

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND
TECHNOLOGY, KUMASI
COLLEGE OF ENGINEERING
DEPARTMENT OF MATERIALS ENGINEERING**

KNUST

**ADMINISTRATION OF LOCAL COMMUNITY FOREST
RIGHTS IN THE HIGH FOREST ZONE OF GHANA: *THE CASE
OF FOREST FRINGE COMMUNITIES IN TANO-OFFIN FOREST
RESERVE, ASHANTI REGION***



BY

AWUAH, IAN EDWARD

JANUARY, 2015

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BY
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BSc. (Natural Resources Management)

A Thesis submitted to the Department of Materials Engineering in
partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE
in
Environmental Resource Management

JANUARY, 2015

DECLARATION

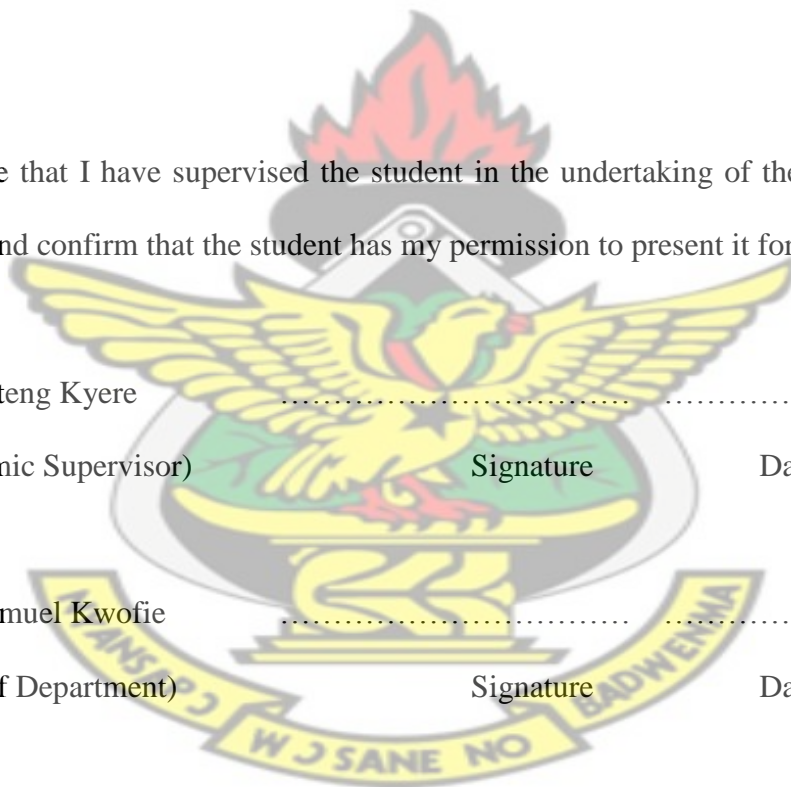
I hereby declare that this submission is my own work towards the MSc. and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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(Student / Index No.) Signature Date

I declare that I have supervised the student in the undertaking of the thesis reported herein and confirm that the student has my permission to present it for assessment

Dr. Boateng Kyere
(Academic Supervisor) Signature Date

Prof. Samuel Kwofie
(Head of Department) Signature Date



DEDICATION

This work is dedicated to my family for their tireless support and to my mother, OBAAPANIN ABENA FRIMPOMAA, who has been the fulcrum of my academic endeavours. .

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ACKNOWLEDGEMENTS

I am extremely thankful to Dr. Boateng Kyereh who recommended this work to me and also supervised me. Encouragement, patience, guidance and constructive comments and suggestions were his hallmark for the success of this thesis.

I extend special commendations to the following persons who greatly assisted me in my field data collection and analysis: Frank Owusu (RMSC), Eva Osei (formerly RMSC), Nana Osei Bonsu (KNUST), and Evelyn Asante-Yeboah (formerly Mapping Unit, RMSC), Dr. Mercy A.A. Derkyi (Tropenbos-Ghana office), Addah, Bediako, Oppong and Owusu (FSD, Nkawie), Dr. Rex Barnes (formerly RMSC) and all the drivers both in RMSC and Tropenbos-Ghana office).

I am profoundly indebted to the TBI through TBI-Ghana for the financial support for this work. Particularly, I am very grateful to Mr Samuel Nketiah (Director), who constantly urged me on. I am also thankful to the administrative staff for their immeasurable administrative support.

I wish to thank the Director and management of RMSC for the support and interest in this work. I thank also the Head and staff of Materials Engineering Department of KNUST for the congenial academic environment for the course of study.

I am extremely grateful to my family for their constant prayer support and my parents for placing me on the academic ladder that has propelled me this far, by God's Grace.

ABSTRACT

Forest rights and how they are administered constitute a major cause of deforestation and forest degradation. This study examined the administration of statutory local forest community rights against the expectation of forest fringe communities in the high forest zone of Ghana.

The study was carried out in the Tano-Offin Forest Reserve in Ashanti Region, a hot spot of deforestation and degradation in the forest zone. A case study approach with qualitative and quantitative data collection methods and analysis was applied. Data was analyzed using SPSS.

Eight categories of forest uses and benefits were identified showing substantial and varied uses of the forest reserve by the local people, but they have limited knowledge of the statutory forest rights and access protocols. Overall, 40% to 55% accessed forest uses and benefits across the regimes but as few as 19% to 30% were aware of community rights. Yet more people were aware of forest rules (42% to 56%), community responsibilities (23% to 32%) and procedures (22% to 31%) than rights. The people depended on their forebears, government/FC and community for knowledge of forest rights and access protocols. Across the regimes 1% to 9% cited their forebears, 6% to 42% the government/FC and 19% to 39% the community. Only in the Plantation regime that because of MTS forestland cultivation that the people most frequently cited the government/FC otherwise the community was most cited across the regimes. Thus in the absence of a structured awareness creation and education by the FC, knowledge passed on from the forebears and the community has shaped people's perceptions and attitudes. The people's potentials for collaborative forest management are not fully tapped as they lack formal forest management responsibilities in many respects. To them, the FC is insensitive to their concerns as it pursues forest management principles that exclude their course. They suggested that education on forest rights, improvements in access to forest resources and pragmatic participatory management regime will enhance sustainable management of the reserve.

The study recommends a realignment of FC's collaborative management to include a pragmatic programme of education on local forest rights and prioritization of local socio-economic aspirations.

LIST OF ABBREVIATIONS

CBAG	Community Biodiversity Advisory Group
CCF	Chief Conservator of Forests
CFC	Community forest committees
FC	Forestry Commission
FD	Forestry Department
FMU	Forest management unit
FORIG	Forestry Research Institute of Ghana
FVG	Fire volunteer group
GFC	Ghana Forestry Commission
GSBA	Globally Significant Biodiversity Area
HFZ	High Forest Zone
MLF	Ministry of Lands and Forestry
MTS	Modified taungya system
NTFPs	Non timber forest products
RMSC	Resource Management Support Centre
SRA	Social responsibility agreement
TBI	Tropenbos International
TIDD	Timber Industry Development Division
TUC	Timber utilization contract
TUP	Timber utilization permit

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
LIST OF ABBREVIATIONS	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	xi
LIST OF FIGURES	xiii
1.0 INTRODUCTION	1
1.1 Background.....	1
1.2 Problem statement.....	2
1.3 Justification	2
1.4 Objectives	3
1.5 Research questions.....	3
2.0 LITERATURE REVIEW	4
2.1 Definition and scope of forest rights.....	4
2.2 Origin and basis of statutory forest rights in Ghana	5
2.3 The native forest rights prior to reservation in Ghana	6
2.3.1 The ownership of forests.....	6
2.3.2 Rights to forest produce	6
2.3.3 Rights of the natives to wildlife resources.....	7
2.3.4 Rights to forest land for agriculture.....	8
2.3.5 Rights to timber.....	8
2.4 Forest rights reforms at reservation in Ghana.....	8
2.4.1 Local community forest rights, responsibilities and access protocols in constituted Tano-Offin Forest Reserve	10
2.5 The contemporary forest rights of local forest communities in Ghana.	11
2.5.1 Current ownership of forests.....	11
2.5.2 Current local community need for non-timber forest resources	12
2.5.3 Current local community need for forest lands for agricultural production	13

2.5.4 Current local community need for timber products	13
2.6 Global perspectives on forest rights administration.....	14
2.6.1 The administrative setting for operation of forest rights	14
2.6.2 Some relevant facets of property rights	16
2.6.2.1 Legal pluralism and forest rights	16
2.6.2.2 Forest rights and rules.....	16
2.6.2.3 Governance and forest rights	17
2.7 The context of knowledge.....	17
2.7.1 The “Justified True Belief” view of knowledge	18
2.7.2 The Challenge to the “Justified True Belief” view of knowledge	18
2.8 The Implementation of forest rights	19
2.8.1 Forest rights implementation challenges	19
2.8.2 Forest rights implementation enhancement	22
3.0 METHODOLOGY	24
3.1 Study Area	24
3.2 Data Collection	26
3.3 Data Analysis.....	28
3.4 Study Limitations.....	29
4.0 RESULTS.....	31
4.1 The Socio-economic profile of respondents	31
4.1.1 Sex and marital status	31
4.1.2 Age class distribution.....	32
4.1.3 Education, occupation and social status.....	32
4.1.4 Place of origin and length of residence.....	33
4.2 Local community forest uses and benefits.....	34
4.2.1 Association between forest reserve uses/benefits and management regimes	36
4.3 Traditional forest uses and development of statutory community forest rights in Tano-Offin Reserve	36
4.3.1 Local community forest uses in the past.....	37
4.4 Knowledge of forest rights.....	37
4.4.1 Awareness status of local forest rights.....	37

4.4.1.1 Association between awareness of community forest rights and management regimes	39
4.4.2 Specific rights known and sources of knowledge.....	39
4.4.2.1 Association between knowledge sources of community forest rights and management regimes	42
4.4.3 Validation of knowledge of forest rights	42
4.4.4 Concerns about forest rights	43
4.4.5 Recommendations for addressing concerns about rights.....	45
4.5 Forest rights responsibilities	47
4.5.1 Awareness Status of Local Communities' Forest Management Responsibilities	47
4.5.1.1 Association between awareness of community forest rights responsibilities and management regimes	48
4.5.2 Specific responsibilities known and sources of knowledge.....	48
4.5.2.1 Association between knowledge sources of community forest rights responsibilities and management regimes	51
4.5.3 Validation of forest rights responsibilities.....	51
4.5.4 Concerns about responsibilities	52
4.5.5 Recommendations addressing concerns about responsibilities	55
4.6 Procedures for accessing forest rights.....	57
4.6.1 Awareness status of procedures	57
4.6.1.1 Association between awareness of procedures for accessing forest rights and management regimes	58
4.6.2 Specific procedures known and sources of knowledge	58
4.6.2.1 Association between knowledge sources of procedures for accessing forest rights and management regimes.....	61
4.6.3 Validation of knowledge of forest rights access procedures	61
4.6.4 Concerns about procedures	62
4.6.5 Suggestions for addressing concerns about procedures.....	64
4.7 Rules governing access to forest rights.....	65
4.7.1 Awareness status of forest rights rules.....	65
4.7.1.1 Association between awareness of rules on community forest rights and management regimes	66
4.7.2 Specific forest rules known and sources of knowledge	67

4.7.2.1 Association between knowledge sources of forest rights rules and management regimes	69
4.7.3 Validation of knowledge of forest rights rules	69
4.7.4 Concerns about rules.....	70
4.7.5 Recommendations for addressing concerns about rules	71
5.0 DISCUSSION.....	73
5.1 Local socio-economic situation and forest rights implications.....	73
5.1.1 Literacy status and forest rights implications	73
5.1.2 Key local livelihoods and forest rights implications.....	73
5.2 Community knowledge of community forest tenure rights	75
5.2.1 The local forest reserve uses and benefits.....	75
5.2.2 Status of community knowledge of forest tenure rights	76
5.2.2.1 The awareness and knowledge of local forest rights	77
5.2.2.2 The awareness and knowledge of local forest responsibilities	78
5.2.2.3 The awareness and knowledge of local forest procedures.....	80
5.2.2.4 The awareness and knowledge of forest rights rules	82
5.3 Concerns and mitigation strategies about community forest rights.....	84
5.3.1 Concerns about forest rights	84
5.3.2 Concerns about responsibilities	87
5.3.3 Concerns about procedures	89
5.3.4 Concerns about rules.....	91
5.4 Mitigation strategies for community concerns about forest rights, responsibilities, access rules and procedures.....	93
6.0 CONCLUSIONS AND RECOMMENDATIONS.....	96
6.1 CONCLUSIONS.....	96
6.2. RECOMMENDATIONS	98
REFERENCES.....	99
APPENDICES	106

LIST OF TABLES

Table	Page
4.1: The age of respondents by age-class in the management regimes	32
4.2: The education, key occupation and social status of respondents in the forest management regimes	33
4.3 The Native and migrant status of respondents and length of migrant stay in the management regimes	34
4.4 The Local community forest reserve uses and benefits identified by the respondents in management regimes.....	35
4.5: Association between community forest uses/benefits and management regimes in Tano-Offin Forest Reserve.....	36
4.6 Local community forest use profile at the time of proposing the Tano-Offin forest for reservation.....	37
4.7: Respondents awareness levels of community rights to forest uses and benefits in the management regimes.....	38
4.8: Association between awareness of community forest rights and management regimes in Tano-Offin Forest Reserve.....	39
4.9: Respondents' knowledge levels and knowledge sources of specific forest use and benefit rights in the management regimes.....	41
4.10: Association between knowledge sources of specific forest rights and management regimes in Tano-Offin Forest Reserve.....	42
4.11: Validated respondent-specified community forest rights	43
4.12: Respondents concerns about community forest use and benefit rights in the forest management regimes.....	44
4.13 Respondents' recommended strategies for addressing concerns about community forest rights in the forest management regimes.....	46
4.14: Respondents awareness levels of community responsibilities for forest management.....	47
4.15: Association between awareness of community forest rights responsibilities and management regimes in Tano-Offin Forest Reserve.....	48
4.16: Respondents knowledge levels and knowledge sources of specific community responsibilities in the forest management regimes.....	50

