserves respectively.
2. The reserved forests by categories in the closed forests and the savannah as percentage of the zones are shown below.

Table : Reserved forests of Ghana by categories

Category	Closed forest Zone		Savannah Zone Total		Area (mil. ha)
	Area (mil. ha)	% of Zone	Area (mil. ha)	% of Zone	
Forests Reserves	1.754	21	0.880	5.6	2.634
Wildlife Reserves	0.116	-	1.104	-	1.220

Off-Reserves

- Off -reserve areas consist of mosaic of intact forest, which are estimated at a total of 500,000 ha.
- There are also patches of private and community forests, as well as trees on farmlands.
- It is worth stating that in several cases the density of trees and vegetation cover on some farmlands; especially in the wetter forest areas are much better than some reserves in the drier areas.
- Available records show that since the 1980's, about 70 % of all timber produced in the country has consistently come from the reserved areas.
- Most of the benefits from forest resources in Ghana are also from these areas.

Benefits of Forest Resources to Local Communities

- **National economy:** Forestry accounts for 6 % of the GDP, 11 % of export earnings and employs a labour force of 100,000.
- The timber industry is the third most important foreign exchange earner of the country. It is one of the fastest growing manufacturing units in the country and generates more employment and income to a majority of Ghanaians.
- The annual value of wood export is of the order of US\$ 120 million FOB. Timber currently contributes 6 % of GDP, earns 11 % of Ghana's foreign exchange, and provides about 30 % of export earnings.
- Forest sector also contributes the energy requirements of Ghana and accounts for more than 70 % of the energy consumed in the country.
- In rural communities, dependency on wood fuel exceeds 95 %.
- It is estimated that 14 million m³ of wood are consumed annually and this may be valued at about US\$ 200 million.
- It is projected by the World Bank that this volume could raise to 20 million m³ by the year 2000 (Ministry of Lands and Forestry, 1995).
- **Environment:** Forest resources of Ghana protect watersheds which provide drinking water to many rural communities.
- In addition, local communities have high dependence on the resources for farmland, foraging for food, hunting for meat, fodder and fuel wood.
- The forests are also highly valued as sources of natural medicines, which are essential components of health treatment, which is commonly used in conjunction with mystical and ritual practices.
- **Industry:** There is also the industry, which depends on resources from the forest.
- The industry directly employs over 170,000 people with dependent families.
- Many more are indirectly dependent on forest, for example those who supply goods and services.
- The industry also supplies the timber needs of the 20 million Ghanaians as well as being Ghana's third most important export product after gold and cocoa.
- **Cultural uses:** In many local communities, they have set aside small patches of forest normally close to settlements, as sacred lands which would not be touched.
- These patches of forest which are generally small could contain a single species of tree considered to be the abode of a god or an area where the royals of a particular village or town were buried.

- They could also be areas which supported wild animals considered to be sacred, totem or taboo and have special spiritual or cultural values which are accorded special protection.

Constraints against benefits

However in recent times, the role the forest plays in the livelihood of local communities is dwindling due to:

- the decline in supply of non timber forest products.
- the decline in livelihoods of many of the local communities
- Streams and rivers which served as sources of drinking water are either drying up or are polluted.
- the lost of cultural significance of many sacred groves.
- the unsustainable use and subsequent reduction in timber which provides revenue for chiefs and landowners.

Factors responsible for the constraints on NTFPs

- Improper methods of harvesting
- Excessive exploitation of the NTFPs
- No value addition to the materials collected from the wild
- Lack of domestication of NTFPs currently in use

General management

- Continuing trend on deforestation and forest degradation due to inappropriate land use systems including legal and illegal mining
- Lack of management of secondary forests which currently form the bulk of the forests in Ghana
- Lack of practical involvement of traditional and local institutions in management, planning and implementation
- Inequitable sharing of benefits, especially as regards to off-reserve areas where there is no management but FSD is currently taking 50 % of the stumpage with no incentives to farmers and other community members, who protect and manage trees on farmlands
- Improper implementation of alternative livelihood schemes for forest fringe communities
- In efficient capture of forest fees which often results in delayed payment of royalties

- Inadequate knowledge of communities on forest policy and legislations leading to laws

Way forward

- Democratisation enables local people and others outside the forestry sector, to slowly gain a voice in the management of public forests and in forestry planning and policy. Decentralisation of forest control and management from national agencies to local governments creates conditions that are more conducive to local input, and creates local appropriate institutional structures.
- Appropriate policies should, therefore, be adopted among others, that will allow a paradigm shift in forest governance from centralized to decentralized management involving, traditional authorities, local communities and other stakeholders.
- There should be benefit arrangements for off-reserves with larger percentage going to traditional authorities and local communities, resources owners and farmers.
- Management of off-reserve areas with the active collaboration of traditional rulers should be treated with outmost urgency to enhance benefits accruing from these resources
- There should be maximum utilization of timber and minimize wood waste so as to increase revenue from timber and generate employment
- Chainsaw operators should be provided with alternative productive ventures or given more efficient machines such as the Logosol, which has its efficiency demonstrated in my areas so as to control illegal logging and illegal chainsaw lumbering operations.
- Efforts should be made to minimize delayed payment of royalties by ensuring that all forest rents are efficiently collected and corruption within the system uprooted.
- Forest policy and legislations, especially as related to SRA and other related community issues should clearly be explained to traditional authorities and local communities to minimize conflicts.
- Methods for domestication and sustainable methods of harvesting of widely used NTFP's should be determined and promoted within local communities.
- Efforts should be made to add value to NTFPS to increase revenue accruing to local communities. In case of value addition by established companies, there should be arrangements put in place to make areas where these activities are promoted to benefit.

4.5 A FARMER'S VIEW ON MANAGING OFF-RESERVE TIMBER RESOURCES

Solomon Munufie, farmer, Tarkwa Forest District

These are some concerns of farmers we want addressed.

- Timber contractors always come in the name of Forestry Commission that they have a permit to fell trees on our farms.
- The contractors neither contact the Odikro nor members of the community before logging. When they are leaving, we don't know.
- They sometimes leave felled trees on our farms which gets rotten after some time.
- Most of us farmers did not know about the Forest and Wildlife Policy if not for the intervention of some NGO's e.g. RECA and CARE.
- Our community has never benefited from the timber resources harvested by contractors. No Social Responsibility Agreements (SRA) has been paid by contractors who have ever worked in our community.
- The trees the contractors harvest end up falling on our crops, they drag them through our farms, thereby, destroying them and have never paid compensations for any crop damage. This is what makes us to kill or fell trees on our farms for firewood and charcoal production.
- We are asked to go and get permit from FSD before we can fell a tree on our farm to get lumber to roof our houses. We do not agree to this requirement.
- Farmers have not benefited from royalties/proceeds from the forest after protecting and managing trees on our farms.
- Due to destruction of the forest, we have lost trees that were used for medicinal purposes

We are praying that we benefit from managing trees on our farms through payment of adequate compensation, SRA fulfilment and infrastructural benefit. When these are done we will do our maximum best to protect forest, plant and nurture more timber trees and eradicate all illegal timber activities on our farms.

5. QUESTIONS AND COMMENTS ON THE PRESENTATIONS

5.1 MR. AFFUM-BAFFOE'S PRESENTATION

Question: Does the FC have any plan for follow-up on the 1996 and 2004 off-reserve inventory since they were skewed? (Christian Hansen)

Response: The challenge is funding. In 1996, it was funded by the DFID. This task involves huge financial commitment. Since we now don't have much timber in the off-reserve area within the HFZ, we needed to block the areas that were perceived to contain enough timber. The number of blocks was increased to incorporate the Volta Region. The bottom line is FC does not have much resource to undertake such large-scale inventory.

Question: Can you explain the rationale for increasing the Annual Allowable Cut (AAC) of the off-reserve from 500,000 m³ to 1,500,000 m³? (Kwabena Nketiah)

Response: When we came up with the 55 years lifespan, the assumption was that plantations will be established to cushion the pressure on the natural forest reserves. But we never started the plantations until 2001. Also the off-reserve regulation was not effective due to illegal activities. The contractors were not getting the timber that have been allocated to them as the chainsaw operators fell the timber before the legal contractors could get to the areas. But I must say that officially the AAC is still 500,000 m³.

Reacting to the question the Chief Executive of the FC indicated, that for him as a policy maker, there was the need to go through the various steps on decisions as to how much we wanted to harvest each year.

5.2 MR. ALEX ASARE'S PRESENTATION

Question: Has there been any work by the CFMU of the RMSC or FC on ownership of trees on-farm? It appears that the work of the CFMU concentrated on sacred groves and closed canopy forests – what about trees on-farm, where in most cases there are tenant farmers? In my opinion, the tenant farmers and tree tenure issues are very crucial. I wonder whether you can explain such issues now. (FAO)

Response: I hope this question would be addressed through the other presentations.

Question: How much area of forest is under the dedicated forests category and how much timber comes from these forests? How does timber from these areas come to the market?

Response: In principle, all areas outside forest reserves are under the management of communities but for the well documented and properly planned ones, e.g. the Assin Foso

and Gwira Bansa facilitated by Care International are those under sustainable management. All the other areas have no management plans. Therefore, I cannot consider them as sustainably managed forest areas. For the community managed forests, not much has been harvested from the areas. If there were a policy, we would have pursued it further. However, we have plans to expand this concept to other areas.

Question: How many people profit from the dedicated forest and how much is it contributing to their livelihood?

Response: The economic benefits have not been a priority but conservation values. This is because the forest was degraded. So for the first 10 years, the focus was restoration and conservation, hence, not much harvesting was envisaged. However, ultimately, they can gain economically from the areas in the future. Remember these were pilot projects.