4.17: Association between knowledge sources of specific forest rights responsibilities and management regimes in Tano-Offin Forest Reserve.	51
4.18: Validated respondent-specified community forest reserve responsibilities	52
4.19: Respondents concerns about community forest responsibilities in the management regimes	54
4.20: Respondents' suggested strategies for addressing concerns about community forest responsibilities in the forest management regimes	56
4.21: Respondents' awareness levels of procedures for accessing rights to identified forest uses and benefits in the forest management regimes	57
4.22: Association between awareness of procedures for accessing forest rights and management regimes in Tano-Offin Forest Reserve.....	58
4.23: Respondents knowledge levels and knowledge sources of specific procedures for accessing forest rights in the management regimes.....	60
4.24: Association between knowledge sources of specific procedures and management regimes in Tano-Offin Forest Reserve.	61
4.25: Validated respondent-specified procedures for accessing forest rights.....	62
4.26: Respondents concerns about forest use and benefit procedures in the management regimes	63
4.27: Respondents' suggested strategies for addressing concerns about procedures for accessing forest uses and benefits in the management regimes	65
4.28: Respondents awareness levels of rules about rights to identified Forest uses and benefits in the management regimes	66
4.29: Association between awareness of rules on community forest rights and management regimes in Tano-Offin Forest Reserve.....	66
4.30: Respondents knowledge levels and knowledge sources of specific rules about forest rights in the management regimes.....	68
4.31: Association between knowledge sources of specific forest rights rules and management regimes in Tano-Offin Forest Reserve.....	69
4.32: Validated respondent-specified rules governing forest rights	70
4.33: Respondents concerns about Forest use and benefit rules in the management regimes	71
4.34: Respondents strategies for addressing concerns about community forest rules in the management regimes	72

LIST OF FIGURES

Figure	Page
3.1: Map of Ashanti Region of Ghana showing Study Forest reserve.....	24
3.2: Map of Tano – Offin Forest reserve Showing Study sites in the production, protection and planation regimes	26
4.1: The sex and marital status of respondents in the management regimes	31

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1.0 INTRODUCTION

1.1 Background

After almost two decades of implementing the 1994 forest and wildlife policy, whose main thrust is sustainable management, Ghana is still bedeviled by forest degradation and deforestation. In recent estimations forest cover loss is around 650 km² per year whilst about 84% of the forest reserves are considered degraded (Agyeman *et al.*, 2010). This is a worrisome picture because degradation and deforestation jeopardize the capacity of forests to support sustainable livelihoods and poverty alleviation of forest dependent communities. Indeed, over the years there has been a growing public concern about the deteriorating condition of the forest resources of Ghana and the poverty of the rural forest communities.

Deforestation and forest degradation in the tropics, including Ghana, is partly blamed on forest tenure. Owubah *et al* (2001) observe that rural communities in Ghana are not motivated by the forest tenure systems to engage in sustainable forestry practices. Gilmour and Fisher (2010) embody the key factors that influence the achievement of forest management objectives in three broad domains: governance, tenure and regulatory frameworks. Forest tenure is rationalized with sustainable forest management on the basis that secure tenure provides incentives for people to invest time and resource in forest management. Forest tenure also impacts on livelihood and poverty reduction on the basis that improving livelihoods involves improving access to subsistence resources and ways of increasing income.

Therefore to secure the future of forests and increase the prospects for forest-related livelihoods and subsistence, forest policy and management practices should make adequate provisions for equitable forest and tree tenure for the benefit of local people.

Consequently for forest policy to impact on poverty reduction, it should ensure community access to benefits from the resource; and access to increased benefits will depend on the Government's capacity to facilitate rural people accessing their rights to benefits (MLF and DFID, 1999, Agyeman *et al.*, 2010). Thus access to forest resources by rural communities should be governed by a legal framework which specifies rights and responsibilities and corresponding implementation drive to ensure that rights are effectively and efficiently accessed.

1.2 Problem statement

In Ghana some forest rights were instituted at the time of forest reservation whilst others consisting of policy regulations and administrative procedures have been developed by the FC lately to cater for the interests of local communities in forest management. There is however, little evidence to show that these are being followed in practice. Whilst forest tenure provisions are important, the administration of the systems is equally important since rights are valuable to the extent that they can be accessed; otherwise they remain abstract guarantees.

1.3 Justification

In order to protect the existing forest rights and examine them for improvements or possibly advocate new ones, information should be provided on the status of forest rights, their administration and impact as well as what is required to make them work. Insight into how communities perceive the way their forest rights combine with their responsibilities in sustainable forest management will be useful in defining the requirements for a proper democratic process and protection of rights in forestry.

This study therefore, seeks to contribute towards our understanding of forest tenure constraints by examining the present status of forest rights and responsibilities against the expectations of forest fringe-communities.

1.4 Objectives

1. To assess local community knowledge of their forest rights and responsibilities and the governing access procedures and rules.
2. To identify the concerns and improvement needs in the administration of local forest rights.

1.5 Research questions

1. What forest rights and corresponding responsibilities exist for forest fringe communities?
2. What do forest fringe communities know about forest rights and how do they understand these rights?
3. To what extent do fringe communities access or enjoy their rights? What aspects of their rights are fully met?
4. What changes do forest fringe communities want to see in forest rights and their administration for better livelihood support and sustainable forest management?

2.0 LITERATURE REVIEW

2.1 Definition and scope of forest rights

Forest rights are included in the broad concept of property right which embodies several types of rights to different form and use of resources (von Benda-Beckmann and Spiertz, 1996 cited in Meinzen-Dick and Pradhan, 2002). Property right may be conceived as aggregate entitlements and it circumscribes the actions that a person can take relative to others regarding the use of a resource. (Agrawal and Ostrom, 1999; Meinzen-Dick and Nkonya, 2005; Crase and Dollery, 2006).

Forest right or property right to the forest is conceived as a “bundle” of legally or customarily defined ownership rights and arrangements for the management and use of forest resources (Romano, 2007). It defines the rights to own, use, manage, and dispose a resource and to exclude others from interference but also the obligation to refrain from exercising the rights to the detriment of others (FAO, 2002; Bruce 1998 cited in World Resources, 2005; Gilmour and Fisher, 2010). Others have the corresponding duty to observe the right of the right-holder (Agrawal and Ostrom, 1999). It is misleading to equate ownership with tenure because ownership is a particular tenure type that implies exclusive and permanent rights including the right to alienate property or it is the holding of the full bundle of rights (Meinzen-Dick *et al.*, 1997; Romano, 2007; Gilmour and Fisher, 2010).

Schlager and Ostrom (1992) put the bundle of property rights into two broad categories of a) use rights of access and withdrawal b) decision making rights of management, exclusion and alienation. The categories are respectively considered as operational-level and collective-choice level rights and are distinguished as follows:

- i) Access: The right to enter a defined physical area and enjoy non-subtractive benefits (e.g., hike, canoe, sit in the sun).
- ii) Withdrawal: The right to obtain resource units or products of a resource system by taking out some of the flow (e.g., catches fish, divert water).
- iii) Management: The right to regulate internal use patterns and transform the resource by making improvements.
- iv) Exclusion: The right to determine who will have an access right, and how that right may be transferred.
- v) Alienation: The right to sell or lease management and exclusion rights.

Tenure can be formal or informal: formal rights have legal recognition by the state but informal rights are locally recognized without formal legal recognition. Customary tenure systems can be recognized legally but are often informal (Gilmour and Fisher, 2010). In Ghana land tenure is governed by statutory and customary laws giving rise to a plurality of land tenure and management systems (Constitution of Ghana, 1992; Kasanga and Kotey, 2001; Marfo, 2009).

2.2 Origin and basis of statutory forest rights in Ghana

Formal forest management and rights regime in Ghana is the legacy of colonial forest management. It originated from the forest study that the colonial government of Ghana (then Gold Coast) commissioned in 1908 under H.N. Thompson to identify the appropriate strategies for addressing the deforestation and forest degradation that resulted from excessive exploitation of Mahogany timber (Thompson, 1908; Oliphant, 1934).

The study underscored the entrenched rights of the natives to forest and wildlife resources (Thompson, 1908). Following that the forest tenure rights of the local people became a crucial and fundamental issue of forest reservation and management

in the Gold Coast. Consequently the forest administration that emerged sought to establish and manage the forests as estates (subject to the law) with due recognition of the native forest rights. Thus, the existing local forest rights had to be identified and the implications for conservation assessed (Thompson, 1908).

2.3 The native forest rights prior to reservation in Ghana

The profile of the existing native forest rights prior to reservation is intended for the understanding and appreciation of the history of tenure reform in the forest administration of Ghana.

2.3.1 The ownership of forests

The Gold Coast government did not own land; all the land belonged to the people except for public purpose as town sites and water works (Thompson 1908; Oliphant, 1934). The owners could be the tribe, the stool, or the family and this was a system of communal land, held under the principle of trusteeship within the community. But by 1928 the communal land ownership began to weaken in favour of individual ownership as a result of sale (alienation) of rights to individuals or groups of other tribes and portioning out of the land among the individual members of the tribe, (Empire Forestry Conference, 1933; Oliphant, 1934).

2.3.2 Rights to forest produce

The local people exercised numerous rights, especially to the collection and utilization of forest produce. The rights were acquired by custom or were prescriptive (right to use the property of another by continued and regular use) but they were exercised under the prevailing idea that almost any one was entitled to a share of the forest produce as the forest belonged to no one in particular (Thompson, 1908). The forest products that were accessed for subsistence consumption included oils, gums, fibers,

latex, dyes, fish poisons, insecticides and scents, medicines and culinary products from tree and plant parts (Empire Forestry Conference, 1933).

The magnitude of the minor forest products use posed critical forest conservation issues: the difficulty in limiting customary rights and the tendency of prescriptive rights becoming too expansive to be regulated. But the numerous rights indicated that the forest was crucial to the needs of the people and hence for this alone, it was incumbent for the government to ensure legal protection and proper management of the forests (Thompson (1908). Indeed these tenure issues could not be overlooked because the people were exceedingly sensitive and jealous about their native forest rights.

2.3.3 Rights of the natives to wildlife resources.

In the forest region of Gold Coast, the Afram Plains was the key hunting destination for wildlife. The fringe communities consisted of hunters (professionals, outlaws and the riff-raff) from across the country whose livelihood consisted of shooting and selling game (Thompson (1908). The natives were not limited in their hunting rights but the Europeans were obliged by law to obtain game licenses and were restricted from shooting certain animal species (Thompson, 1908). The prevailing argument was that wild animals had survived the generations and were still abundant but Thompson (1908) observed a growing scarcity of game which was also corroborated by the hunters who had to go further afield.

The recommendations under the circumstance were a limitation to the number of native hunters or the creation of a game reserve in the Afram plains and prohibition of all shooting therein (Thompson 1908)

2.3.4 Rights to forest land for agriculture.

Cultivation of cocoa and ordinary food crops dominated the agricultural livelihoods of the local people. Cocoa farming, started about 1881, and was the chief source of the colony's wealth representing some 40% of the world's total production (Thompson, 1908; Oliphant, 1934). In the previous times when land was plentiful, there was no motivation for the individual ownership of land; the people accessed the communal land for growing their food on a system of shifting cultivation. But as the cocoa industry developed, there was a considerable shift towards the alienation of land from community to private persons (Oliphant, 1934).

2.3.5 Rights to timber

The bulk of domestic wood consumption was fire wood (about 3,400,000m³ out of 3,430,000m³ yearly total wood consumption). The area outside of the forest zone depended on some 1,130,000m³ of fire wood and unknown quantity of timber for their daily needs (Oliphant, 1934). In order to safeguard domestic consumption, Oliphant (1934) indicated that exports needed to be the surplus over domestic consumption. Domestic and export timber trade were mainly in the hands of small-scale African cutters and dealers. The timber cutters acquired permission to fell trees from the Chief owning the land by means of presents and they then agreed on the price per tree which depended on the owner's need for cash (Oliphant, 1934).

2.4 Forest rights reforms at reservation in Ghana

The creation of forest reserves (forest estates) in Ghana placed the forest areas in a legal context and hence required the definition of all rights in relation to them. Two kinds of forest reserves were created: i) the "bye-law reserve" or the "Stool" forest reserves and ii) the Ordinance reserves. With the bye-law reserves, the Native Administrations passed bye-laws and administered them under the advice of a forest

Officer. For instance the Tano-Offin Forest Reserve was constituted under the Kumasi Native Authority (Tano-Offin Forest Reserve) Rules of 15th December, 1949. The Ordinance forest reserves, however, fell under complete government control (Empire Forestry Conference, 1933; Oliphant, 1934).

The Forests Ordinance (1931) provided for the creation of a forest reserve and forest right reforms as follows:

1. A notification to create a forest reserve was published in the gazette. Then a Reserve Settlement Commissioner was appointed to enquire into and determine i) the limits of the proposed reserve and ii) the existence, nature and extent of all claims as to rights of any person or community.
2. By the Commissioner's legal judgments, forest rights were effected as follows:
 - i. Forest Reserve ownership Right: The ownership of land within a forest reserve was not altered by its constitution into a reserve.
 - ii. Rights in relation to the practice of shifting cultivation: They were prohibited or permitted in part or wholly. In part or wholly permitted, the exercise of the rights was twofold: the limit of the proposed reserve was altered to exclude land reasonably convenient for the claimant or portions of the proposed reserve were separately demarcated for the claimant subject to prescribed conditions.
 - iii. Commuted Rights: If it was impossible to admit wholly or in part any established right, considering the establishment and maintenance of the Reserve, the Commissioner might assess a lump-sum amount to be paid to the right-holder and so the right was commuted.
 - iv. Admitted Rights: When the right was established, but it was inexpedient to be commuted, the right was admitted by the Commissioner in his

judgment. Also a commuted right could be set aside by the court on appeal and treated as Admitted Rights.

- v. Extinguished Rights: Every right in respect of which no claim was made or no knowledge was acquired at any enquiry was extinguished.
- vi. Alienation of Rights: Rights in a reserve may not be transferred (alienated) by sale, lease, mortgage, charge, transfer until the right-holder had given a written notification of the intention to the CCF.

Public or private way or water-course in a reserve: These might be stopped on request of the CCF to the District Commissioner provided a suitable substitute was found.

2.4.1 Local community forest rights, responsibilities and access protocols in constituted Tano-Offin Forest Reserve

Upon constitution of Tano-Offin Forest Reserve, local forest rights, responsibilities and access rules and procedures were formally recognized. The local forest uses and rights were formally admitted as follows:

- i. Communal Rights: hunting, fishing, collecting snails and dead wood.
- ii. Cultivation: Individual and group farming as farms demarcated in the reserve
- iii. Settlement: Existing village including farm land was demarcated in the reserve
- iv. Ownership of forestland: Ownership as originally vested in Golden Stool (Asantehene) with Hiahene, Nyimahinihene, Nkawiepaninhene as caretakers

Native Authority, Forestry Authority and community forest responsibilities were assigned and they may be categorized as follows:

- i. Native Authority responsibilities: management and grant of permits
- ii. Forestry Department: Advice to Native Authority, law/rule enforcement, management, demarcation and boundary maintenance.