Question: How is the FC prepared to help the farmers who are into on-farm tree planting (as in the case of Gwira Bansa) to harvest the produce without any difficulty? I have observed that the farmers are planting the trees with a very high enthusiasm. Is there any provision for these farmers not to go through rigorous processes of getting permits to harvest the trees they tend on their farms?

Response: For an area, there is the need for a management plan covering the entire area, which should be approved by the FC. It is in the management plan that specifications on how the trees will be harvested will be given. If the area has no management plan, the FC will have to apply regulations pertaining to all timber trees outside forest reserves.

Question: What about individual farmers who plant trees?

Response: In the spirit of the current regulations, when one plants a tree; it belongs to him/her. But in this case the farmer needs to contact FC to ascertain whether, indeed, the tree belongs to him.

5.3 DR. DOMINIC BLAY'S PRESENTATION

Question: How was the lumber produced from the project sold? i.e. to whom and at what price?

Response: The project has not reached the commercialization stage yet. The project started about six months ago and the period has been used mainly for training. The real processing is yet to begin. However, the agreement with the local communities is that they could sell the lumber to anybody they wanted. Take note that the FSD is involved in this project. The FSD has agreed to give the local communities permit to transport the lumber for sale outside the areas. As of now, the lumber produced by the trainees is not for sale, so they are not benefiting in terms of proceeds from the sale of lumber. The lumber produced will be used to construct sheds for air-drying lumber that would be produced later.

Comment (Yaw Poku – TIDD, Accra): I suggest that the area farmed by each farmer should be assessed in terms of the amount of timber it holds so that the amount of timber that could be removed at a particular time is determined. On the basis of this, a quota system, as applicable to timber contractors, could be used for these areas as well. Also, you could have incorporated royalty payment so that the communities would appreciate the need to give something to those who manage the timber trees on their behalf.

Comment: Dr. Blay gave some percentages as to how the benefit will be shared. My concern is that you may be repeating the same fundamental problem we have with the constitutional scheme for sharing timber revenues. Is it not possible for research to evaluate cost and benefits of managing trees outside forest reserves to be conducted? On the basis of the research findings a recommendations on what is equitable way of sharing timber benefits could be made.

Comment: Do you consider the inception workshop as an adequate means to prescribe the benefits to the communities? Negotiations with the communities could have also served as useful means for the prescription of the benefits.

Response: On the means of deciding on the benefits, let me clarify that during the inception workshop we agreed with the various stakeholders involved in the project on how to share the benefits. It is on the basis of the agreement that we came out with the percentage shares.

Re-access to trees, we are looking at better organization of the people, e.g. chainsaw operators for training on modern methods of processing logging residues for improved production. When the people are not well organized, they do worst things. Irrespective of who is trained, they are going to have access to the trees on the farms; so we thought of improving production efficiency by training them. We should remember that the chainsaw operators already have access to the resources, though illegally. Again, in most cases, it is the farmer who gives the chainsaw operators access to the trees on their farms. If we improve the benefits to the communities through access to the resource, then, for instance, the farmer will be in a better position to protect the resources prompted by the benefits he/she will get from the resource.

On the issues of benefit-sharing, our scheme is a pilot one. We will do evaluation, and if the scheme works, there might not be any need for another sharing arrangement. Generally, since this is a pilot study, lessons would be drawn from the various issues and then appropriate recommendations made.

Comment: Is there any plan to expand the project to all localities to get a national picture and also assess its impact on the nation? I suggest that the project's impact on the national economy be discussed during the group work.

Comment: All of us would realize that just about 10% of lumber comes to the local market from the saw mills. The rest comes from chainsaw operations. I therefore suggest that we all should support Dr. Blay's project.

Comment: Since this is a pilot project, it is quite different from a research. Therefore, the project could consider the existing policies on the issues involved so that comprehensive recommendations for its replication could be made to cover the whole country. Otherwise, the project could face some resistance when actual implementation is embarked upon.

5.5 LOUISE'S PRESENTATION

Comment: Comments on as to why tree density in Goaso area seems to be dwindling as one moves close to settlements as detected from the analysis of satellite imagery.

Immediately after the 1983 wildfires, a lot of the off-reserve areas including cocoa farms were destroyed. During that period most affected cocoa farms were converted to other cash crop farms. Also, how people are changing their farming practices with changing prospects of other crops should be considered. It has been suspected by some researchers that the President's Special Initiatives (PSI) e.g. on plantation could have a detrimental effect on the environment, where people were convinced that oil-palm could fetch more money than food crops. Some farmers have started to convert cocoa farms and other crop farms to oil-palm plantation. This could have adverse effect on tree cover.

5.6 CHRISTIAN HANSEN'S PRESENTATION

Comment: There is a perception that the DAs do not account for the timber revenues. I want to point out that the stool land revenues, of which timber revenue forms the bulk, is captured in our annual budget as part of the Internally Generated Fund (IGF). Hence, there is no way that the DCEs can sit on the revenue.

There is also the notion that the DAs do not report on the revenues - account to the people. I think that it is impossible for the DAs to go to all communities to do this. Their representatives (i.e. Assembly members) are involved in the budgeting, so they (Assembly members) can report to their electoral areas.

Comment: I think the general concern is that the people would want the DAs to specify what the stool land revenue has been used for in terms of physical projects.

6. OUTCOME OF GROUP DISCUSSIONS

6.1 GROUP ONE

Researchable issues

1. Impact study on present policy on species diversity/population
2. Response of farmers to the policy
3. Landowners' perceptions of the present policies
4. Stakeholder investment as a determinant of benefit sharing from off- forest reserve tree resources.
5. Potential for natural regenerated timber production in off-reserve areas
6. Challenges that have to be addressed to achieve the two options

Current situation

Off-reserve forests are not well-managed to satisfy society in terms of equity, good governance, conservation and economic gains

Must activities/conditions

1. Recognition of farmers' role in OFR management
2. Grass root participation in policy formulation and implementation
3. Power balance – obligatory to involve local stakeholders in decision making
4. Empowerment of livelihoods to influence OFR management

Addressing ownership right to trees

Review ownership rights to naturally generated trees between landowners and farmers/land activators.

1. Reviews legal status
2. Documentation of agreement
3. Provide evidence to LA

Unfair benefit sharing

- Method for sharing 50:50 = farmer: landowner
- Review of current benefit sharing arrangement based on cost of investment stakeholders (research needed)
- Ensure benefits are paid to farmers

Root problem

- Lack of rights for the farmer to manage/control the resources and derive benefits from them
- Lack of acceptable definition of who has the control/access to the resource
- Unfair benefit sharing
- Ownership rights to trees

Road map

What to do	Who to do it	When to do it
Research to generate information on stakeholder inputs and possible benefits	Researchers, Consultants, Government, NGOs & Donors	Short term
Discussion of research findings in forums for common understanding & acceptance (sensitization)	Government, NGOs & Donors	Short term
Implementation	Government	Medium term
Reviews	Government NGOs	Long term

Review of Ownership Rights to Trees

What to do	Who to do it	When to do it
Sensitization for chiefs or traditional landowners	Government NGOs	Short term
Formation of committees to facilitate negotiations between landowners and farmers	Government	Short term
Review of policies/ legislation to reflect the changes in ownership rights	Government (Parliament)	Short-medium term
National awareness creation	Government Civil society	Medium-long term
Operation of reforms	Government	Medium-long term
Mechanisms for monitoring and evaluation	Government	Medium-long term

6.2 GROUP TWO

Vision: Timber resource off-reserve is managed sustainably.

Objective: Poverty reduction – economic benefits
Good governance
Resource conservation

Critical Issues/Conditions

1. Trees as assets, economically attractive to the farmer/local people
2. Equitable sharing of cost and benefits
3. Functional institutional arrangements
4. Ecological value of timber resource and conservation
5. Ensure lumber on local market is legal
6. Fair compensation paid to farmers

Options: The complexity of off-reserve does not permit a simple option. Whatever the option the management and ownership is to be devolved to the farmer/landowner and an independent body monitors the exploitation.

Scenarios: Communal lands/stool lands, land owned by individuals, land cultivated by tenants

Policy recommendations

Research Priorities:

- Feasibility of transfer of ownership should be researched
- Research into how control and monitoring should be done at resource point and not through road checks
- Research on monitoring approaches off-reserve and linked to a taxation system
- What institutional arrangements are needed to manage the complexity of off-reserve situation/scenarios?
- What regulatory and legislative reforms are needed for this to occur?
- Research on new benefit sharing arrangements
- If off-reserve management is reformed, how will this impact on reserved areas.

Way Forward

- Expert consultative meeting to fine-tune the complexity of the off-reserve scenarios
- A communiqué

6.3 GROUP THREE

Expected output

1. Options and roadmaps for decentralized forest management
2. Policy recommendations for moving forward
3. Priorities for research

Current situation

Unsustainably managed trees and forests in off- forest reserve

Vision

Sustainably managed off-reserve trees and forests

Procedure

1. Review current situation
2. Determination of future desirable situation (vision)
3. What must be done to achieve vision- policy, legal, institutional and research
4. Roadmap

What must be done

1. Trees and land tenure insecurities

- *(Research)*- Development of platform for agreement/ understanding between landowners and land users with respect to trees and land tenure
- *(Research)*- Synthesize existing studies and recommend policy options

2. Inadequate reforestation

- *(Policy)*- Facilitate access to land, improve seeds/seedlings
- *(Institution)*- Education on platform rights
- *(Research)*- Demonstration of profitability of plantations and trees on farms
- *(Institutional)*- Develop capacity of local communities for plantation development

3. Lack of incentives

- *(Policy)*- Establish a funding mechanism for OFR
- *(Research)*- Cost –benefit analysis of appropriate incentives
- *(Institutional and Research)*- Information on opportunities for inventory in forestry
- *(Institutional)*- Simplification of procedures for award of permits to fell and trade in trees.

4. Inequalities in benefits and responsibility sharing

- *(Research)*- Review schemes to benefit farmers/communities commensurate with responsibilities/roles

5. Inadequate supply of lumber on the local market

- *(Research and Policy)* –Sustainable production and processing of trees (logging residues) in farms with appropriate techniques
- *(Policy)*- Revision of LI 1649 to allow commercial production of lumber by communities on-site

6. Inadequate implementation of policies, laws

- *(Institutional)*- Awareness/education of local communities
- *(Policy and Research)*- Decentralization of enforcement
- *(Policy)*- More deterrent sanctions
- *(Policy)*- Harmonized policies and promote intersector co-operation
- *(Institutional)*- Effective monitoring and evaluation of policy implementation

7. Lack of local capacity and structures for sustainable forest management

- *(Institutional)*- Develop capacity for technical and extension support
- *(Institutional and Research)*- Provision of knowledge and skills to engage in Sustainable Forest Management
- *(Policy)*- Creation of forest fund
- *(Institutional)*- Consolidation of existing CRMCS

8. Erosion of traditional values

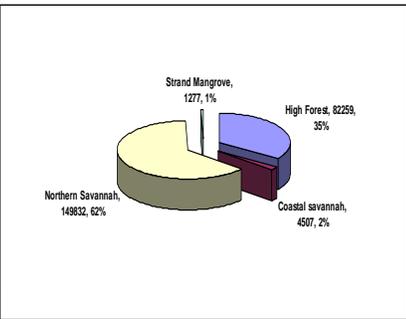
- *(Institutional)*- Awareness creation about traditional values and benefits to livelihood and the environment
- *(Institutional)*- Capacity for effective promulgation and enforcement of by-laws by the District Assembly with adequate deterrent penalties
- *(Policy)*- Award/Recognition schemes

9. Lack of political wills (chiefs and government)

- *(Policy)*- Government should develop an appropriate sharing benefit mechanism and enforce it.

APPENDICES

APPENDIX 1: POWER POINT PRESENTATIONS

<p>Practices Of Managing Tree Resources On Farm Lands</p>  <p>K. Asamoah Adam (CSIR-FORIG, Kumasi)</p>	<p>Outline of presentation</p> <ol style="list-style-type: none"> 1. Background <ul style="list-style-type: none"> ■ Forest coverage ■ Factors influencing tree resources on farm lands 2. On-farm tree management practices <ul style="list-style-type: none"> ▪ Traditional ▪ FSD 3. Conclusions 4. Way forward 															
<p>Major vegetation zones of Ghana</p>   <table border="1"> <caption>Major vegetation zones of Ghana</caption> <thead> <tr> <th>Vegetation Zone</th> <th>Area (km²)</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Northern Savannah</td> <td>149832</td> <td>62%</td> </tr> <tr> <td>High Forest</td> <td>82259</td> <td>35%</td> </tr> <tr> <td>Coastal savannah</td> <td>4597</td> <td>2%</td> </tr> <tr> <td>Strand Mangrove</td> <td>1277</td> <td>1%</td> </tr> </tbody> </table>	Vegetation Zone	Area (km²)	Percentage	Northern Savannah	149832	62%	High Forest	82259	35%	Coastal savannah	4597	2%	Strand Mangrove	1277	1%	<p>Background</p> <p>1 Tree resources on farm lands</p> <ul style="list-style-type: none"> ■ Status of tree sources outside forest reserve and their management have been influenced by: <ol style="list-style-type: none"> I. National forest policies, and forest laws; II. land/tree tenure systems; III. Traditional farming systems; and IV. Tree exploitation for timber and fuel-wood.
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<p>1.I National forest policies and laws</p> <hr/> <p>Forest policies and laws continue to shape the forest landscape in terms :</p> <ul style="list-style-type: none"> ➤ natural forest land area reserved; ➤ forest and timber tree protection, and, ➤ Level of timber exploitation and utilization. 	<p>1.I Policies and laws 1911-1990</p> <table border="1"> <thead> <tr> <th>Policy/legal document</th> <th>Description of Provisions</th> <th>Actions and effects</th> </tr> </thead> <tbody> <tr> <td>Forest Ordinance 1911</td> <td>1. Ordinance to provide for the establishment of forest reserves by the colonial administration</td> <td>Opposition from chiefs made it un-workable</td> </tr> <tr> <td>Native Authority Ordinance No. 18 of 1927</td> <td>2. Empower native authorities to constitute forest reserves under their by-laws</td> <td>Almost all Forest reserve created before 1957 were done under the native Authority Ordinance</td> </tr> <tr> <td>Concession ordinance 1939 (Cap 136)</td> <td>3. Ordinance to provide a system of granting rights of interest in all land resources including timber by native authority</td> <td>Timber concessions granted under this ordinance</td> </tr> </tbody> </table>	Policy/legal document	Description of Provisions	Actions and effects	Forest Ordinance 1911	1. Ordinance to provide for the establishment of forest reserves by the colonial administration	Opposition from chiefs made it un-workable	Native Authority Ordinance No. 18 of 1927	2. Empower native authorities to constitute forest reserves under their by-laws	Almost all Forest reserve created before 1957 were done under the native Authority Ordinance	Concession ordinance 1939 (Cap 136)	3. Ordinance to provide a system of granting rights of interest in all land resources including timber by native authority	Timber concessions granted under this ordinance			
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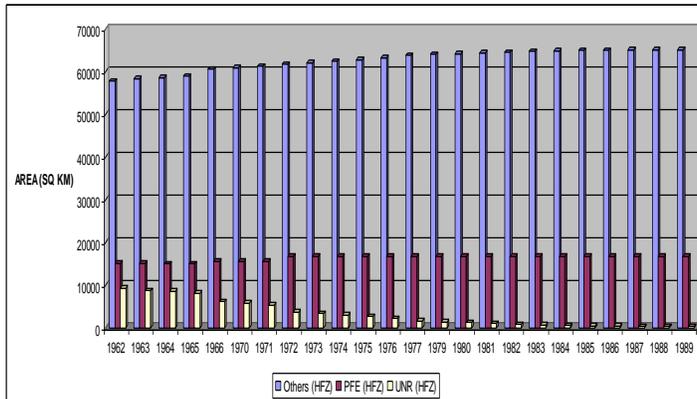
1.1 Policies and laws (1911-1990)

Policy/legal document	Description of Provisions	Actions and effects
1948 Forest policy	4. Creation of permanent forest estate through reservation 5. Maximum utilization of areas not dedicated to permanent forestry,	Forest Ordinance 19.. (cap157)
Forest Ordinance of 19.. (Cap 157)	6. Provided for the funding of protection and management activities in Reserve Forests	<ul style="list-style-type: none"> Fixing of forest fees and royalties Formula for disbursement of forest revenue
Trees and Timber Ordinance no.20 of 1949 (cap 158)	7. Regulate and control the timber harvesting and trade	<ul style="list-style-type: none"> Introduced the property mark, Issuance of felling licences (loggers pit-sawyers)
Protected Timber lands Act, 1959 (Act 34)	8. Provided for the declaration of off-reserve timber lands as protected timber land areas.	Unreserved forest were declared PTLs to allow for removal of timber before conversion to agriculture

Impacts of policies and laws (1911-1990)

- By 1972 1,678,800 hectares of reserve had been created in the high forest zone.
- By 1990 there was no forest left outside the reserve areas. Patches of forest found are mainly sacred grove

Impacts of policies and laws



Source: Compiled from Forestry Dept annual reports 1962-1989

Forest policies and laws (1990-2007)

- 1994 policy makes provision the management of unreserved forests by the Forestry Department for sustainable resource development (5.3.2);and
- Revision of resource management standards and techniques for preparation of detailed prescriptions and plans to guide the sustainable management ofas well as **unreserved forests** (5.3.3);

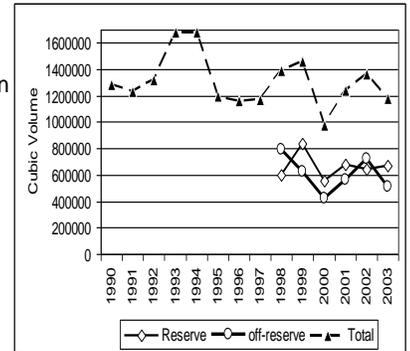
1.2 Traditional practices

Traditional practices contributing to the demise of the unreserved forests

- I. Scramble for land (Based on-“where your hatchet has touched” principle
- II. Communal right to live and farm but no right of ownership to naturally growing timber trees on farm.
- III. Long term tenancy agreement –but farmer cannot plant trees and cannot own naturally occurring trees

1.3 Tree exploitation off-reserve

- Off-reserve areas contribute between 50-70% log production over the years.
- 1996 estimates predict yields of 500,000m³ per year for the next 55 years (Aninakwa, 1996)



Source: Cobbinah et al 2005

3. On-farm tree management practices

What is “on-farm tree management”?

- Tree Management on-farm describes how to manage individual crop trees for single or multipurpose benefits to the farmer or land owner.
- In Ghana, are on-farm trees under any system of management?

3. On-farm tree management practices

- 3.1 Traditional Practices



- 3.2 FSD Practices



3.1 Traditional Practice

Traditional practices include:

- Bush fallows;
- Individual trees retained in cash and crop farms for variety of purposes;
- River and stream buffers;
- Sacred groves;
- shade tree at resting/fire place;
- Delineating farmland boundaries, and,
- Food-stuff storage bans.