- iii. Community: Local labour for boundary maintenance and other operations, fire prevention by farmers.

Across the reserve, official rules applied that prohibited certain acts to be done in the reserve. The rules tended to control and limit the use and access to the reserve. They included felling and acts done on timber and trees, cultivation of forest land, hunting, and building on forest land, acts in respect of rivers, forest extractions and burning.

Everything done in the reserve needed the written approval (by permit) of the Native Authority on the advice of the Forest Officer (Tano-Offin Reserve Working plan, 1958-1968).

2.5 The contemporary forest rights of local forest communities in Ghana.

Two formal government policies, 1948 and 1994, have guided forestry development and management in Ghana to date. The 1948 Forest Policy was a colonial formulation and it persisted through independence, in 1957, till 1994 when the existing Forest and Wildlife policy was formulated. The 1994 policy recognizes and confirms the rights of people to have access to natural resources for maintaining a basic standard of living and related responsibility to ensure sustainable use of resources (MLF, 1994). The guiding principle emphasizes the importance of community forest rights and hence justifies community expectations.

2.5.1 Current ownership of forests

Communal land ownership had survived colonial government annexation attempts but Native Authority bye-law reservation, a facet of the Colonial political philosophy of Indirect Rule, was a necessary compromise for a landless colonial government (Oliphant, 1934; Empire Forestry Conference, 1934; Kotey *et al*, 1998). Eventually, per the Administration of Lands Act, 1962 (Act 123), State Lands Act, 1962 (Act

215) and Concessions Act of 1962 lands in the country were vested in the President. The President was granted the power as the sole authority to acquire land compulsorily for public purpose or interest and all timber resources together with all lands declared to be forest reserves or subject to timber concessions were vested in the state respectively (Kotey *et al*, 1998).

Thus, two main categories of public lands emerged: i) Land compulsorily acquired (Public Lands) and ii) Vested Land. For Public Lands, all previous interests were extinguished: both legal and beneficial titles were vested in the president and lump sum compensations were paid to victims of expropriations. For Vested Lands, the lands were vested in the President in trust for the land holding community; previous interests were not extinguished but management and control were ceded to the President for the benefit of the land holding community; Annual rents instead of lump sum compensations are paid to land holding communities (Alden Wily and Hammond, 2001; Kasanga and Kotey, 2001).

2.5.2 Current local community need for non-timber forest resources

Forests, farm and fallow forest areas are indispensable sources of NTFPs for the socio-economic life of the rural people providing a host of domestic and commercial items including foods (bush meat, mushroom, snails and fruits); fuel (firewood and charcoal); medicines; canes and intangible benefits such as sacred sites (Abbiw, 1990; Falconer, 1991 and 1992).

Wild animals are the main source of meat for about 80% of the rural population (Asibey, 1987 cited in Kotey *et al*, 1998) and bush meat support about 30,000 hunters (Ankudey, 2002). Wood energy supply is about 16 million m³ representing over 75% of all energy consumed in Ghana (Owusu *et al*, 1989; Agyeman *et al*, 2010); and

dependency on wood fuel exceeds 95% of the energy consumption in the rural communities (Agyeman et al, 2010).

2.5.3 Current local community need for forest lands for agricultural production

The scarcity of land in the forest zone of Ghana results in land conflicts and encroachment on forest reserves and the case of the Western Region of Ghana best shows this. The Region alone contains about 25% of Ghana's total area of forest reserves. The present situation in the Region's forest reserves is massive encroachment estimated to be 50-70% of their total area. (England, 1993 cited in Kasanga, 2003).

A measure to address the anticipated land hunger in the forest communities was the taungya farming, formally operationalized in the 1970s, as a reforestation method in the degraded portions of the forest reserves. A key component was the cultivation of food crops. It was suspended in 1984 due mainly to policy and legislative failures, benefit sharing, security and use right challenges (Agyeman et al, 2010, FC, 2011). It was reintroduced under a new name and tenure arrangement as Modified taungya system (MTS) in 2001 with strong benefits in the timber for the farmer, community and the land owners (Agyeman et al, 2010; FC, 2011).

2.5.4 Current local community need for timber products

Satisfying the domestic timber consumption through the supply of quality and adequate industrial timber to the domestic market is imperative under the 1994 Forest and Wildlife policy.

Currently, Ghana has an estimated per capita domestic wood consumption of 0.03m^3 , which is higher than the 0.02m^3 for Africa, and an estimated annual demand of about $591,000\text{m}^3$ (Whiteman, 2005; TIDD and FORIG, 2009). Lumber dominates the wood

products on the market (about 94%) and the major sources are bush cut (chain saw lumber) and they are the preference because of their affordability, availability, perceived quality and wider range of dimensions (TIDD and FORIG, 2009). The predominance of chain saw lumber on the market, on the other hand, is an indication of the persistence of illicit chain saw activities and high demand of chainsaw lumber in spite of the ban and high demand.

2.6 Global perspectives on forest rights administration

This section reviews the global perspectives on community knowledge of forest rights including responsibilities, governing rules and procedures as well as the experiences and aspirations regarding implementation. The global picture serves as a necessary context for the study of forest tenure in the emerging globalization and global governance.

2.6.1 The administrative setting for operation of forest rights

Meinzen-Dick and Nkonya (2005) and Meinzen-Dick *et al.* (1997) have observed that property rights derive their strength from the legitimizing institution and commonly the state is the primary institution. Also, Meinzen-Dick *et al.* (1997) observed (in relation to water rights) that the mediating institutions that actualize the rights (implement, enforce or modify rules) require attention.

The context for forest rights administration in this study is premised on the definition of land administration as the means to apply and make operational the rules of land tenure (FAO, 2002). The premise is consolidated on the recognition that land includes forests and the concepts of forest tenure are dependent on land tenure (FAO, 2002; Makonese, 2010). In this regard, forest (land) administration is viewed as comprising

systems and processes to administer land rights, land-use regulations and revenues and resolution of disputes and doubts that may arise (FAO 2002).

Effective forest rights administration depends on information on the forest, people and their rights; procedures to manage information; actors to implement procedures and enforcement or protection of rights (FAO, 2002). Information on rights is fundamental because rights are not physical entities but by nature, have to be represented (FAO 2002). Rights are valuable as the claims are enforceable, hence enforcement and protection of forest rights ensure that defined rights are secure.

The locus of information, protection of rights and actors of tenure administration distinguish between formal and customary tenure settings. In statutory tenure, information on rights is often recorded in documents (in state laws) but in the community collective memory and witnesses in the case of customary tenure (Sunderlin *et al*, 2008). In the formal tenure setting also, protection of rights usually emanates from the state and the enforcement through the courts, but community consensus and customary leadership in the case of customary tenure. It has been observed, however, that the people who know their rights and infringement redress procedures are more capable of protecting the rights than the less knowledgeable. In the formal setting the actors of tenure administration are principally the state agencies but are the customary leaders in the case of customary tenure. The procedures to manage information on rights and their protection are as efficient as they allow transactions to be completed without delay, inexpensively and transparently. But commonly, formal land administration procedures are time-consuming, bureaucratically cumbersome and expensive and lack transparency (FAO, 2002).

2.6.2 Some relevant facets of property rights

This section provides an overview of some facets of property rights that have important implications for the local community knowledge, understanding and attitudes for forest rights administration. Indeed property rights transcend defined or specified rights per se as they embody rules and other aspects of access and use of the resource (Meinzen-Dick and Nkonya, 2005)

2.6.2.1 Legal pluralism and forest rights

Conventionally, property rights are defined in statutory law but in reality a wide range of legal orders, for example state, customary, religious and local laws exist (Meinzen-Dick & Pradhan, 2002; Meinzen-Dick *et al*, 1997). In practice, therefore, formal rules and other legal orders may co-exist and interact but often statutory tenure overlaps and competes with customary tenure (White in Sunderlin *et al*, 2008). People have an array of legal orders, in legal pluralism, to choose from to back their forest resource claims (forum shopping) but all the laws are not equal or equally powerful. In the state and local community relationship, for instance, state law is usually more powerful and applied by the state officials (Meinzen-Dick & Pradhan, 2002; Meinzen-Dick 2009). Legal pluralism engenders flexibility in the use of natural resources but it also can cause uncertainty, especially in conflict situations. Uncertainties result from lack of full knowledge of all relevant laws and the availability of wide range of legal orders for rival claimants to use (Meinzen-Dick & Pradhan, 2002).

2.6.2.2 Forest rights and rules

It is pertinent to distinguish between forest rights and rules for the avoidance of ambiguity of terms (Schlager and Ostrom, 1992). Rules are used to create and enforce property rights (i.e. rights are the product of rules); and for every right an individual holds, rules exist that authorize or require particular actions in exercising that property

right (Schlager and Ostrom, 1992). Thus property rights comprise two components; the rule and its enforcement mechanism. (Schlager and Ostrom, 1992). The recognition of claims over resources is based on rules or laws that define the right holders, the types of rights they hold, and the procedures and conditions, by which persons establish, maintain, transfer and lose rights (Meinzen-Dick and Pradhan, 2002).

2.6.2.3 Governance and forest rights

The relationship created by property rights includes a governance structure besides the right holder and others without rights. To have effective claims, property rights need to be sanctioned by a collective and hence governance structure to back up the claims (Meinzen-Dick and Nkonya, 2005). Indeed, the strength of the law lies in the legitimizing institution or collective that includes the state through its agency, the village, user groups and management committees (Meinzen-Dick and Pradhan, 2002). The collective rights (management, alienation and exclusion) are decision-making rights (Schlager and Ostrom, 1992) and hence they underscore the importance of structures of governance and issues of authority and representation. (Larson *et al.*, 2009).

2.7 The context of knowledge

The knowledge of the local people of their forest rights is the thrust of this study and it is imperative to consider the relevant framework to situate and guide the evaluation of such knowledge.

The study of knowledge is epistemology and primarily epistemologists have been concerned with propositional knowledge (knowledge-that). Propositional knowledge is the knowledge that is referred to when one knows that such-and-such (some fact) is

true; and it is distinguished from knowing how to do something or knowing a person (Fantl, 2012; Ichikawa and Steup, 2012). Propositional knowledge, concerned with knowledge of a truth or fact, is the appropriate context for this study as it deals with whether it can truly be said of the local communities that they know their statutory forest rights as a matter of fact.

2.7.1 The “Justified True Belief” view of knowledge

Various views are held about propositional knowledge but classically, it is defined in terms of “Justified True Belief” (JTB). Thus three conditions, belief, truth and justification, are traditionally thought to be necessary and sufficient for a person to have knowledge and they constitute the “JTB” view of knowledge (Russell, 2012).

Kelley (2007, 2008) expounded the relationship among the elements of the JTB view as: “In a “belief,” someone mentally assents to some proposition; if this belief is “true,” then there is some fact about reality that makes the proposition true; and then if the belief is “justified,” it means that the believer has some evidence or good reason for the belief.” Belief, thus, requires additional properties of truth and justification: truth because false proposition cannot be known and good evidence or reasoning or other rational justification so that a lucky guess may not pass for knowledge (Ichikawa and Steup, 2012; Hetherington, 2005; Steup, 2005).

2.7.2 The Challenge to the “Justified True Belief” view of knowledge

The JTB analysis of knowledge has been shown to be incomplete as there are cases of JTB that do not pass for knowledge. This means that the analysis of knowledge as “JTB” must be modified, giving rise to what is referred to as the “Gettier problem” (Ichikawa and Steup, 2012). “In Gettier cases the person, in some sense, is lucky to believe what is true on the basis of his evidence” (Russell, 2012). Thus the “Gettier

problems” function as challenges to the philosophical tradition of defining knowledge of a proposition as justified true belief (Klein, (1998, 2005). There have been several attempts to solve the Gettier challenge but there is no consensus, that any one of the attempts has succeeded in fully defining what it is to have knowledge of a truth or fact (Klein, (1998, 2005). Two different strategies are recommended: to strengthen the justification condition or to amend the JTB analysis with a suitable fourth condition (Ichikawa and Steup, 2012).

In this study, therefore, the JTB analysis of knowledge is applied and further evaluation of the respondents’ knowledge is done by the triangulation in the context of the statutory forest right provisions as a way of confirming or otherwise of the knowledge expressed.

2.8 The Implementation of forest rights

Many rights have statutory recognition yet numerous challenges hinder their practical realization (RRI, 2012). This state of affairs discloses that effort is needed to ensure that community rights are actually enforced (Sunderlin *et al.*, 2008).

2.8.1 Forest rights implementation challenges

The RRI (2012) identified common forest rights implementation challenges as bureaucracies and lack of political will, yet Gilmour and Fisher, (2010) observed that stakeholders, including local communities were limited in their knowledge of their forest rights and capacity to enforce them. Agyeman *et. al.*, (2010) observed in Ghana that most communities and even the forestry agency (FC) staff were virtually ignorant of the rights that were admitted during reservation that entitled the local communities to domestic use of forest reserve products especially NTFPs. Even though the communal rights were written into management plans, they were hardly respected and

implemented (Agyeman *et. al.*, 2010). Similarly, Meinzen-Dick and Pradhan (2002) observed that in many countries, state laws are largely unknown in villages, and sometimes government officials at the district or village levels too are ignorant of the new laws; consequently resource users may act in ignorance of some forest rights.

Kotey *et. al.*, (1998) observed that in complex and uncertain situations such as forestry, monopoly over information and poor communication of policy lead to policy failure and harm. Furthermore, legal pluralism creates uncertainty in respect of forest rights as no person is likely to know all the applicable laws for claims on the forest; instead one may have partial and fragmented knowledge of laws relating to forest rights (Meinzen-Dick and Pradhan, 2002).

Statutory forest tenure reforms often are linked to national decentralization and devolution policies (Gilmour and Fisher, 2010; Sunderlin *et al.*, 2008). However, governments are unable to clarify and finalize tenure rights effectively for such reasons as administrative weaknesses and inadequate attention to property rights in decentralization and devolution programmes (Sunderlin *et. al.*, 2008). While the national government is the ultimate decision maker for the forest, the native forest communities perceive that they are excluded from the forest (Sunderlin *et. al.*, 2008). Under the circumstance clarifying and strengthening forest tenure that includes recognition of customary claims is ethnically imperative (Sunderlin *et. al.*, 2008). Thus effective forest tenure should empower the local user group to make decisions for forest use and its management (Gilmour and Fisher, 2010).