3.1 Traditional practices

The knowledge gap

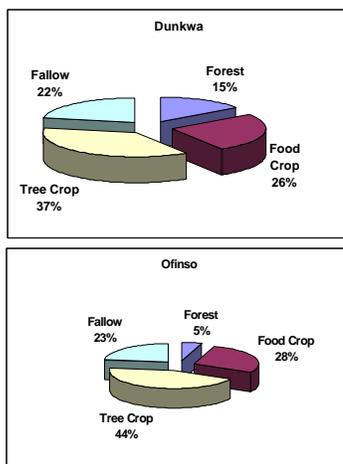
- 1) Are there significant variations in tree species diversity in the different farming and cropping systems?
- 2) What are the factors influencing trees species regeneration on farmlands?
- 3) How will the different farming systems affect future timber production?
- 4) Can timber production on farmlands be made more acceptable to farmers?

3.1.2 Stocking and ecological characteristics

On-farm trees may be found in:

- bush fallows/secondary forests;
- cash crop farms;
- food crop farms;
- sacred groves/Remnant forests, and,
- stream/river buffers zones.

Source: Adam *et al.*, 2000



Species distribution and abundance

The 10 most abundant species were mainly P (Pioneers) and NPLD

- Dunkwa = *Triplochiton scleroxylon* (8%); Ofinso = *Ceiba pentandra* (6%)

Species	Dunkwa	Ofinso	Guild	Seed dispersal
<i>Amphimas pterocarpoides</i>	-	3.9	NP LD	Wind
<i>Antiaris toxicaria</i>	1.6	2.7	NPLD	Animal
<i>Celtis mildbraedii</i>	4.9	-	NP LD	Animal
<i>Entandrophragma angolense</i>	1.2	-	NP LD	Wind
<i>Petersianthus macrocarpus</i>	1.5	2.5	NPLD	Wind
<i>Pycnanthus angolensis</i>	3.5	3.6	NPLD	Animal
<i>Nesogordonia papaverifera</i>	1.2	-	NP SHB	Wind
<i>Alstonia boonei</i>	5	4	P	Wind
<i>Ceiba pentandra</i>	4.2	6	P	Wind
<i>Melicia excelsa</i>	1.4	-	P	Animal
<i>Rhodognaphalon buonopozense</i>	-	2.8	P	Wind
<i>Terminalia ivorensis</i>	-	2.7	P	Wind
<i>Terminalia superba</i>	-	5.2	P	Wind
<i>Tiplochiton scleroxylon</i>	7.5	4	P	Wind
Others	68	62.6		

Conclusions – ecology of on-farm trees

- There are chances for pioneer and non-pioneer light demanding species to regenerate and grow to timber size under all traditional farming systems
- Tree density will however, depend on the type of cropping and desired tree species



3.1.3 Stocking and ecological characteristics

- The tree crop density, species composition (guild) and size classes and distribution vary with different farming systems

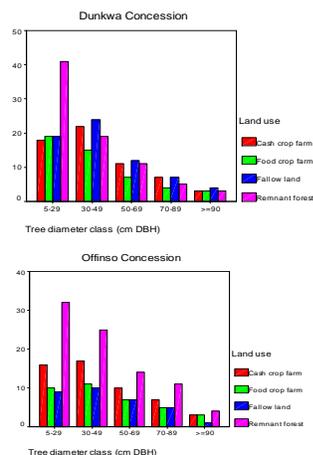
Tree density

Tree density:

- Tree density at Dunkwa higher than at Ofinso ($\chi^2 = 9.67$, $df = 3$, $p < 0.05$).

- Tree density at Dunkwa did not vary with farming system (ANOVA, $F = 1.15$, $df = 3, 9$; $P = 0.38$)

- Tree density at Ofinso varied with farming system (ANOVA, $F = 12.82$, $df = 3, 9$; $P = 0.01$)



3.2 Forestry practices

- 1994 forest policy makes a commitment for the FC to establish a management system to regulate harvesting of off-reserve timber and expeditious collection of relevant fees in ultimate conformity with criteria for sustainable resource management.

3.2 Forestry practices

- Identification of Timber utilization contract (TUC) areas
- Preparation of the contract
- Management of the TUC
- Fixing of district quotas

3.2 Forestry practices

Management of the TUC

- Approval of the TUC Operation Plan
- Inspection of all trees to be felled within the year
- Approval by land owners and cultivators and fixing any compensation payments
- Preparation of the Annual Plan
- Tree felling and tree volume estimation
- Cross-cutting and estimation of log volume
- Issue of log conveyance certificate
- Post logging inspection

3.2 Forestry practices

Fixing of district quotas

- Introduced as a measure to restrict severe over cutting and stretch the resource over a longer period (55 years) to allow on-farm and commercial planting to replace the natural forest.
- The calculation of the total cut and allocation of the quotas are provided on Instruction Sheet F2.1 (MOP Section F)
- Practice has receive very strong protest from TUC holder (Loggers)

3.2 Forestry practices

Protest on quota system

- Off-reserve TUC is 5 years so why restrict harvesting volume?
- Unit cost of logging on farm land is made more expensive when there are fewer trees to be removed
- There is no guarantee that the farmers will continue to give husbandry to the trees
- Survival of trees is also threatened by chainsaw milling
- Farmers are conniving with chainsaw millers to fell and process trees on their farms in some agreed terms

<p>Evaluation of Forestry management practices for off-reserve trees</p> <p>This may be assessed by asking the following questions:</p> <ul style="list-style-type: none"> ■ Have the measures improved tree recruitment, density, and species diversity of on-farm trees? ■ Has it ensured adequate supply of timber to the local industry? or ■ By how much has it improved access to timber for local development? ■ By how much has it increased revenue collection for on-farm tree harvesting? ■ Has it improved environmental protection (e.g. catchments protection,) ■ Has it contributed to the protection of genetic raw material? 	<p>Conclusions on forestry practice</p> <ul style="list-style-type: none"> ■ On-farm tree management practices by FC appear to be suffering from the weakness of focusing on the liquidation of on-farm tree resource as identified with the 1948 forest policy.
<p style="text-align: center;">Way Forward</p> 	<ul style="list-style-type: none"> ■ In attempt to resolve the problems of deforestation associated with agriculture and logging, the interaction between agricultural tree crops and timber tree species need to be well understood.
<ul style="list-style-type: none"> ■ Permanency of tree crops on farmlands needs to be addressed through resource policies ■ The social implications of increasing tree population on farmlands need to be addressed especially, with the issue of benefit sharing. 	<p>On-farm Tree Management Systems should focus on selecting and treating trees that will yield multiple benefits such as:</p> <ul style="list-style-type: none"> ■ Timber production ■ Medicinal uses ■ Fish and wildlife habitat improvement, ■ Aesthetic enhancement, and ■ Water-quality maintenance. ■ Etc.



<p style="text-align: center;">Strengthening Off-Reserve Timber Resource Management</p> <p style="text-align: center;">CBNRM – Field Experiences from CARE Ghana</p>	<p style="text-align: center;">Challenges facing availability of off-reserve timber – Policy Issues</p> <ul style="list-style-type: none"> • Off-reserve areas are for agriculture – consistent logging without conscious effort to replace off reserve timber through re-forestation • Off-reserve forest resources are best created by farmers & communities. Government should create policy and legal environment to facilitate this. • Lack of incentives for local management of forest resources: <ul style="list-style-type: none"> - Farmers have no financial benefits from forest resources, hence resort to turning the forest into cocoa farms which they can confidently call their own and get financial benefits from it. - Exclusion of TAs and communities from forest resource governance • Communities access to timber and forest resources to improve their livelihood is weak compared to other stakeholders. They see “strangers” harvesting “their” forests without any financial benefits to them and therefore compelled to support illegal “chain sawing”.
<p style="text-align: center;">Challenges facing Off-Reserve Timber Resource Management – Policy Issues</p> <ul style="list-style-type: none"> • Government takes 76% of income from timber royalties leaving 24% for traditional authorities and land owners. • These are hardly re-invested to improve off-reserve forest resources. • Attention of FC is on “maintaining” forest reserves (Tano- Ehuro, Krokosua Hills, Pamu Berekum). • Non/inadequate compensations for crops destroyed by timber companies. • Several stakeholders with a common interest in forest resources without a common platform for dialogue. • Competing interests of timber companies with legally granted leases with illegal chain saw operators means timber companies do not have full benefit of timber resources from their leases for which they are fulfilling their Social Responsibility Agreements (SRAs). 	<p style="text-align: center;">Challenges facing Off-Reserve Timber Resource Management – Customary Practices</p> <p>The two most important issues for farmers/communities in off-reserve areas are:</p> <ul style="list-style-type: none"> • Security of income for land owners, <ul style="list-style-type: none"> ➢ 2-year traditional rule ➢ implications for forest resource loss in the off-reserve areas • Security of land tenure for tenant farmers <ul style="list-style-type: none"> ➢ share cropping arrangements ➢ implications for forest resource loss in the off-reserve areas • Dominance of cocoa as main income source <ul style="list-style-type: none"> ➢ appropriate policy environment and institutional arrangements as incentives for communities to invest in cocoa ➢ replacement of forest cover and timber trees with cocoa ➢ no such consideration for other cash crops
<p style="text-align: center;">Challenges facing Off-Reserve Timber Resource Management – Farming Practices</p> <ul style="list-style-type: none"> • Focus on mono-crop farm types rather than integrated/farm forest systems • Lack of capacity to match crop suitability with soil type/sustainable land use practices • Capacity of farmers to generate income from other forest products (<i>Thaumatococcus</i>, <i>Alnblanckia</i>, bamboo, canes, rattans, timber etc) 	<p style="text-align: center;">Priority Issues for Communities</p> <ul style="list-style-type: none"> • Security of tenure, ownership and control of forest resources on their farm lands • Security of income • Capacity to diversify production systems to fit into forest ecology • Equity issues – are farmers paying right rents? • Local platforms to engage • Access to markets

<p style="text-align: center;">Addressing Security of Tenure Tenant Farmers</p> <ul style="list-style-type: none"> • Create/use platforms and facilitate community discussions to address insecurity of tenure issues for tenant/migrant farmers: <ul style="list-style-type: none"> ➢ Understanding share cropping –different opinions ➢ Prevailing benefit sharing arrangements based on cocoa ➢ no consideration for benefit sharing arrangements from other cash crops – cola, black pepper etc ➢ Discuss concerns Tenant farmers have with landowners ➢ Discuss concerns from landowners and how to address them 	<p style="text-align: center;">Addressing Security of Income Land owners</p> <ul style="list-style-type: none"> • Create/use platforms to facilitate discussions among landowners/chiefs to address insecurity of income issues and tenure <ul style="list-style-type: none"> ➢ Discuss sources of incomes for land owners ➢ Discuss share cropping and implications for sustainable forest resource management including timber – other options? ➢ Discuss concerns from Tenant farmers and how to address them ➢ Discuss concerns land owners have with tenant farmers ➢ “management” understanding between landowners and land users that promote sustainable land use and forest management practices – overlapping interests/conflicting interests/fair deal
<p style="text-align: center;">Diversifying Production Systems Farm Forests</p> <p>Farm forests is the idea of integrating farming practices into existing forest ecosystems so as to maintain the forest ecology and its resources (water, etc)</p> <ul style="list-style-type: none"> • <i>“the commitment of resources by farmers, alone or in partnerships, towards the establishment or management of forests on their land.”</i> with the ultimate aim of generating income to improve their livelihoods. (Farm Forest Line[1] is a free information service managed by Australian Forest Growers) • <i>“dynamic, ecologically based, natural resources management system that, through the integration of trees on farms and in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels.”</i> The World Agroforestry Centre (ICRAF) 	<p style="text-align: center;">Diversifying Production Systems Farm Forests</p> <ul style="list-style-type: none"> • Viewing the forest as a farm from which forest commodities such as canes, rattan, bamboo, timber, wildlife and other forest products can be sustainably harvested to generate income. • Farmers engage in “in situ” cultivation of such forest products including timber as part of farming • Farming is based on analysis of knowledge and use of what the land can support without damage to the ecosystem and focuses on sustaining production from the farm as a whole. • Establishing production systems where suitable agriculture crops and forest resources are compatible and co-exist together.
<p style="text-align: center;">Diversifying Production Systems Farm Forests</p> <ul style="list-style-type: none"> • Facilitate discussions on farmers productions systems <ul style="list-style-type: none"> ➢ Cost benefit analysis of production of varieties of crops to enable farmers make informed choices of which to invest in ➢ Compare cocoa/black pepper ➢ Use of crop/soil suitability maps ➢ Short, medium and long term income generating production systems 	<p style="text-align: center;">Timber Trees in Cocoa Farms</p> <p>About 10 timber trees per acre in cocoa farms</p> <ul style="list-style-type: none"> • Gwira Bansa 1996 to 2003: <ul style="list-style-type: none"> ➢ 600 families planted 247,000 timber species in off-reserve areas ➢ 16 different species: <i>mahogany, edinam, nyankom, makoree, utile, asanfuna, avodaree, sapele, akasah, aprokuma, odum, kusia, wawa, guarea, teak, cedrella</i> • 2005- 2006 <ul style="list-style-type: none"> ➢ 283 farmers planted 36,502 trees in 2,313 acres ➢ Species: <i>mahogany, ofram, nyankom, edinam, avodari, bako, subaha, emire, onyina, odum, akonkodia, nyamedua, asanfuna,kyenkyen, guarea, cedrella</i>

<p style="text-align: center;">Constraints</p> <ul style="list-style-type: none"> • Farmers ask for financial support as incentives • Ownership of concept • Access to seedlings 	<p style="text-align: center;">Constraints</p> <ul style="list-style-type: none"> • Farmers ask for financial support as incentives • Ownership of concept • Access to seedlings
<p style="text-align: center;">Policy and Legal Reforms</p> <ul style="list-style-type: none"> • Addressing community ownership of forest resources • Adoption of a policy that supports accelerated devolution of forest management to communities and District Assemblies building on the lessons of implementing CREMA type systems introduced by the Forestry Commission • National and local level technical, research and commercial forest and wildlife service providers that support community forest-based enterprises • Institutionalisation of democratic mechanisms that allow communities and other stakeholders to participate actively and effectively in sector policymaking • A strong Forest and Wildlife Service that acts as regulator but not a manager and is accountable to both District Assemblies and (through MLFM) Parliament 	<p style="text-align: center; font-size: 2em;">THANK YOU</p>

Decentralised forest management in Tanzanian and Nepal; Relevance for Ghana? (T. Treue)

UNIVERSITY OF COPENHAGEN
Faculty of Life Sciences
Forest and Landscape Denmark

Decentralised forest management in Tanzanian and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

Structure of presentation:

1. Brief introduction to the concept and objectives of Decentralised Forest Management (DFM)
2. History and results of Community Forestry (CF) in Nepal
3. History and results of Participatory Forest Management (PFM) in Tanzania
4. Is DFM relevant in Ghana's High Forest Zone (HFZ)?

Place, date, unit, occasion etc.
Slide 1

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Decentralised forest management in Tanzanian and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

The triple objective of Decentralised Forest Management (DFM):

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Decentralisation through Devolution or Deconcentration?

Devolution:

A transfer of authority over forest resources to (democratically elected) local governments, which may further delegate authorities to different kinds of user groups.

Deconcentration (plus delegation):

A transfer of authority to a line agency (e.g. the Forestry Department) authorising it to delegate (hand-over) management of specified forest resources to different kinds of (self-established) user groups.

Place, date, unit, occasion etc.
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Decentralised forest management and the surrounding society

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Decentralised Forest Management in Tanzanian and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

How can central and local governments promote the triple objective of DFM "on-the-ground"?

Forest Conservation

May be ensured by making DFM contingent on forest managing communities' actual implementation of specified procedures and guidelines for sound forest utilisation (law-defined minimum requirements to management planning and implementation). Yet, technical requirements more sophisticated than those official agencies, which manage similar resources, must live up to, are probably not justifiable, nor are they likely to be essential.

Poverty Reduction

The economic rationale of decentralised forest management, *as an alternative to open access*, is that the total value of the resource can be enhanced or at least maintained (through improved management) and that the costs and benefits can be distributed equitably (through improved governance).

Good governance

May first and foremost be promoted by giving local communities real and meaningful powers over forest resources *as well as forest revenues*. In addition, local-level decision-making must be transparent and follow democratic principles. Free-riding among users must be discouraged by effective but fair punishment systems. Community leaders must be made downwards accountable through transparent accounting systems that allow for mandatory public auditing. Moreover, there must be reasonable frequent elections of community leaders and clear procedures for when extraordinary elections can be called, e.g. based on votes of no confidence.

Place, date, unit, occasion etc.
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Community forestry (CF) in Nepal

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Decentralised forest management in Tanzanian and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

Community Forestry (CF) in Nepal

History:

- Practically all forest resources were nationalised in 1957
- 1957-1993: Forests were, *de jure*, controlled by the Department of Forests (DoF), but most forests were, *de facto*, open access resources.
- The resulting and quite conspicuous deforestation including its possible costs in terms of land slides and floods became a reason for growing political concern.
- The 1988 Master Plan for the Forestry Sector deemed the 1957 nationalisation of forests a failure and stipulated legislative changes that would allow for and encourage the handing over of all accessible and suitable forest areas to appropriate user groups.
- 1988-1993: Donors generously supported numerous pilot projects including massive 're-orientation' programmes for DoF staff.
- 1990: Democracy was restored for the second time in Nepali history.
- In 1993 a new Forest Act legalising and promoting CF was passed in parliament.
- In 1995 the Forest Regulations including detailed procedures for implementing CF were passed in parliament.
- 1993-present: Donors have generously supported decentralisation forest management in Nepal.

Place, date, unit, occasion etc.
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Decentralised forest management in Tanzanian and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

Community Forestry (CF) in Nepal

Key Legal Features:

- District Forest Officers (DFOs) are authorised to 'hand over' negotiated areas of state forest to local self-defined community forest user groups (CFUGs). This is contingent on:
 - A constitution being developed for the CFUG.
 - An elected executive committee being established.
 - A 'sustainable' CF management plan being devised by the community and approved by the DFO.

The DFO must support and guide this in accordance with the 1993 Forest Act and 1995 Forest Rules, i.e. the organisational approach is *deconcentration and delegation*.

- The state remains the formal owner of CF land but:
 - CFUGs get rights to access, extract, manage and exclude outsiders from their CFS.




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Community Forestry (CF) in Nepal

Key Legal Features (continued):

- CFs can only be managed as common pool resources, i.e.:
 - They cannot be sub-divided into individualised plots or outright sold to individuals or any other legal persons.
 - They can, however, be sub-divided into, e.g. women CFUGs over which men have no formal say.
- CFUGs are 'legal persons' with perpetual succession (they do not need to renew their status as proprietors of their CF).
- CFUGs acquire full ownership to all products from their CF:
 - Products from CFs may be sold to members or external buyers according to the CFUGs decision and at prices fixed independently by the individual CFUG.
 - No royalties are to be paid. However, some DFOs attempt to collect a disputed 15% 'company tax' on revenues arising from sale of CF products to 'outsiders'.




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Community Forestry (CF) in Nepal

Results

Facts based on official monitoring:

- 3.5 million ha of the country's 5.5 million ha of forest is estimated to be suitable for CF.
- Since 1993, at least 0.85 million ha or some 23.5% of the potential CF area has been handed over to CFUGs.
- The total number of CFUGs is around 12,000, including approximately 1.2 million households.