Ignorance of community statutory rights indicates that most forest people still experience the exclusion of reservation as they lost their customary forest use and management rights when governments declared forests as public and became the

ultimate decision-makers (Sunderlin *et al.*, 2008). In Ghana, for instance the local forest communities generally see the reserves as a removal of their traditional rights and benefits and expropriation of their forest land because the forest protection laws virtually debar them from engaging in any act without the prior written authority of the Forestry authority (Kotey *et al.*, 1998).

The concern for forest conservation or promotion of greater sustainability is the reason why forest tenure rights are combined with responsibilities including heavy regulations and co-management. (Bouriaud and Schmithüsen, 2005; MLF, 1994).

The co-management of forest resources aims at promoting greater state-community collaboration and it is the result of the criticism of command-and-control approach (Larson *et al.*, 2009); yet often, burdensome responsibilities based on state norms are applied despite the availability of effective local customs (Larson *et al.*, 2009). Similarly, Marfo, (2010) observed that Ghana's collaborative forest management regime (co-management) places burdensome responsibilities on communities that override their economic expectations. Thus emphasis is placed on statutory responsibilities but Accra Caucus on Forests and Climate Change, (2010) intimated that given control over forests resources, forest dependent communities can protect the forests against destruction by others and indeed communities expend scarce human and financial resources to defend their new rights from ongoing encroachments (Larson *et al.*, 2009). These observations tend to recognize the potency of responsibilities based on local customs but while statutory responsibilities are emphasized, the local people tend to have limited knowledge of their responsibilities (Glimour and Fisher, 2010).

2.8.2 Forest rights implementation enhancement

As forest tenures are plagued with various implementation challenges including inadequate knowledge and information and lack of capacity to exercise rights, Gilmour and Fisher (2010) recommended awareness raising of new tenure arrangements. Similarly, Sunderlin *et al.* (2008) recommended capacity building within communities to ensure understanding of new legislations and confidence and ability to assert rights to full participation in the control of forest resources. Indeed full participation in control of forests cannot be underestimated since passive onlookers will not contribute their skills and resources (Kotey *et. al.*, 1998). For instance a key constraint of wildfire management in Ghana was the failure of the government to involve traditional structures and systems culminating in resistance to changes due to traditional beliefs, attitudes, values and practices (National Wildfire Management Policy, 2006).

Sunderlin *et al.* (2008) have indicated the lack of adequate information on tenure claims, conflict and ownership of forest areas of most countries. Accordingly they recommended, among others the provision of accurate, detailed and publicly available information on ownership and control of forest resources. Indeed, effective tenure reforms entail that forest communities must be well informed of the tenure policies, legislation and of their rights and responsibilities (Bouriaud and Schmithüsen, 2005; Sunderlin *et. al.*, 2008).

White and Alejandra (2002) observed that cumbersome and bureaucratic process may render statutory rights almost impossible to exercise by the forest communities; under the circumstance a subsidiary rule may have to be introduced to relax the parent rule. In Cameroon, Larson *et al.* 2009) found out that obtaining right to community forests was so bureaucratic and costly that communities often depend on external

elite for funding who eventually hijack the benefits. Also they observed that legal permits were too expensive or time consuming to obtain.

In related observation forest regulatory obstacles may be too great such as that which requires villagers to file applications, conduct monitoring and perform other tasks at a level of cost or sophistication that is beyond the reach of the local community (Larson *et al.*, 2009).

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3.0 METHODOLOGY

3.1 Study Area

The study was carried out in the Tano-Offin Forest Reserve in Nkawie Forest District in Ashanti Region of Ghana. Figure 3.1 is a map of Ashanti Region showing the study forest reserve.

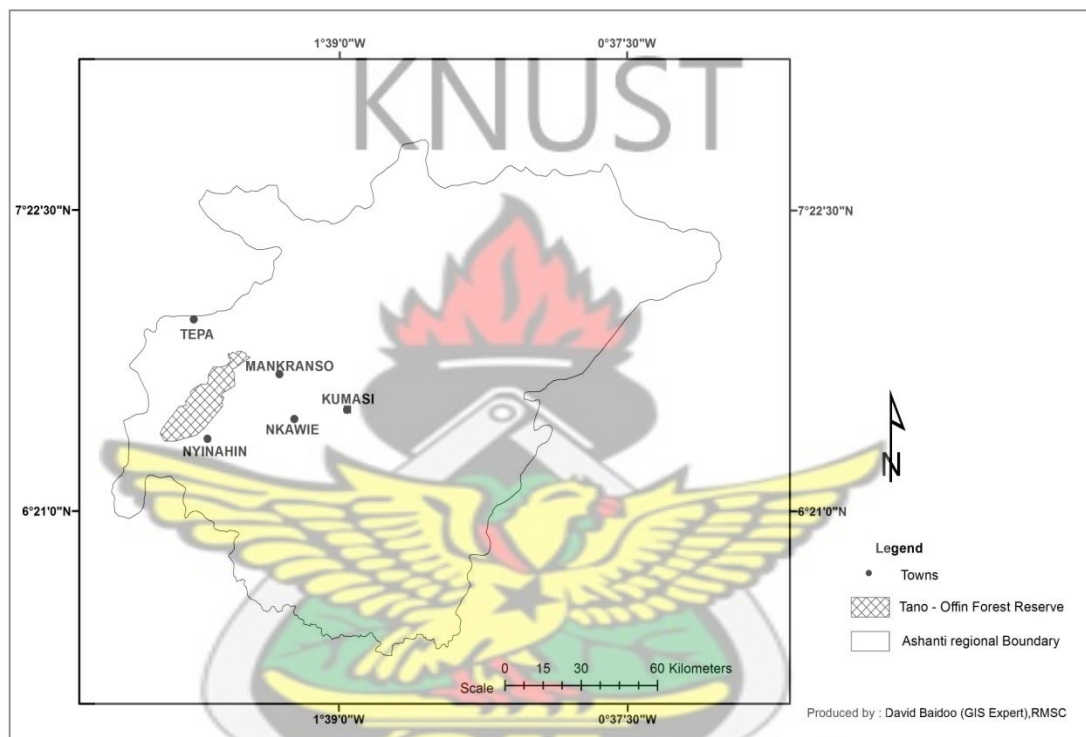


Figure 3.1: Map of Ashanti Region of Ghana showing Study Forest reserve

The Tano Offin Forest Reserve was selected for the study because it is one of the hot spots of Ghana's forest resource destruction (e.g. illegal chain saw milling, logging, farming and NTFP harvesting) and for which reason a fact finding team of FC Board visited it in 2008 (FC, 2008). The Board found community condoning and/or connivance in forest offences and when the traditional authority was asked for a hand of assistance they demanded the payment of their overdue royalty benefits (FC, 2008). Of course as the forest resources deteriorate so are the benefit streams that are the

essence of tenure rights and community livelihoods. In this regard the synergy between rights and responsibilities of right holders as recognized by the forest and wildlife policy of Ghana (MLF, 1994) is undermined which requires understanding. Also the reserve has all the broad management zones [protection and production including the plantation (conversion)] and hence distinct community rights and forest reserve management regimes (Tano-Offin Reserve Working Plan, 1958-1968; Ghana Forestry Service, 1998). These situations present heterogeneous cases whose common patterns are likely to indicate core and central impacts of wider relevance because they occur over diverse situations. Altogether, the state of affairs in the reserve provides the reasonable conditions for the case study of the performance of community forest rights.

This reserve is situated between latitudes $6^{\circ}54'$ and $6^{\circ}35'$ North and longitudes $1^{\circ}57'$ and $2^{\circ}17'$ West and located between the Kumasi-Tepa and the Kumasi-Bibiani trunk roads. It falls in the Atwima-Mponua and Ahafo-Ano South District Assemblies. It covers a gross area of 413.92km^2 that includes a settlement and farms. Forty-four and a half percent of its area (178.34km^2) forms the Globally Significant Biodiversity Area (GSBA) (FC, 2007). Some 2% of the reserve has been converted under the Modified Taungya System (FC, 2007) whilst the rest is managed for timber production. The reserve now falls under Forest Management Unit (FMU) 35.

3.1.1 Selection of study communities

The survey was conducted in six forest fringe communities purposively chosen to represent the various forest management regimes i.e. protection, production and plantation regimes of the forest reserve. The communities were Sereso-Tempom and Kyekyewere (protection regime); Chirayaso and Mpasaso No. 1 (plantation regime) and Akantansu and Wiowso (production regime) (Fig. 3.2).

The FC defines forest fringe communities as the villages within five kilometers of the external boundaries of a reserve and all internal settlements. Other criteria for the selection of a community were: vehicular accessibility, willingness to participate in the study and the need to ensure spread around the reserve.

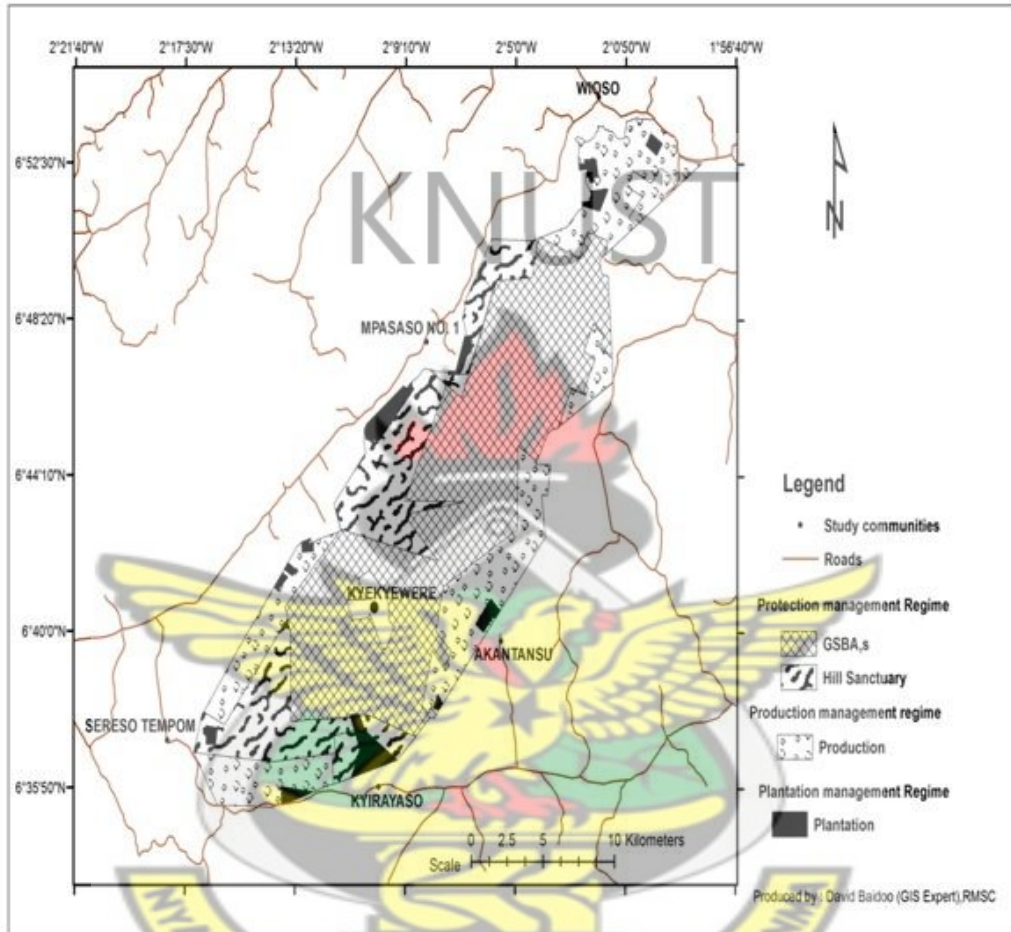


Figure 3.2: Map of Tano – Offin Forest reserve Showing Study sites in the production, protection and plantation regimes

3.2 Data Collection

The unit of observation for the study was the statutory community forest rights (the legally granted forest reserve uses and benefits) and the units of analysis were the forest reserve users and benefit holders.

Purposive sampling by snowballing was applied to select participants for initial focus group meetings through active facilitation of FC field staff and community guides. This was considered most appropriate technique considering that the people were skeptical as the study related to forest reserve access and uses that were largely perceived to be illegal. Therefore their participation had to be negotiated as applied by Acheampong and Marfo (2011). Although data collected in this way could not be said to be representative of the entire study population, the range of possible views in this case NTFP collectors and traders, chain saw millers, farm land owners, MTS farmers, illegal farmers, hunters, community forest committees, land owners etc. could be identified (Williams, 2003).

Focus group meetings were run for the purposive selection: 30 to 35 persons per village or 60 to 70 persons per management regime of two study sites. The focus groups were run as an interaction between the participants to identify issues of forest access, reservation and benefits. The interactions were used to form the basis of the questionnaire (Williams, 2003); but they were also meant to disabuse the minds of the people as to the perceived incriminating intentions of the study.

Key informants comprising the chief and elder, Assemblyman and community forestry group member (CBAG, FVG, CFC and Taungya head) were directly selected. The other respondents (NTFP collectors and traders, chain saw millers, farm land owners, MTS farmers, illegal farmers, hunters, community forest committees, land owners etc.) were chosen randomly from the purposive selection by choosing from folded papers indicated yes (for selected) and no (for not selected). A total of 36 respondents were chosen from two villages per each of three management regimes (18 per village). The sample size was based on the size of 30 to 50 as suggested to be

adequate for such exploratory study (Bernards 1995 as cited in Acheampong and Marfo, 2011).

Interviewer-administered questionnaire (Appendix I) was used for the data collection. With this tool, unclear questions could be clarified to the respondent and the open-ended questions allowed possible responses (Williams, 2003). The key components of the data were respondents' personal bio-data, forest reserve uses/benefits and the community knowledge of related rights and community forest responsibilities and knowledge thereof. Others were formal procedure for accessing forest rights and community knowledge of those rights, formal rules governing community forest rights and community concerns about forest rights, responsibilities, procedures and rules. The rest were improvement needs for community concerns about forest rights, responsibilities, procedures and rules.

3.3 Data Analysis

Initial data analysis was carried with SPSS. Data were summarized into descriptive statistics, frequencies and cross tabulations of relevant variables to reveal patterns and relationships between the variables.

Further, the expressed knowledge was qualitatively evaluated according to the parameters of the classical definition of knowledge as “justified true belief” (JTB) (Ichikawa and Steup, 2012). In the evaluation, to conclude that the respondent actually knew a specific forest right, responsibility, procedure or rule, the particular right, responsibility, procedure or rule must be true; the respondents must actually believe it and they must have a justification, thus all the three parameters must be positive (Ichikawa and Steup, 2012). In the evaluation, the “yes” response for knowledge of the specific right, responsibility, procedure and access rules was

equated with respondent's belief in the response and the sources of information (forebear, government/FC or the community) were equated with respondent's justification for the response. That the responses were indeed true was established through triangulation in which the expressed specific right, responsibility, procedures and rules were juxtaposed with the community forest rights provisions as stated in the Constitution of Ghana, forest legislations, rules and regulations, Manual of procedures and management plans. in order to identify the consistency with the respondent's information.

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3.4 Study Limitations

1. The extent to which the participants were willing to provide information was a major limitation. Initially the respondents were extremely cautious about their answers or were unwilling to talk to me because they feared that the information might be used against them. Such attitude was the reflection of the general perception that all community forest reserve access and uses were illegal and the offenders must be arrested and prosecuted. Therefore, to them anyone who had a wealth of information to provide was a regular user of the reserve and hence a likely offender.
2. Respondents were typically farmers and were unwilling to devote their time to a venture they perceived as wasteful of their man hours in terms of meeting their subsistence requirements for the day. It became necessary therefore to pay allowances to cover their time spent but there was a budget constraint. To avoid the intrusion into their productive man hours we resorted to engaging them during their taboo days but these occurred once in a week.
3. Very little work has been done in the country about forest tenure rights especially regarding the implementation of community forest rights (the bulk

of work that has been done in the country relate to land tenure with focus on agriculture). Therefore much of the literature was external experiences and hence did not reflect the local situation reality very well.

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4.0 RESULTS

The results are presented on the respondents' socio-economic profile, perspectives on the forest reserve uses and benefits that accrue to the communities, forest rights and responsibilities as well as rules and procedures for accessing the rights. The results include also the respondents' concerns and recommendations on the various perspectives.

4.1 The Socio-economic profile of respondents

4.1.1 Sex and marital status

Majority of the respondents in the management regimes were men (about twice as much as women). A few of them were single, the rest were still in marriage (70% to 80%) or had married before and were widowed or divorced (Figure 4.1).

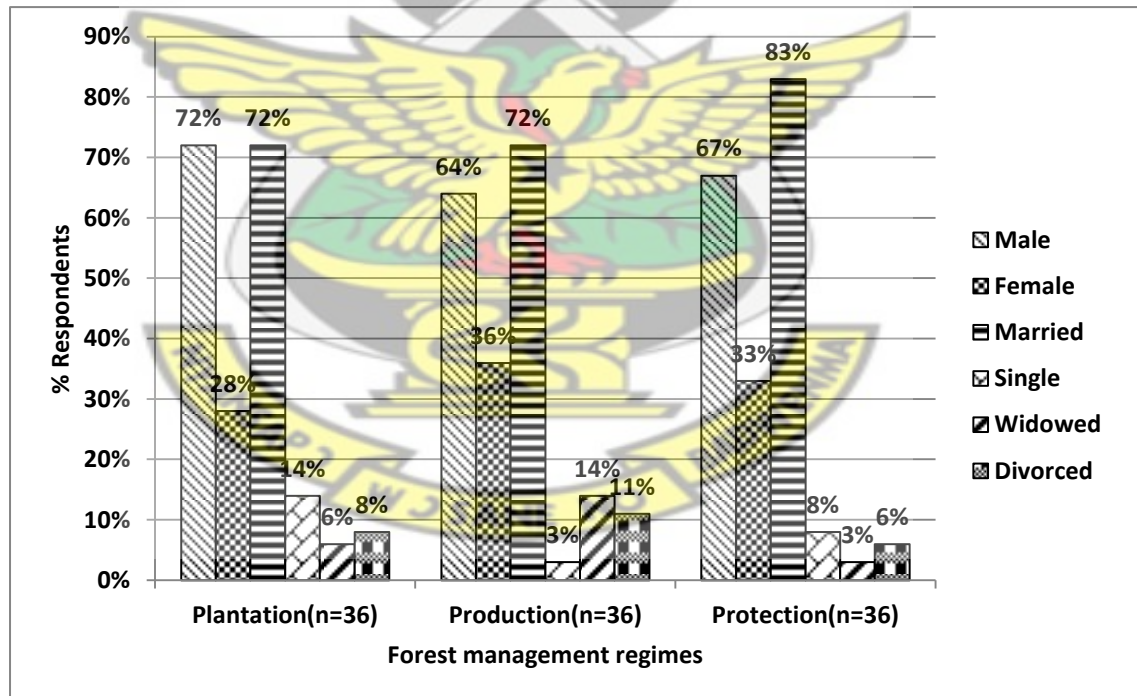


Figure 4.1: The sex and marital status of respondents in the management regimes

4.1.2 Age class distribution

The age groups, spanning 15-64 years and over, were represented in the study with the dominant age groups being 45-54 years for the plantation and production regimes and 35-44 years for the protection. The economically active age class, 20-55 years, comprised 67%, 81% and 67% of the respondents for plantation, production and protection forests respectively (Table 4.1).

Table 4.1: The age of respondents by age-class in the management regimes

Age Class (years)	Plantation regime		Production regime		Protection regime	
	(n=36)	%	(n=36)	%	(n=36)	%
15-24	1	3	1	3	1	3
25-34	5	14	4	11	6	17
35-44	8	22	9	25	10	28
45-54	10	28	15	42	7	19
55-64	7	19	4	11	8	22
65 and above	5	14	3	8	4	11

4.1.3 Education, occupation and social status

Table 4.2 shows that a little over 30% of plantation and protection regime respondents and about 20% of the Protection's were illiterates. Of respondents who had received any education, most of them were JHS or the erstwhile Middle School graduates (lowest level of education in this classification). The highest levels of education attained were SHS or SSS and vocational or technical: no protection regime respondent had SHS/JHS education and no production regime respondent had vocational/technical education. Over 80% of the respondents across the regimes were farmers. Interestingly 3% of plantation and production respondents indicated that they were chain saw millers: a livelihood which is widely known to be banned.

The social status responses add to 119% because a few people mentioned more than one type of status. Most respondents mentioned that they were household heads. Thirty-six to 50% percent of respondents across the regimes were ordinary members

of the community. The chief and elders and the local government leaders who are the key opinion leaders were represented but fairly.

Table 4.2: The education, key occupation and social status of respondents in the forest management regimes

Respondents characteristics	Plantation regime		Production regime		Protection regime	
	n=36	%	n=36	%	n=36	%
Education						
No education	12	33	8	22	13	36
Non-formal	0	0	0	0	0	0
Middle /JHS	20	56	27	75	20	56
SHS(SSS)	1	3	1	3	0	0
Vocational /technical	3	8	0	0	3	8
Tertiary (e.g. polytechnic, university)	0	0	0	0	0	0
Key occupation						
Farming	30	83	34	94	29	81
Public service (e.g. teaching, District assembly)	0	0	1	3	3	8
Chainsaw milling	1	3	1	3	0	0
Student	1	3	0	0	0	0
Petty trading	4	11	0	0	4	11
Social Status*						
Head of household	25	68	21	58	20	56
Chief /sub-chief/elders	2	6	5	14	7	19
Assembly member/Unit committee	3	8	5	14	6	17
Ordinary	13	36	15	42	18	50

* There were multiple answers from the respondents thus some respondents indicating holding multiple social status.

Key: SHS = Senior High Secondary School; JHS = Junior High Secondary School

4.1.4 Place of origin and length of residence

Table 4.3 shows that 58% to 72% of the respondents across the management regimes were natives of their communities while 28% to 42% were migrants from other parts of Ghana. The Production regime had the most migrants (42%). Nine to 20 percent of migrants across the regimes had lived in their communities for less than ten years and 91%, 80% and 90% had lived in the plantation, production and protection zone

communities for less than 60 years respectively; thus 9%, 20% and 10% had respectively lived in the communities for over 60 years (the reservation age of Tano - Offin is 62 years: reserved in 1949). Specifically most migrants had lived for 50-59 years in the plantation regime; 40-49 years in the production and 30-39 years in the protection zone.

Table 4.3 The Native and migrant status of respondents and length of migrant stay in the management regimes

Origin	Plantation regime		Production regime		Protection regime	
	n=36	%	n=36	%	n=36	%
Natives	25	69	21	58	26	72
Migrants	11	31	15	42	10	28
Period (years) of stay of migrants						
0-9	1	9	2	13	2	20
10-19	0	0	0	0	1	10
20-29	1	9	3	20	0	0
30-39	1	9	0	0	5	50
40-49	1	9	4	27	1	10
50-59	6	55	3	20	0	0
60-69	1	9	2	13	0	0
70-79	0	0	0	0	1	10
80 and above	0	0	1	7	0	0

4.2 Local community forest uses and benefits

Table 4.4 consists of the current/past uses that the respondents make of the forest reserve and the benefits that they deem to be allowable to them. The catalogue of uses and benefits serves as the basis for assessing the status of local knowledge and understanding of forest rights, corresponding responsibilities, access procedures and governing rules.

Eight categories of uses and benefits were mentioned across the management regimes. The respondents mentioned all the eight in the Protection regime but excluded settlement in both Plantation and Production regimes as well as deity in the Plantation

regime. All the respondents (100%) mentioned NTFPs in the three regimes. Also all respondents mentioned access routes in the Protection regime but 56% and 69% mentioned it in the Production and Plantation regimes respectively. After NTFPs most respondents, (69% to 89%) mentioned timber products (all three management regimes) and cultivation (only in the Plantation regime). Eighty-three percent of respondents mentioned cultivation in the Plantation regime but less 30% mentioned it in both Production and Protection regimes. Fifty percent of respondents mentioned deity, settlement and alternative livelihood in the Protection regime. Generally less than 30% mentioned all other uses and benefits across the regimes.

Table 4.4 The Local community forest reserve uses and benefits identified by the respondents in management regimes

Forest uses and Benefits	Yes/ No	Plantation regime		Production regime		Protection regime	
		n=36	%	n=36	%	n=36	%
NTFPs (e.g. water, fish, bush meat, firewood, pestles, medicines)	Yes	36	100	36	100	36	100
	No	0	0	0	0	0	0
Forestland cultivation (e.g. taungya system, MTS ,admitted farm)	Yes	30	83	10	28	3	8
	No	6	17	26	72	33	92
Forest settlements (village land)	Yes	0	0	0	0	18	50
	No	36	100	36	100	18	50
Timber products (household, personal community and commercial uses)	Yes	32	89	25	69	26	72
	No	4	11	11	31	10	28
Deity Worship (river , sacred groves)	Yes	0	0	10	28	18	50
	No	36	100	26	72	18	50
Forest reserve routes (roads, footpaths)	Yes	25	69	20	56	36	100
	No	11	31	16	44	0	0
Timber harvest benefits (SRA, royalties)	Yes	9	25	8	22	3	8
	No	27	75	28	78	33	92
Alternative livelihoods (e.g. grass cutter, snail rearing, bee keeping)	Yes	9	25	5	14	18	50
	No	27	75	31	86	18	50
Total number cases	Yes	141		114		158	
	No	147		174		130	

There were multiple answers

Key: Yes = respondents access the reserve uses and benefits indicated; No = respondents do not access the reserve uses and benefits indicated.

4.2.1 Association between forest reserve uses/benefits and management regimes

Table 4.4 is tested for association between variables by the null hypothesis that, communities' forest reserve uses/benefits and management regimes are independent. In the contingency table 4.5 the management regimes define the respondents' residence locations relative to the forest reserve and they coincide with the existing forest reserve management regimes.

Table 4.5: Association between community forest uses/benefits and management regimes in Tano-Offin Forest Reserve.

Observed values:				
Forest uses/ Benefits	Plantation regime	Production regime	Protection regime	Total
Yes	141	114	158	413
No	147	174	130	451
Total	288	288	288	864

Chi-square = 13.7; Degrees of freedom = 2; Probability (p-value) = 0.001

As the p-value is less than 0.05 (the alpha level of significance), the null hypothesis that there is no association between forest uses/benefit stream and management regime is rejected. Thus, overall, the respondents' perspectives of forest uses/benefit streams were influenced by their residence locations relative to the management regimes.

4.3 Traditional forest uses and development of statutory community forest rights in Tano-Offin Reserve

This section provides information on the traditional community forest tenure in Tano-Offin Forest Reserve in the period of reservation. The information is intended to provide a useful context for an examination and analysis of the development of statutory forest tenure that apply in fringe communities

4.3.1 Local community forest uses in the past

Tano-Offin Forest Reserve was constituted as a Native Authority bye-law forest reserve in 1949 after its selection and demarcation in 1927. Little was known and documented of the past history in terms of land use. The profile of forest uses of the fringe communities of the proposed Tano-Offin Forest Reserve is presented in Table 4.6

Table 4.6 Local community forest use profile at the time of proposing the Tano-Offin forest for reservation

Forest uses	Details on uses
NTFPs	Demanded in small quantities
Timber	Demanded in small quantities
Settlement	Few villages and hamlets
Cultivation	Less extensive as shifting cultivation
Hunting and hunting camps permission	Prominent livelihood and hunters often sought to erect hunting camps
Ownership of forest land	Vested in the Golden Stool (Asantehene) with Hiahene,
Revenues	Grants from Central Government and compensation and fines

Source: Tano-Offin Forest Reserve Working Plan, 1958-1968

4.4 Knowledge of forest rights

4.4.1 Awareness status of local forest rights

The respondents' awareness of community rights to the identified forest reserve uses and benefits are indicated in table 4.7. The data shows that the respondents were either well aware they had some rights ('yes right') or were not sure they had any ('don't know'). None could say emphatically that they had no rights ('no rights').

Across the regimes respondents indicated awareness of their rights to NTFPs, cultivation, timber products and harvest benefits and routes (five out of the eight categories of reserve uses and benefits mentioned in table 4.4). In addition,

respondents mentioned settlement and deity in the Protection regime. In the Plantation regime most of the respondents expressed awareness of their rights to cultivation (89%) and NTFPs (61%) but only between 25% and 31% were aware of the others. In the Production and Protection regimes, apart from the latter where 50% mentioned settlement, only 8% to 42% expressed awareness of the various forest rights; thus 58% to 92% were ignorant about their rights to the different reserve uses and benefits they accessed. In the two regimes, however, respondents frequently mentioned awareness of community rights to NTFPs and timber harvest benefits (Production regime) and settlement and deity (Protection regime).