Effects on forest conservation:

- Seems very positive but many CFs also appear 'under-utilised'.
- No formal attempts to estimate the forest conservation effect of CF across the country.
- Yet, there have been very few cases of DFOs 'taking back' CFs due to over-harvesting or other mismanagement.




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Community Forestry (CF) in Nepal

Results (continued)

Effects on poverty reduction:

- No official or unofficial national estimates exist.
- However, a survey in Nepali fiscal year 2003/4 of 1,958 CFUGs shows that:
 - Their total CF derived income was approx. US\$ 1.0 million making up around 30% of the CFUGs total income.
 - Of CFUG expenditures, 22% are spend on CF management, 51% on community development, 15% on development of the CFUG organisations and 12% on activities specifically for poor people.
 - The accumulated assets (outstanding loans, bank balances and cash holdings) of CFUGs was approx. US\$ 1.0 million.




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Community Forestry (CF) in Nepal

Results (continued)

Effects on governance:

- No official or unofficial estimates have been published. Nor does a 'governance monitoring scheme' exist (it is an emerging and hitherto under-researched area).
- Anecdotal information and a few case studies, however, report that:
 - Many CFUGs have experienced cases of embezzlement and, thus, toppled executive committees, which indicates that 'ordinary' people are beginning to exercise their democratic rights and bring about downwards accountability of their elected leaders.
 - CFUGs have established a national interest organisation; the Federation of Forest User Groups Nepal (FECOFUN), which is capable of raising its voice on CF policy issues at the national level.
 - Some residents or occasional forest users are not accepted into the CFUG although they would like to become members (minority interests/rights are not legally secured and not always respected).
 - Some CFUGs are dominated by influential individuals who bend group decisions to their personal benefit (elite capture).
 - When the terms of local government members ran out under the King's recent period of direct rule, networks of CFUGs often took over the administration of public investments and services (health, education, infrastructure, etc.). This indicates that CFUGs are often considered very credible organisations.

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Decentralised forest management in Tanzanian and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

Participatory Forest Management (PFM) in Tanzania



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Decentralised forest management in Tanzanian and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

Participatory Forest Management (PFM) in Tanzania

History:

- Political concern over dwindling and degrading forest resources.
- A number of donor-supported pilot projects were implemented during the 1990s.
- In 2002, the current Forest Act, which provides a clear legal basis for PFM, was passed.

Two different types of PFM:

Community-based forest management (CBFM)

- Village governments may declare (and ultimately gazette) forest reserves within their territory. This applies on hitherto unreserved forest land. Village governments become the official owners of such forests and their products (Devolution).

Joint forest management (JFM)

- Communities may sign joint management agreements with representatives of local or the central government on sharing responsibilities, costs and benefits of managing government forest reserves. Under JFM, the forest reserves remain under government (central or local) ownership (Deconcentration).



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Participatory Forest Management (PFM) in Tanzania

Facts based on official survey in 2006:

Community-Based Forest Management		Joint Forest Management	
Area of forest under CBFM	2.06 mill. ha	Area of forest under JFM	1.61 mill. ha
No. of declared or gazetted village land forest reserves	382	No. of forest reserves under JFM.	209
No. of villages engaged in CBFM	1,102	No. of villages engaged in JFM	719
Most common forest types under CBFM	Miombo, acacia and costal woodlands	Most common forest types under JFM	Montane forest and Mangroves
% of public land forests now under CBFM	10.2%	% of government forest reserves under JFM	11.6%

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Decentralised forest management in Tanzanian and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

Participatory Forest Management (PFM) in Tanzania

Results

Since PFM is relatively new in Tanzania, no large scale systematic monitoring of the effects have yet been launched. Accordingly, the below listing of general results should only be considered as indicative.

Effects on forest conservation:

- Seems very positive for both CBFM and JFM. However, some CBFM forests appear harvested well below their capacity.

Effects on poverty reduction:

- Most JFM arrangements appear heavily focussed on forest conservation, thus, offering very few benefits for the local people. Forests under CBFM, on the other hand, are often generating locally significant incomes.



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Decentralised forest management in Tanzanian and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

Participatory Forest Management (PFM) in Tanzania

Results (continued)

Effects on governance:

- Many CBFM villages have experienced cases of embezzlement and, thus, toppled executive committees, which indicates that 'ordinary' people are beginning to exercise their democratic rights and bring about downwards accountability of their elected leaders.
- Some residents' or occasional forest users' interests are not well reflected in management plans (minority interests/rights are not legally secured and not always respected).
- Some CBFM villages are dominated by influential individuals who bend group decisions to their personal benefit (elite capture).



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Decentralised forest management in Tanzanian and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

Participatory Forest Management (PFM) in Tanzania

Results (continued)

Acknowledged challenges and priorities for the Forest and Beekeeping Division:

- The need to rapidly bring more forest under PFM (to prevent ongoing deforestation and forest degradation).
- The need to increase "legal literacy" among rural forest managers on how they may legally benefit from, own and utilise forest land under the 2002 Forest Act.
- The need to increase the awareness and capacity of district staff and other PFM facilitators.
- The need to develop ways of making JFM arrangements for high bio-diversity forests financially attractive to local communities.
- The need to engage responsible private sector forestry enterprises (loggers, charcoal traders, etc.) in PFM in ways that maximises benefits for both communities and the private companies.
- The need to establish a national monitoring system for PFM and to support in-depth research on the effects of PFM.



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Decentralised forest management in Tanzania and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

CF in Nepal & PFM in Tanzania

Similarities:

- Political concern over the wider results of dwindling and degrading forest resources.
- Political commitment to 'democratise' forest resource management and reduce rural poverty.
- Substantial donor support during testing, refinement and implementation of the concept.
- Substantial and meaningful powers over forest resources *and* revenues are transferred from central governments to local levels, but this is contingent on decentralised management being 'sustainable'.
- Forest products are mainly consumed domestically.

Differences:

- CF in Nepal follows the principle of deconcentration while PFM in Tanzania follows the principle of devolution (CBNRM) as well as deconcentration (JFM).

Place, date, unit, occasion etc.
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Decentralised forest management in Tanzania and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

Is DFM relevant in Ghana's high forest zone?

Selected issues in the 1994 Forest & Wildlife Policy that appear unfulfilled:

Guiding Principles:
The Government of Ghana recognizes and confirms:

- 3.2.15 The need to develop a decentralized participatory democracy by involving local people in matters concerned with their welfare.
- 3.3 In view of the importance of local people in pursuing these principles the Government *proposes to place particular emphasis on the concept of participatory management and protection of forest and wildlife resources* and will seek to develop appropriate strategies, modalities and programmes in consultation with the relevant agencies, rural communities and individuals.

Policy Statements:

- 4.1 The Forest and Wildlife Policy of Ghana aims at 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.
- 4.2.1 Manage and enhance Ghana's permanent estate of forest and wildlife resource for preservation of vital soil and water resources, conservation of the environment and sustainable production of domestic and commercial produce.

Strategies:

- 5.3.10 Encouragement of local community initiatives to protect natural resources for traditional, domestic and economic purposes, and support with the reservation of such lands to enable their legal protection, management and sustainable development.
- 5.5.5 Development of consultative and participatory mechanisms to enhance land and tree tenure rights of farmers and ensure access of local people to traditional use of natural products.

Place, date, unit, occasion etc.
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Decentralised forest management in Tanzania and Nepal; Relevance for Ghana? (T.Treue, Sep. 2007)

Is DFM relevant in Ghana's high forest zone?

Chinese proverb:
If we don't change course, we'll reach what we are heading towards

Some key policy questions:

- Is the current rate of deforestation/forest degradation desirable for Ghana as a nation?
- What will happen when (if) off-reserve timber trees become economically extinct?
- Ghana's economically vital cocoa export is based on small-scale (decentralised) producers located in the HFZ. Could the timber sector learn something from this?
- In the long-run, can timber resources realistically be conserved unless local communities get more benefits from on and off-reserve trees than today?
- Could the GoG 'trade' carbon storage and bio-diversity protection on emerging international markets and make forest conservation financially more attractive than the current (unsustainable) timber exploitation?



Place, date, unit, occasion etc.
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THANK YOU