Table 4.7: Respondents awareness levels of community rights to forest uses and benefits in the management regimes.

Forest uses and benefits rights	Awareness of rights					
	Plantation n=36 (%)		Production n=36 (%)		Protection n=36 (%)	
	Rights	Don't know	Rights	Don't know	Rights	Don't know
NTFPS	22(61%)	14(39%)	15(42%)	21(58%)	10(28%)	26(72%)
Cultivation of forestland	32(89%)	4(11%)	10(28%)	26(72%)	3(8%)	33(92%)
Timber products	11(31%)	25(69%)	6(17%)	30(83%)	3(8%)	33(92%)
Forest access routes	9(25%)	27(75%)	8(22%)	28(78%)	14(39%)	22(61%)
Alternative Livelihood	-	36(100%)	-	36(100%)	-	36(100%)
Timber harvest benefits	11(31%)	25(69%)	15(42%)	21(58%)	4(11%)	32(89%)
Deity	-	36(100%)	-	36(100%)	15(42%)	21(58%)
Worship	-	36(100%)	-	36(100%)	18(50%)	18(50%)
Settlements	-	36(100%)	-	36(100%)	18(50%)	18(50%)
Total responses	85	203	54	234	67	221

There were multiple answers

4.4.1.1 Association between awareness of community forest rights and management regimes

The test for association is based on table 4.7 and the null hypothesis is that: respondents' awareness of community forest rights is not influenced by the management regimes. In the contingency table 4.8 the management regimes define the respondents' residence locations in terms of the forest reserve management regimes. The respondent's awareness of forest rights is classified into levels of 'yes' and 'don't know'.

Table 4.8: Association between awareness of community forest rights and management regimes in Tano-Offin Forest Reserve.

Observed values:

Awareness	Plantation regime	Production regime	Protection regime	Total
Yes	8554	67	206	
Don't know	203	234	221	258
Total	288	288	288	864

Chi-square = 9.27; Degree of freedom = 2; Probability value (p-value) = 0.010

The p-value is less than 0.05, the alpha level of significance, and hence the null hypothesis that there is no association between awareness of forest rights and management regime is rejected. Consequently, respondents' awareness of their community forest rights was influenced by their residence locations relative to the forest reserve management regimes in Tano- Offin Forest Reserve.

4.4.2 Specific rights known and sources of knowledge

In this sub-section community rights were elaborated from the eight general rights (Table 4.4) to 15 specific rights (Table 4.9) and respondents expressed their

knowledge of them as such and identified the sources of their knowledge (Forebears, Government/FC and Community)

Forty-two percent to 56% of respondents variously expressed knowledge of rights to collect firewood; fetch water from streams, river or springs in the reserve and to cultivate farms under MTS in the plantation regime. Apart from these, less than 30% of respondents mentioned any specific rights across the regimes. The modal respondents (56%), in the plantation regime, referenced their knowledge of MTS rights to the government/FC. Then 42% that mentioned firewood and also water referenced the government/FC and community respectively in the plantation regime. In the Production regime the modal respondents (25%) cited the government /FC for their knowledge of timber royalty rights and then their forebears for their rights to collect snails from the forest (23%). In the protection regime the highest number of respondents (28%) cited the community for their knowledge of grove and river deities and then of road and foot paths through the reserve (25%).

Across the regimes specific knowledge and sources of knowledge appear varied.

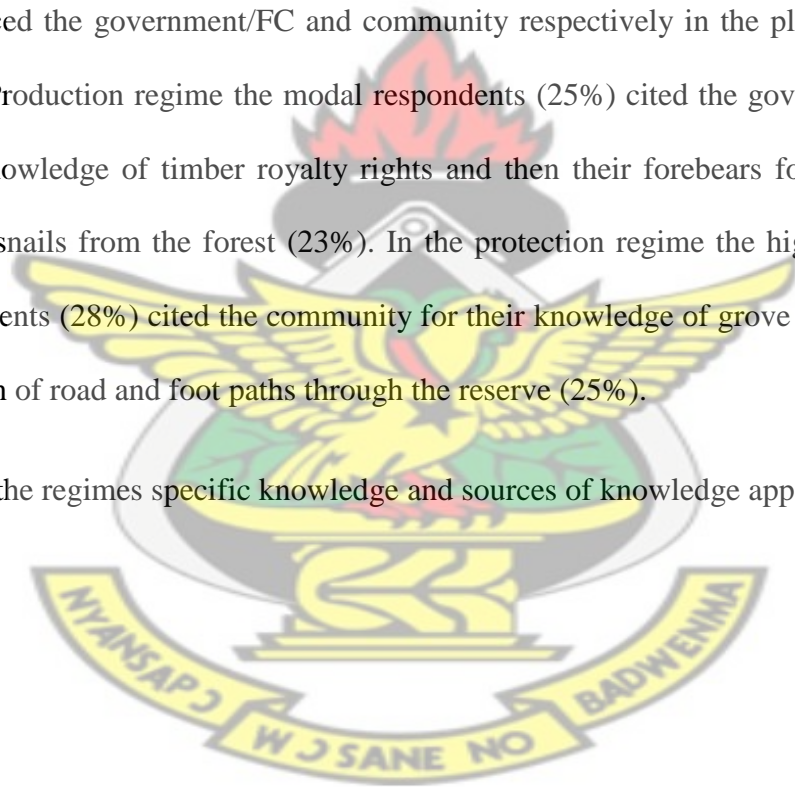


Table 4.9: Respondents' knowledge levels and knowledge sources of specific forest use and benefit rights in the management regimes

Specific forest uses and benefits	Plantation regime n=36			Production regime n=36			Protection regime n=36		
	Forebear	Gov./FC	Community	Forebear	Gov./FC	Community	Forebear	Gov./FC	Community
<i>NTFPs</i>									
Snail	14%	-	19%	22%	-	-	6%	-	8%
Fire wood	-	42%	19%	-	-	17%	-	6%	14%
Water	14%	-	42%	11%	-	19%	8%	-	19%
<i>Cultivation</i>									
Old taungya	8%	14%	22%	-	8%	11%	-	8%	-
MTS	-	56%	33%	-	17%	6%	-	3%	6%
Admitted farms	11%	-	-	11%	6%	6%	6%	3%	6%
<i>Timber products</i>									
Private use	6%	6%	14%	-	-	11%	6%	-	3%
Community use	-	8%	22%	-	6%	11%	-	6%	3%
<i>Forest routes</i>									
Roads	8%	-	14%	6%	-	11%	14%	-	25%
Footpaths	8%	-	19%	6%	-	11%	14%	-	25%
<i>Timber harvest benefits</i>									
SRA community development	-	11%	14%	-	14%	22%	-	-	-
SRA customary protocol	14%	-	14%	17%	-	22%	6%	-	-
Timber royalty	8%	19%	-	8%	25%	3%	3%	8%	-
<i>Deity</i>									
River	-	-	-	-	-	-	19%	-	22%
Sacred grove	-	-	-	-	-	-	--	11%	22%
Total number cases	33	56	84	29	27	54	29	16	55

There were multiple answers.

4.4.2.1 Association between knowledge sources of community forest rights and management regimes

The null hypothesis under test is that knowledge sources of community forest rights are independent of management regime. The management regimes correspond to respondents' residence locations relative to the reserve; and the forebear, government/FC and the community define respondents' sources of knowledge of specific forest rights.

Table 4.10: Association between knowledge sources of specific forest rights and management regimes in Tano-Offin Forest Reserve.

Knowledge Sources		Plantation regime	Production regime	Protection regime	Total
Forebear	33	29	29		91
Gov/FC	56	27	16		99
Community	84	54	55		193
Total	173	110	100		383

Chi-square = 10.3; Degree of freedom = 4; Probability value (p-value) = 0.035

The p-value is less than the alpha level of significance, 0.05, and hence the null hypothesis is rejected. Consequently respondents' knowledge sources of community forest rights depended on their residence locations relative to the forest reserve management regimes in Tano- Offin Forest Reserve

4.4.3 Validation of knowledge of forest rights

I compared the respondent-identified specific forest rights to the statutory, management and customary provisions for validation: the full validation is presented in Appendix II. Table 4.11 (summary of Appendix II) depicts the validity status in terms of de jure (identified with a specific law) or de facto (traditional guarantees but

not traceable to a specific law) rights. Recognizing that potable water collection is traditionally permissible, it is indeed a customary right. The validation, therefore, shows that, indeed, the respondents knew the specific identifications as community forest rights.

Table 4.11: Validated respondent-specified community forest rights

Validity status	Specific forest uses and benefits
De jure rights	Snail and firewood (dead) collection; MTS and traditional taungya farming; timber for personal use; forest reserve paths and roads; forest reserve sacred groves and river deities; community development and customary protocol SRAs; timber royalties; admitted farms and village land.
De facto rights	water (potable water collection)

4.4.4 Concerns about forest rights

Respondents raised concerns about forest rights in all the forest management regimes (Table 4.12). Concerns were expressed on dwindling resources (timber and NTFPs), sharing of benefits, farmers inability to participate in the MTS due to perceived high upfront costs and poor documentation of admitted farms rights.

In the Plantation regime, respondents frequently raised doubts about fulfillment of the MTS benefit sharing arrangement (75% of respondents) and hindered access to domestic use NTFPs occasioned by the District Forest Services Division (58% of respondents). In the Production regime, the highest percent of respondents, (36%) were uncertain about the allowable quantum of benefits under SRA while 31% mentioned hindered access to domestic use NTFPs. Similarly in the protection regime most of the concerns expressed were about hindered access to NTFPs (25% of

respondents) and dwindling NTFP resources (22% of respondents). Thus across the management regimes concerns of NTFPs were paramount.

Table 4.12: Respondents concerns about community forest use and benefit rights in the forest management regimes

Forest use and benefits	Issues of concerns	Frequency(n) and percentage (%) of respondents in the management regimes		
		Plantations	Production	Protection
NTFPS	a) Forestry Officials hinder and prohibit community access (e.g. threats of arrests by Forest Guards for collection)	21 (58%)	11(31%)	9(25%)
	b) Commercial collection by outsiders competes and reduces community subsistence collection	15(42%)	8(22%)	6(17%)
	c) Increasing depletion of products threatens livelihood security of resource uses	15 (42%)	9 (25%)	8 (22%)
Cultivation <i>MTS</i>	a) Not certain about payment of plantation timber benefits to farmers because MTS has not been practised before	27(75%)	3(8%)	3(8%)
	b) Upfront tending and protection costs borne by farmers may become unbearable	15(42%)	-	2(6%)
<i>Admitted farms</i>	a) The original farm documentations are not accessible to farmers and so raise ownership insecurity	1(3%)	8(22%)	-
Timber Products	a) Forestry officials hinder and prohibit the community access to timber products	10(28%)	6(17%)	3(8%)
	b) Outsiders plunder timber resources while local access is denied.	7(19%)	4(11%)	2(6%)
Timber Harvests <i>SRA</i>	a) Not certain about the quantum of benefits due the community	11(31%)	13(36%)	4(11%)
	b) Lack of clarity about the beneficiaries, whether chiefs or the community	8(22%)	9 (25%)	3(8%)
<i>Royalties</i>	a) Declining royalty due to reduced timber harvests	4(11%)	8(22%)	-
	b) Lost royalty due to cessation of timber harvesting	6(17%)	4(11%)	4(11%)

There were multiple answers.

4.4.5 Recommendations for addressing concerns about rights

Table 4.13 shows the various recommendations made by respondents for addressing the forest right concerns in the management regimes. The recommendations are visualized under five categories: Education on right; management of expectations; confidence-building; monitoring and evaluation system and transparent and easy access mechanisms.

In the plantation regime 50% to 78% of respondents recommended education, management of expectations, confidence-building and monitoring and evaluation. Apart from these, less than 34% of respondents across the regimes (plantation, protection and production) made any recommendations. In the production regime the highest percent of respondents, 28% to 33% recommended education on rights to NTFPs and SRA and monitoring and evaluation of access to NTFP rights. In the protection regime, however, the highest percent of respondents, 25%, recommended monitoring and evaluation of access to NTFP rights while 19% suggested education on NTFP rights. Across the regimes the emphases on same recommendations for addressing forest right concerns were very varied but most respondents suggested the education on NTFP rights and monitoring and evaluation of their implementation to ensure effective access. It was only in the production regime that most respondents recommended the education on SRA. Peculiar to the plantation regime, most respondents suggested, in respect of MTS, farmer confidence enhancement and periodic outlook systems to assure expectations.

Table 4.13 Respondents' recommended strategies for addressing concerns about community forest rights in the forest management regimes

Forest use and benefits	Strategies for rights concerns	Frequency(n) and percentage (%) of respondents in the management regimes		
		Plantations	Production	Protection
NTFPS	a) Promote education on existing local rights	18 (50%)	10(28%)	7(19%)
	b) Develop extension systems to monitor and review rights to reflect changing local needs	20(56%)	12(33%)	9(25%)
Cultivation MTS	a) Build confidence of farmers through finalization of benefit sharing agreement on MTS	23 (64%)	7 (19%)	2 (6%)
	b) Institute expectation checks to inform and manage farmers' expectations about MTS	28 (78%)	8 (22%)	3 (8%)
<i>Admitted farms</i>	a) Develop transparent and easy access to admitted farms	1 (3%)	8 (22%)	-
Timber Products	a) Promote education on existing local Timber rights	10(28%)	6(17%)	3(8%)
	b) Develop extension system to monitor, enforce and review local rights to timber	11(31%)	4(11%)	2(6%)
Timber Harvests SRA	a) Promote education on SRA	8(22%)	12(33%)	4(11%)
	b) Develop extension system to monitor, enforce and review social responsibilities.	10(28%)	9 (25%)	3(8%)
<i>Royalties</i>	a) Institute expectation checks to inform and manage royalty expectations of land owners	1(3%)	5(14%)	-

There were multiple answers from the respondents on sources of rights.

4.5 Forest rights responsibilities

4.5.1 Awareness Status of Local Communities' Forest Management

Responsibilities

The respondents' level of awareness of local communities' forest management responsibilities is shown in Table 4.14. They indicated awareness of their responsibilities only in relation to NTFP uses, timber product uses, forest land cultivation and timber harvest benefits. The majority of respondents, 64% to 83%, were aware of responsibilities in relation to NTFP and timber product uses. In the respective management regimes, it was only in the plantation regime that the majority of respondents, 69% were aware of any responsibilities (cultivation). Apart from this case fewer than 33% of respondents were aware of any responsibilities in the various regimes.

Table 4.14: Respondents awareness levels of community responsibilities for forest management

Forest uses and benefits rights	Respondents level of awareness of community responsibilities					
	Plantation n=36		Production n=36		Protection n=36	
	Aware of responsibility	Don't know	Aware of responsibility	Don't know	Aware of responsibility	Don't know
NTFPS	28 (78%)	8 (36%)	23(64%)	13(36%)	30(83%)	6(17%)
Cultivation of forestland	25(69%)	11(31%)	8(22%)	28(78%)	8(22%)	28(78%)
Timber products	28(78%)	8(22%)	23(64%)	13(36%)	30(83%)	6 (17%
Forest access routes	-	36(100%)	-	36(100%)	-	36(100%)
Alternative Livelihood	-	36(100%)	-	36(100%)	-	36(100%)
Timber harvest benefits	10(28%)	26(72%)	12(33%)	24 (67%)	-	36(100%)
Deity Worship	-	36(100%)	-	-	-	36(100%)
Settlements	-	36(100%)	-	36(100%)	-	36(100)
Total cases	91	197	66	222	68	220

There were multiple answers

4.5.1.1 Association between awareness of community forest rights responsibilities and management regimes

The null hypothesis to be tested is that respondents' awareness of community forest rights responsibilities is independent of the management regime. The respondents are classified by their relative residence locations in terms of the forest reserve management regimes. Their awareness of their forest responsibilities is classified into levels of 'yes' and 'don't know'.

Table 4.15: Association between awareness of community forest rights responsibilities and management regimes in Tano-Offin Forest Reserve.

Observed values:				
Awareness	Plantation regime	Production regime	Protection regime	Total
Yes	91	66	68	225
Don't know	197	222	220	639
Total cases	288	288	288	864

Chi-square = 6.96; Degree of freedom = 2; Probability value (p-value) = 0.031

The p-value is less than 0.05 (the alpha level of significance) and hence the null hypothesis that there is no association between awareness and management regime is rejected. Thus respondents' awareness of their community forest rights responsibilities depended on their residence locations relative to the forest reserve in terms of the management regimes.

4.5.2 Specific responsibilities known and sources of knowledge

Table 4.16 shows the specific responsibilities known by the respondents and the sources of their knowledge thereof (forebears, government/FC and community). Twelve specific responsibilities were identified across the management regimes. The highest percent of respondents in the Plantation regime that mentioned any responsibilities was 64%: they mentioned social and private charge to safeguard

human life and property against wildfires from the reserve and identified the community as the source of their knowledge. They also mentioned contractual obligations to establish and protect the MTS plantation but cited the government/FC as their reference. The corresponding responsibilities for NTFPs and timber in both Production and Protection regimes were mentioned by 44% and 69% of respondents respectively (these percentages were also the modal for both regimes). The corresponding responsibilities for the MTS in the Production and Protection regimes were indicated by 6% to 11% of respondents who referenced the government/FC and the community. Six percent cited the Community in the Plantation regime as well. In respect of moral and customary responsibilities for NTFPs and timber, 14%, 8% and 14% cited the forebears in the Plantation, Production and Protection regimes respectively whilst 6% to 10% cited the government/FC as well. It appears that moral/local customary responsibilities exist alongside formally assigned responsibilities in the management regimes and the respondents know them mostly per the authority that assigns them.

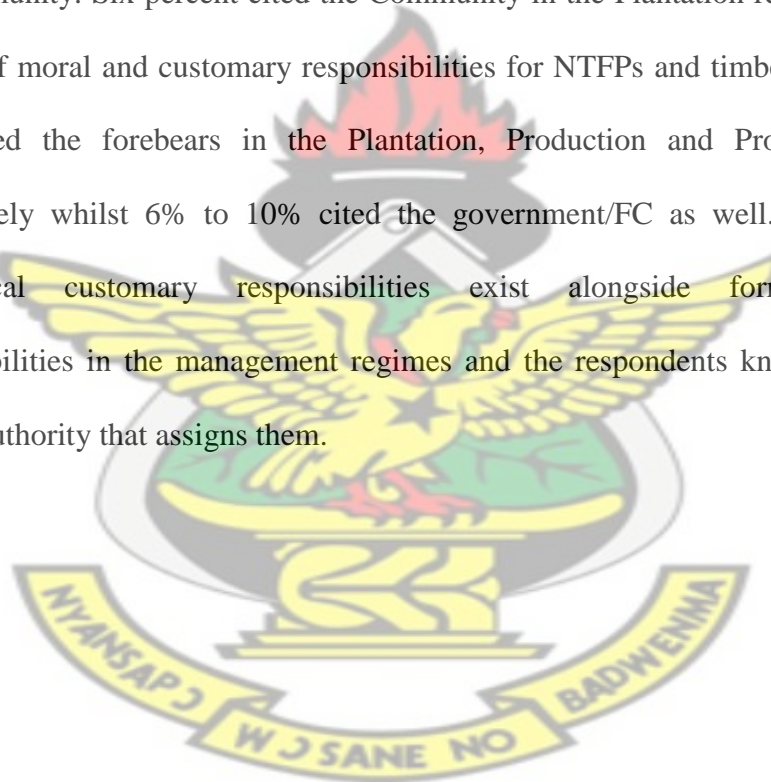


Table 4.16: Respondents knowledge levels and knowledge sources of specific community responsibilities in the forest management regimes

Forest uses and benefits responsibilities	Knowledge levels and sources of knowledge								
	Plantation N=36 (%)			Production N=36 (%)			Protection N=36 (%)		
	Forebear	Gov./FC	Community	Forebear	Gov./FC	Community	Forebear	Gov./FC	Community
NTFPs									
<i>a)</i> Customary and moral charge to protect forest resources from wildfire	14%	6%	22%	8%	14%	42%	14%	14%	28%
<i>b)</i> Social and private charge to protect human life and property (e.g. houses, schools) from against spillover wildfires from forest	-	-	64%	-	-	44%	-	-	69%
<i>c)</i> Patrolling duty as CBAG	-	-	-	-	-	-	-	28%	11%
<i>d)</i> Fire protection duty as FVG	-	39%	-	-	33%	-	-	33%	11%
Cultivation									
MTS :	-	64%	6%	-	11%	-	-	8%	38%
<i>a)</i> Protect against wildfire as contractual obligation till maturity of plantation	-	64%	-	-	6%	-	-	6%	6%
<i>b)</i> Establish and tend till maturity of plantation as contractual obligation	-	6%	11%	-	11%	11%	-	-	-
<i>c)</i> Taungya:Tend for 3 years as farmers' obligation	-	6%	11%	-	11%	11%	-	-	-
Timber Produce									
<i>a)</i> Customary and moral charge to protect forest resources against wildfire	14 %	6%	22%	8%	14%	42%	42%	42%	28%
<i>b)</i> Social and private charge to protect human life and property (e.g. houses, schools) against spill over wildfires from the forest.	-	-	64 %	-	-	44%	-	28%	44%
<i>c)</i> Patrolling duty as CBAG	-	-	-	-	-	-	-	-	4(11%)
<i>d)</i> Fire protection duty as FVG	-	42%	-	-	33%	-	-	33%	-
Timber Harvest benefits									
SRA: <i>a)</i> Chief and elders ensure that operating Contractors obey the community customs	-	-	19%	-	-	25%	-	-	-
Timber royalty- <i>a)</i> Traditional Authority to ensure that royalty is paid to them	-	14%	14%	-	19 %	8%	-	-	-
Total number cases	10	86	80	6	51	78	20	69	78

There were multiple answers.

4.5.2.1 Association between knowledge sources of community forest rights responsibilities and management regimes

The null hypothesis to be tested is that respondents' knowledge sources of specific community forest rights responsibilities are independent of the management regime.

The respondents are classified by their relative residence locations in terms of the forest reserve management regimes.

Table 4.17: Association between knowledge sources of specific forest rights responsibilities and management regimes in Tano-Offin Forest Reserve.

Knowledge Sources	Plantation regime	Production regime	Protection regime	Total
Forebear	10	6	20	36
Gov/FC	86	51	69	206
Community	80	78	78	236
Total	176	135	167	478

Chi-square = 12.0; Degree of freedom = 4; Probability value (p-value) = 0.018

The p-value is less than 0.05 and hence the null hypothesis that there is no association between knowledge sources of community forest rights responsibilities and management regime is rejected. Consequently respondents' knowledge sources of community forest rights responsibilities depended on their residence locations relative to the forest reserve management regimes in Tano- Offin Forest reserve

4.5.3 Validation of forest rights responsibilities

I compared the respondent-identified specific community responsibilities for the forest reserve to the statutory, management and customary provisions for validation: the full validation is presented in Appendix III. Table 4.18 (summary of Appendix

III) shows the validity status in terms of de jure and de facto responsibilities. By nature the responsibilities are; customary, civic or moral, voluntary and contractual and enforcement obligations. The validation shows that, indeed, the respondents knew the specific identifications as community forest responsibilities.

Table 4.18: Validated respondent-specified community forest reserve responsibilities

Validity status	Specific community forest reserve responsibilities
De jure responsibilities	wildfire prevention and watchdog (patrols) as collaborative forest management mandates and goodwill; contractual obligations for establishment, tending and wildfire protection in respect of MTS; ensuring royalty payments and fulfillment of community SRA and respect for local customs.
De facto responsibilities	protection of timber and NTFPs (forest resources), life and property from wildfires as customary, moral/civic and voluntary charges.

4.5.4 Concerns about responsibilities

Table 4.19 shows the respondents' concerns about their forest responsibilities. The concerns related to the perceived responsibilities associated with the rights under timber, NTFPs and MTS.

Fifty three percent to 75% of respondents across the regimes intimated that they felt disempowered because they did not wield the state authority to exercise management functions in respect of timber and NTFPs. They expressed serious concern about the appalling state of resource depletion arising from lack of formal community responsibilities to ensure protection against wildfires, theft and monitoring of harvesting. These concerns were raised mostly in the protection regime. In the

plantation regime, 53% and 69% were concerned that their responsibilities for MTS were not expansive enough to deal with threats of wildfires and timber theft in the adjoining forest and also they faced logistic challenges in the exercise of plantation tending and wildfire management.

All other concerns were expressed by fewer respondents (25% and lower). For the concerns that they did not have definitive understanding of SRA responsibilities and they had limited authority to demand royalty payments, the majority of the respondents came from the production regime and none from the protection regime.

The results show varied emphasis for the same responsibility concerns raised but most respondents were concerned about their responsibilities associated with the rights under timber and NTFPs across the regimes. Besides the cross-cutting concerns there were concerns that were typical of the respective regimes: MTS concerns in the plantation regime and SRA and timber royalty concerns in the production regime.

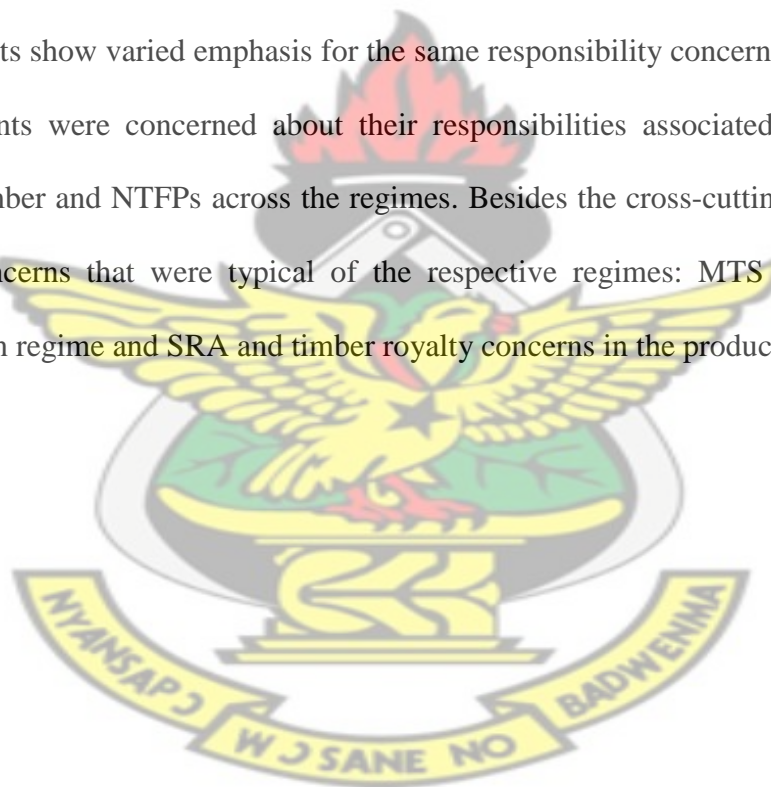


Table 4.19: Respondents concerns about community forest responsibilities in the management regimes

Forest use and benefits	Issues of concerns about responsibilities	Frequency(n) and percentage (%) of respondents in the management regimes		
		Plantations	Production	Protection
NTFPS	a) Disempowerment for lack of formal responsibilities (community cannot take decisions)	23 (64%)	21(58%)	27(75%)
	b) widespread resource depletion because community potentials remain untapped for lack of formal responsibilities	20(56%)	23 (64%)	24(67%)
Cultivation (MTS)	a) Formal responsibility is limited to MTS coups while Community has wider use of the forest	20(56%)	-	-
	b) Lack of logistic support for tending and wildfire control	25(69%)	5 (14%)	6(17%)
Timber Products	a) Disempowerment for lack of formal responsibilities (community cannot take decisions)	25(69%)	21(58%)	27(75%)
	b) widespread resource depletion because community potentials remain untapped for lack of formal responsibilities	19(53%)	22(61%)	23(64%)
Timber Harvests SRA	a) Have only speculative view of responsibility and lack full understanding of the operations of SRA	8(22%)	9(25%)	-
Royalties	a) Community has limited capacity to enforce payment	3(8%)	5(14%)	-

There were multiple answers

4.5.5 Recommendations addressing concerns about responsibilities

Table 4.20 shows respondents' recommendations for addressing their forest management responsibility concerns. Recommendations were indicated across the management regimes in respect of timber (resources and harvest benefits), NTFPs and MTS. In all the management regimes majority of respondents (50% to 75%) recommended education and awareness creation on existing responsibilities; development of shared responsibilities and regimes of constant interactions between the people and forestry authority, provision of logistic support and institution of responsibility performance reward system. In the Plantation regime over 50% of respondents mentioned logistic support and expanded responsibilities beyond MTS coupes. All other recommendations (education on local responsibilities for timber harvesting, shared responsibilities for royalty disbursement, monitoring and logistic support for MTS duties in the production and protection regimes) were made by fewer respondents of less than 30%.