APPENDIX 2: CLASSIFICATION AND FELLING LIMITS OF SOME SELECTED TIMBER TREE SPECIES

No	Scientific name		Local name	Felling limit (cm)	FIP classification	Star rating
1	<i>Albizia</i>	<i>ferruginea</i>	AWIEMFOSAMINA	90	1	Scarlet
2	<i>Entandrophragma</i>	<i>candollei</i>	PENKWA-AKOA	110	1	Scarlet
3	<i>Entandrophragma</i>	<i>cylindricum</i>	PENKWA	110	1	Scarlet
4	<i>Entandrophragma</i>	<i>utile</i>	EFOoBRODEDWO	110	1	Scarlet
5	<i>Khaya</i>	<i>anthotheca</i>	KRUMBEN	110	1	Scarlet
6	<i>Khaya</i>	<i>grandifoliolia</i>	KRUBA	110	1	Scarlet
7	<i>Khaya</i>	<i>ivorensis</i>	DUBINI	110	1	Scarlet
8	<i>Milicia</i>	<i>excelsa</i>	ODUM	110	1	Scarlet
9	<i>Nauclea</i>	<i>diderrichii</i>	KUSIA	110	1	Scarlet
10	<i>Pericopsis</i>	<i>elata</i>	KOKRODUA	110	1	Scarlet
11	<i>Terminalia</i>	<i>ivorensis</i>	EMIRE	90	1	Scarlet
12	<i>Tieghemella</i>	<i>heckelii</i>	BAKU	110	1	Scarlet
13	<i>Triplochiton</i>	<i>scleroxylon</i>	WAWA	90	1	Scarlet
14	<i>Milicia</i>	<i>regia</i>	ODUM-NUA	110	1	Scarlet
15	<i>Azalia</i>	<i>africana</i>	PAPAO	90	1	Red
16	<i>Anopyxis</i>	<i>klaineana</i>	KoKoTE	70	1	Red
17	<i>Antrocaryon</i>	<i>micraster</i>	APROKUMA	90	1	Red
18	<i>Rhodognaphalon</i>	<i>brevicuspe</i>	ONYINAKoBEN	70	1	Red
19	<i>Chrysophyllum</i>	<i>subnudum</i>	ADASEMA	70	1	Red
20	<i>Copaifera</i>	<i>salikounda</i>	ENTEDUA	70	1	Red
21	<i>Entandrophragma</i>	<i>angolense</i>	EDINAM	110	1	Red
22	<i>Guibortia</i>	<i>ehie</i>	ANOKYE-HYEDUA	90	1	Red
23	<i>Heretiera</i>	<i>utilis</i>	NYANKOM	70	1	Red
24	<i>Lophira</i>	<i>alata</i>	KAKU	110	1	Red
25	<i>Lovoa</i>	<i>trichilioides</i>	DUBINIBIRI	90	1	Red
26	<i>Mitragyna</i>	<i>Spp</i>	SUBAHA	70	1	Red
27	<i>Pterygota</i>	<i>macrocarpa+</i>	KYEREYe	70	1	Red
28	<i>Aningeria</i>	<i>altissima</i>	SAMFENA	90	1	Red
29	<i>Amphimas</i>	<i>pterocarpoides</i>	YAYA	90	1	Pink
30	<i>Rhodognaphalon</i>	<i>buonopozense</i>	AKATA	70	1	Pink
31	<i>Chrysophyllum</i>	<i>perpulchrum</i>	ATABENE	70	2	Pink
32	<i>Ceiba</i>	<i>pentandra</i>	ONYINA	110	1	Pink
33	<i>Celtis</i>	<i>mildbraedii</i>	ESA	70	1	Pink
34	<i>Aningeria</i>	<i>Spp.</i>	ASAMFENA	90	1	Pink
35	<i>Antiaris</i>	<i>toxicaria</i>	KYENKYEN	110	1	Pink
36	<i>Canarium</i>	<i>schweinfurthii</i>	BEDIWONUA	110	1	Pink
37	<i>Chrysophyllum</i>	<i>Albidum</i>	AKASAA	70	1	Pink
38	<i>Cylicodiscus</i>	<i>gabunensis</i>	DENYAo	70	1	Pink
39	<i>Cynometra</i>	<i>Ananta</i>	ANANTA	70	1	Pink
40	<i>Daniellia</i>	<i>Ogea</i>	HYEDUA	110	1	Pink
41	<i>Daniellia</i>	<i>thurifera</i>	SOPI	70	1	Pink
42	<i>Distemonanthus</i>	<i>benthamianus</i>	BONSAMDUA	90	1	Pink
43	<i>Erythrupleum</i>	<i>guineense</i>	POTRODOM	70	1	Pink
44	<i>Guarea</i>	<i>Cedrata</i>	KWABOHORO	90	1	Pink
45	<i>Guarea</i>	<i>thompsonii</i>	KWADWUMA	90	1	Pink

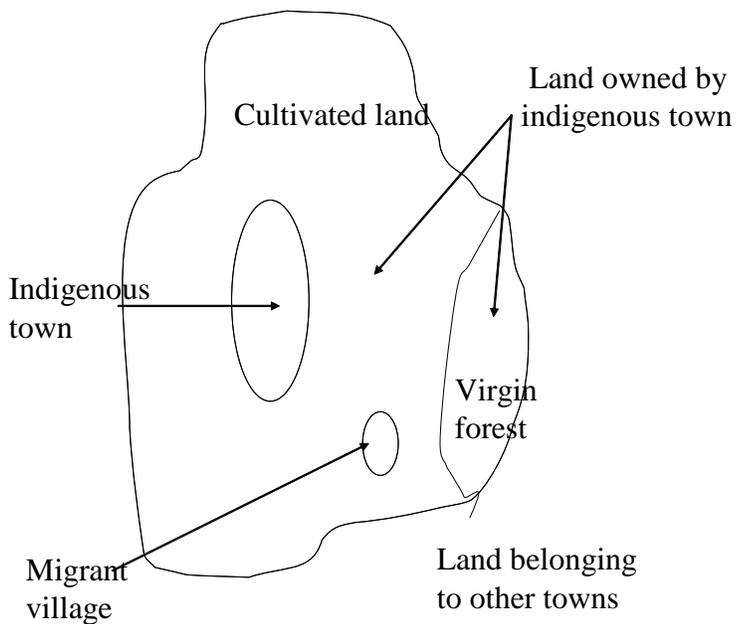
No	Scientific name		Local name	Felling limit (cm)	FIP classification	Star rating
46	<i>Mammea</i>	<i>Africana</i>	BOMPAGYA	70	1	Pink
47	<i>Mansonia</i>	<i>altissima</i>	OPRONO	90	1	Pink
48	<i>Nesogordonia</i>	<i>papaverifera</i>	DANTA	70	1	Pink
49	<i>Piptadeniastrum</i>	<i>africanum</i>	DAHOMA	70	1	Pink
50	<i>Pycnanthus</i>	<i>angolensis</i>	OTIE	70	1	Pink
51	<i>Sterculia</i>	<i>rhinopetala</i>	WAWABIMA	70	1	Pink
52	<i>Strombosia</i>	<i>glaucescens</i>	AFENA	20	1	Pink
53	<i>Terminalia</i>	<i>superba</i>	oFRAM	90	1	Pink
54	<i>Turraeanthus</i>	<i>africanus</i>	APAPAYE	70	1	Pink
55	<i>Chrysophyllum</i>	<i>giganteum</i>	KUMFANA	70	1	Pink
56	<i>Aningeria</i>	<i>robusta</i>	SAMFENANINI	90	1	Pink
57	<i>Albizia</i>	<i>zygia</i>	oKORO	90	1	Green
58	<i>Alstonia</i>	<i>boonei</i>	SINURO	110	1	Green
59	<i>Berlinia</i>	<i>confusa</i>	KWATAFOMPABOA	70	1	Green
60	<i>Berlinia</i>	<i>spp</i>	KWATAFONPABOAN INI	70	1	Green
61	<i>Cordia</i>	<i>millenii</i>	TWENEBOA	70	1	Green
62	<i>Dialium</i>	<i>aubrevillei</i>	DUABANKYE	90	1	Green
63	<i>Klainedoxa</i>	<i>gabonensis</i>	KROMA	90	1	Green
64	<i>Parkia</i>	<i>bicolor(+)</i>	ASOMA	70	1	Green
65	<i>Petersianthus</i>	<i>macrocarpus</i>	ESIA	70	1	Green
66	<i>Celtis</i>	<i>zenkeri</i>	ESAKoKo	70	1	Green
68	<i>Cordia</i>	<i>platythyrsa</i>	TWENEBOABERE	70	2	
69	<i>Morus</i>	<i>mesozygia</i>	WONTON	90	2	
70	<i>Sterculia</i>	<i>oblongata</i>	OHAA	70	2	
71	<i>Zanthoxylum</i>	<i>gilletii</i>	OKUO	70	2	
72	<i>Cola</i>	<i>gigantea</i>	WATAPUO	70	2	
73	<i>Erythroxylum</i>	<i>mannii</i>	BENKYI	50	2	
74	<i>Hannoa</i>	<i>klaineana</i>	HOTROHOTRO	90	2	
75	<i>Parinari</i>	<i>excelsa</i>	AFAM	90	2	
76	<i>Blighia</i>	<i>sapida</i>	AKYE	90	2	
77	<i>Albizia</i>	<i>adianthifolia</i>	PAMPENA	90	2	
78	<i>Breviea</i>	<i>leptosperma</i>	KANKABIM	50	2	
79	<i>Gilbertiodendron</i>	<i>limba</i>	TETEKON	70	2	
80	<i>Lannea</i>	<i>welwitschii</i>	KUMNINI	70	2	
81	<i>Celtis</i>	<i>aldolfi-frider</i>	ESAKOSUA	70	2	
82	Okoubaka	aubrevillei	ODII			Gold

APPENDIX 3: ATTACHED DIAGRAMS FOR PRESENTATION TWO

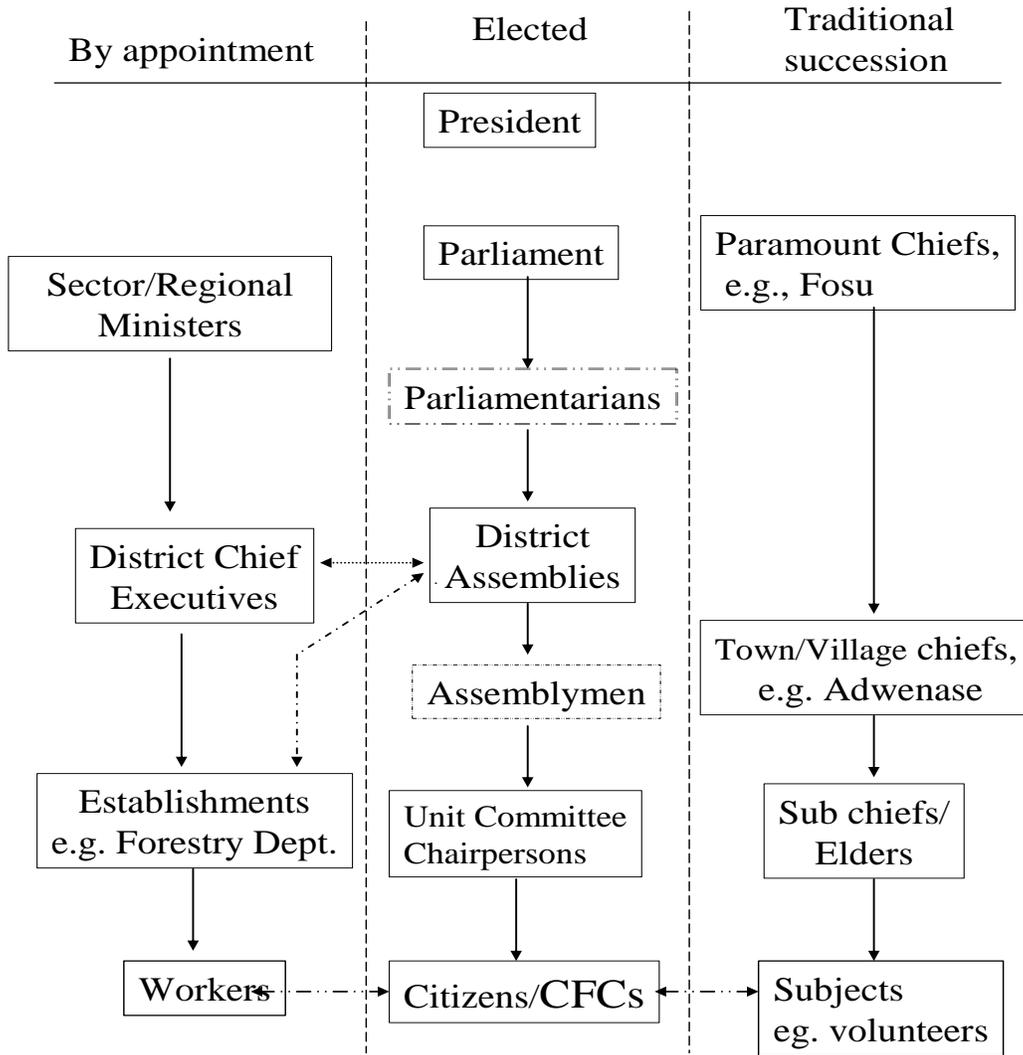
Attached diagrams

1. Village land ownership and use patterns
2. Types of governing systems and hierarchy in Ghana
3. Project impacts at the local level
4. Lessons learnt for wider application.

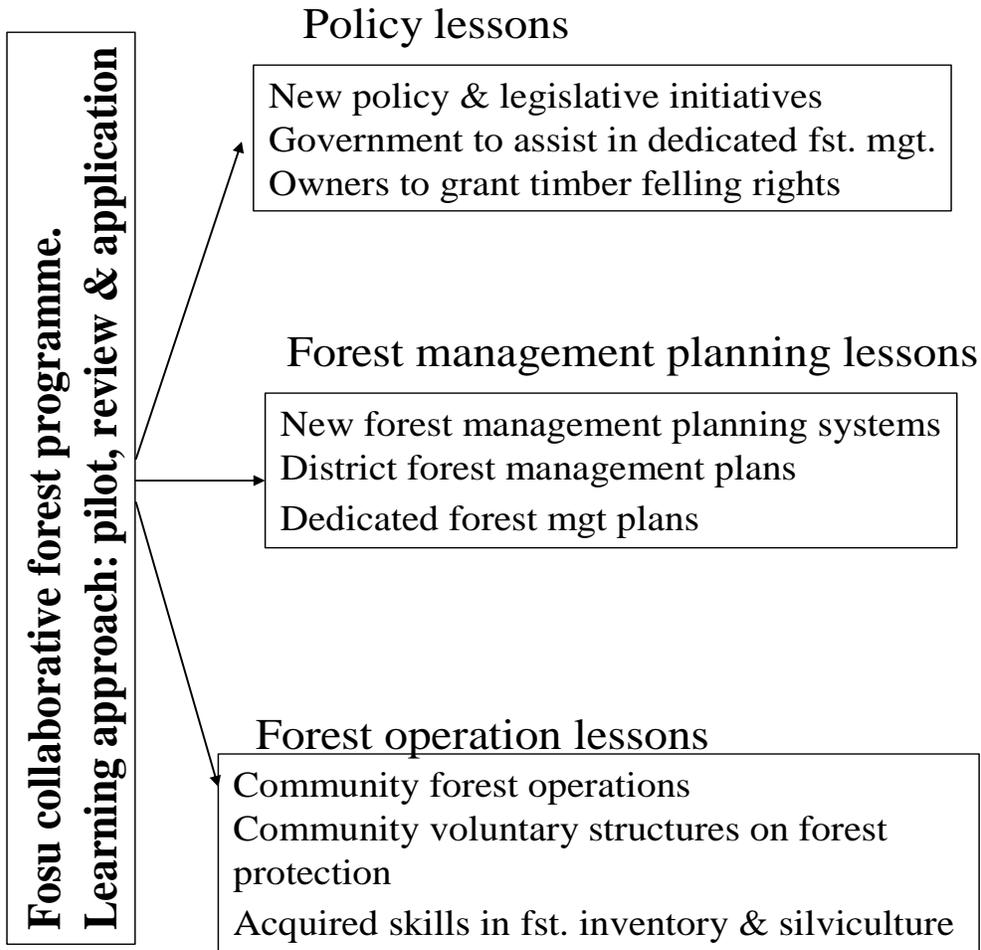
Indigenous land ownership and use patterns



The Hierarchy of Governance in Ghana



Lessons learnt from Fosu community forest management programme



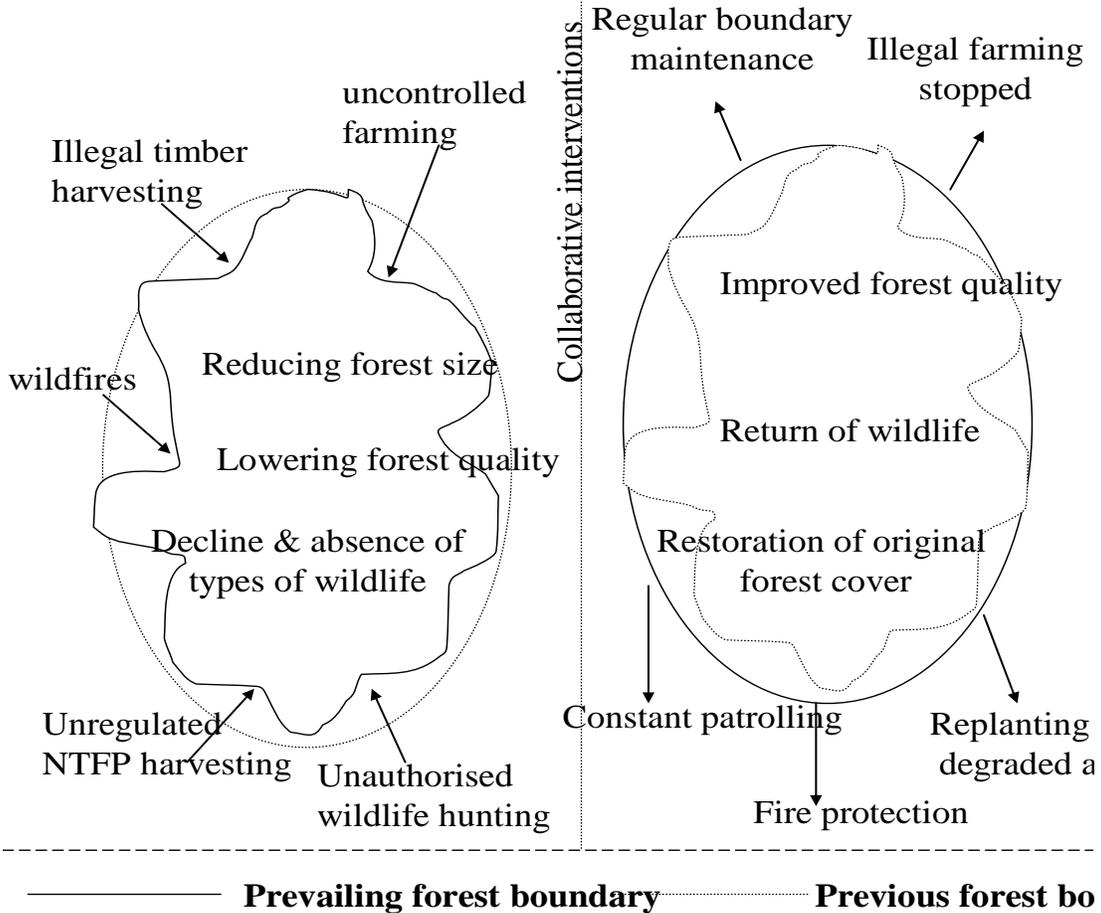
Local impacts of Fosu project

Pre-project situation-1992

With project situation

Social scenario:
 strife, cheating, chaos, absence
 of fst. mgt. structures, e.t.c.

Social scenario:
 Accepted system of fst. Mgt., rest
 traditional authority, peaceful rela



APPENDIX 4: RESOURCE PERSONS

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7	Prof. Thorsten Treue		
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11	Francis Odoom	Abor Nova, Takoradi	

APPENDIX 5: LIST OF PARTICIPANTS

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50	Isaac A. Marfo	Chainsaw Operator, Assin Fosu	024 9738820

APPENDIX 6: PROGRAMME

JOINT TBI-GHANA – FLD, DENMARK AND CARE INTERNATIONAL, GHANA WORKSHOP

Theme: Timber Resources outside Forest Reserves: Is there a Future?

Objective: To identify options for the management of off-reserve timber resources

Dates: Thursday, 27th September to Friday, 28th September, 2007

Venue: Erata Hotel, East Legon, Accra