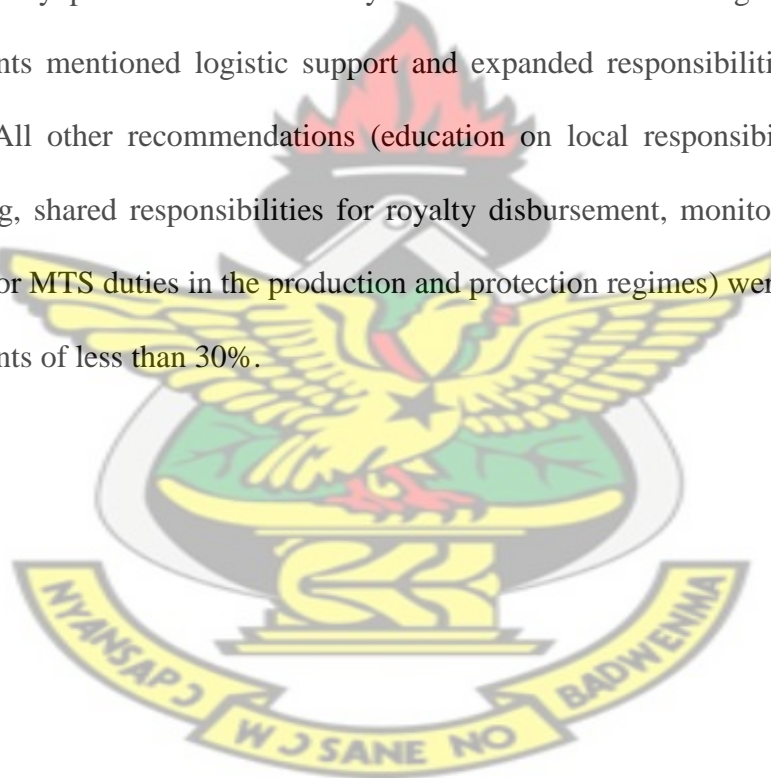


Table 4.20: Respondents' suggested strategies for addressing concerns about community forest responsibilities in the forest management regimes

Forest use and benefits	Strategies for responsibilities concerns	Frequency(n) and percentage (%) of respondents in the management regimes		
		Plantations	Production	Protection
NTFPS	a) Education on existing formal local responsibilities	20 (56%)	18(52%)	19(53%)
	b) Develop shared responsibilities between government/FC and communities	22(61%)	23(64%)	24(67%)
	c) Frequent interaction between community and Forestry Authority to discuss challenges	22(61%)	20(56%)	22(61%)
Cultivation (MTS)	a) Logistic support to execute existing responsibilities e.g. cutlasses, boots, bicycles	24(67%)	5(14%)	16(17%)
	b) Extension of responsibility beyond MTS area	20 (56%)	-	-
Timber Products	a) Education on existing local responsibilities	20(56%)	18(54%)	19(53%)
	b) Logistic support to execute existing responsibilities e.g. cutlasses, boots, bicycles	26(72%)	22(61%)	27(75%)
	c) Provide a reward system for responsibilities e.g. Entitlements to timber.	25(69%)	22(61%)	21(58%)
Timber Harvests	a) Education on existing local responsibilities	8(22%)	10(28%)	-
	<i>Social responsibilities</i>			
<i>Royalties</i>	a) Develop shared responsibility between Govt./FC and Traditional Authority	2(6%)	9(25%)	1(3%)

There were multiple answers

4.6 Procedures for accessing forest rights

4.6.1 Awareness status of procedures

In the Plantation regime respondents showed a high degree of awareness of procedures for NTFP collections, and cultivation of forest land for the purpose of plantation establishment, whilst 44% indicated knowledge of procedures for accessing timber products (Table 4.21).

In the Production regime whilst 92% of respondents were aware of procedures for accessing NTFPs only a few respondents knew of procedures concerning access to timber and forest land cultivation. In the Protection regime 86% of respondents had knowledge of procedures for accessing NTFPs and of acquiring a settlement in the reserve. For procedures for cultivation and alternative livelihoods, the level dropped to 25% and then further down to 19% in the case of procedures for accessing timber products.

Table 4.21: Respondents' awareness levels of procedures for accessing rights to identified forest uses and benefits in the forest management regimes

Forest uses and benefits rights	Level of awareness of status of procedures					
	Plantation N=36 (%)		Production N=36 (%)		Protection N=36 (%)	
	Aware of procedure	Don't know	Aware of procedure	Don't know	Aware of procedure	Don't know
NTFPS	35 (97%)	1 (3%)	33(92%)	3(8%)	31(86%)	4(11%)
Cultivation of forestland	27(75%)	9(25%)	8(22%)	28(78%)	9(25%)	27(75%)
Access to timber products	16(44%)	20(56%)	10(28%)	26(72%)	7(19%)	29(81%)
Forest access routes	-	36(100%)	-	36(100%)	-	36(100%)
Alternative Livelihood	3(8%)	33(92%)	3(8%)	33(92%)	9(25%)	27(75%)
Timber harvest benefits	4(11%)	32(89%)	8(22%)	28 (78%)	2(6%)	34(94%)
Deity Worship	-	36(100%)	-	-	-	36(100%)
Settlements	-	36(100%)	-	36(100%)	31(86%)	5(14%)
Total cases	85	203	62	226	89	199

NB: None of the respondents indicated that they were not aware of status of procedures with respect to forest uses and benefits.

4.6.1.1 Association between awareness of procedures for accessing forest rights and management regimes

The null hypothesis to be tested is that awareness of forest rights access procedures is independent of forest management regimes. The reserve management regimes represent the respondents' relative residence locations to the reserve.

Table 4.22: Association between awareness of procedures for accessing forest rights and management regimes in Tano-Offin Forest Reserve.

Observed values:				
Awareness	Plantation regime	Production regime	Protection regime	Total
Yes	85	62	89	236
Don't know	203	226	199	628
Total cases	288	288	288	864

Chi-square = 7.43; Degree of freedom = 2; Probability value (p-value) = 0.024

The p-value is less than 0.05 and hence the null hypothesis that there is no association between awareness and management regime is rejected. Thus respondents' awareness of their community forest rights depended on their residence locations relative to the forest reserve management regimes in Tano- Offin Forest reserve.

4.6.2 Specific procedures known and sources of knowledge

Table 4.23 shows the specific procedures known by the respondents and the sources of their knowledge thereof (forebears, government/FC and community). The processes for accessing the rights under NTFPs and timber products, timber harvesting, forest land cultivation, alternative livelihood scheme, settlement and deity worship were specified. Only the procedures for accessing forestland for MTS and NTFP collection were specified by 56% to 69% of the respondents. All other procedures were mentioned by under 40% of the respondents.

In the management regimes permits to collect NTFPs: free permit granted by the forestry authority to collect snails and the permits that attract fees to collect NTFPs were mentioned by majority of respondents (56% to 69%); they all cited the community as their source of information. The modal percent of respondents came from the plantation regime and they mentioned the paid permit procedure. Two processes by which a farmer acquired a bonafied access to MTS land were identified: community application to the District forestry authority and subsequent distribution of granted land among community farmers. Sixty-four percent of respondents mentioned each process and cited the government/FC in the plantation regime. Reference to the land acquisition processes in both production and protection regimes were made by fewer than 22% of respondents.

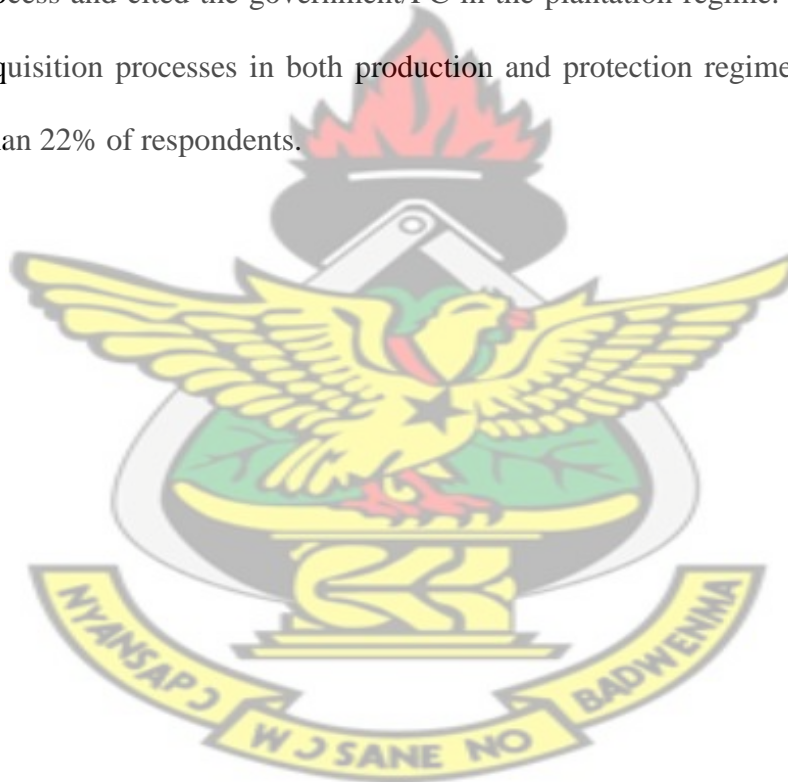


Table 4.23: Respondents knowledge levels and knowledge sources of specific procedures for accessing forest rights in the management regimes

Forest uses and benefits procedures	Respondents' knowledge levels and knowledge sources								
	Plantation N=36			Production N=36			Protection N=36		
	Forbear	Gov/FC	Community	Forbear	Gov/FC	Community	Forbear	Gov/F C	Community
NTFPS									
a) Free of charge permit collection	-	28%	56%	-	33%	58%	-	42%	36%
b) Paid permit collection	8%	-	69%	22%	-	36%	11%	-	56%
Cultivation									
MTS									
a) Community applies government/FSD approves	-	64%	11%	-	8%	14%	-	22%	-
b) Community allocate approved land among members	-	64%	11%	-	-	3%	-	-	-
Timber produce									
a) Buy confiscated chainsaw lumber from Forestry authority	-	19%	17%	-	22%	11%	-	22%	3%
b) Buy sawmill lumber from town	-	19%	17%	-	36%)	11%	-	28%	-
c) Community leaders apply to Government/FSD for free permit to fell timber and produce lumber for community project	-	8%	-	-	11%	-	-	-	6%
Timber harvest benefits									
SRA									
a) Chief and elders and Assembly men appeal to contractor for assistance	-	-	11%	-	14%	11%	-	-	38%
b) Contractor calls on Chief and elders and pay customary charges.	-	11%	-	-	14%	8%	11%	-	8%
Royalty									
a) Government/FSD sells timber; pays a share of revenue to land owner	-	6%	6%	11%	14%	8%	6%	-	8%
Alternative livelihoods									
a) Government /FSD provides livelihood option and inputs; Community member selects and manages livelihood	-	8%	-	-	8%	-	-	25%	-
Settlements									
a)The village was in existence before creation of reserve and admitted as such	-	-	-	-	-	-	14%	-	36%
Sacred sites									
a)The deity was in existence before reservation and admitted as such	-	-	-	-	-	-	14%	-	36%
Total number cases	3	82	71	12	58	58	20	50	71

There were multiple answers.

4.6.2.1 Association between knowledge sources of procedures for accessing forest rights and management regimes

The hypothesis to be tested is that there is no association between community knowledge of procedures and management regimes. The management regimes represent the respondents' relative locations to the reserve.

Table 4.24: Association between knowledge sources of specific procedures and management regimes in Tano-Offin Forest Reserve.

Observed values:				
Knowledge				
Sources	Plantation regime	Production regime	Protection regime	Total
Forebear	3	12	20	35
Gov/FC	82	58	50	190
Community	71	58	71	200
Total	156	128	141	425

Chi-square = 19.2; Degree of freedom = 4; Probability value (p-value) = 0.001

The p-value is less than the alpha level of significance, 0.05 and hence the null hypothesis that there is no association between knowledge sources of community forest rights and management regime is rejected. Consequently respondents' knowledge sources of community forest rights depended on their residence locations relative to the forest reserve management regimes in Tano- Offin Forest reserve

4.6.3 Validation of knowledge of forest rights access procedures

I compared the respondent-identified specific forest right access procedures to the statutory, management and customary provisions for validation: the full validation is presented in Appendix IV. Table 4.25 (summary of Appendix IV) depicts the validity status in terms of de jure or de facto procedures. The validation shows that, indeed,

the respondents knew the specific identifications as procedures for accessing their forest rights.

Table 4.25: Validated respondent-specified procedures for accessing forest rights

Validity status	Specific procedures for accessing forest rights
De jure rights	free permit collection of domestic use timber and NTFPs; purchase of saw mill and FC confiscated timber timber products; application to FC for community purpose timber; community application to FC for MTS farming areas and community allotment of approved sites among themselves; negotiations and undertaking by contractor to observe local customs under SRA; accessing timber royalty through govt./FC disbursement protocols; community appointed access to reserve deities and settlement.
De facto rights	none

4.6.4 Concerns about procedures

Table 4.26 shows the concerns of respondents about perceived procedures for accessing local forest rights. In the three regimes, the modal percent respondents (67% to 78%) intimidated that to be required to purchase a permit (paid permit) just to collect NTFPs for domestic consumption was objectionable as it was only meant to deny access. Then 47% to 56% of respondents across the regimes indicated that paid permit system for accessing NTFPs was bureaucratic and expensive. In the plantation regime 61% mentioned that securing land by application under MTS was bureaucratic and resulted in cultivation delays. All other concerns were mentioned by fewer respondents (6% to 42%) across the regimes: they included absence of village level sales outlet to purchase timber products; lack of personal/community access to timber products; delay disbursement of royalties; lack of notification of timber exploitation;

lack of transparent livelihood inputs allocation and biased selection of livelihood beneficiaries.

The results show that paid permit collection of domestic use NTFPs is a major concern across the regimes. In the plantation regime the application process for obtaining forest land for MTS was considered bureaucratically worrisome.

Table 4.26: Respondents concerns about forest use and benefit procedures in the management regimes

Forest use and benefits	Issues of concerns about procedures	Frequency(n) and percentage (%) of respondents		
		Plantations	Production	Protection
NTFPS	a) Paid permit system stifles access to subsistence NTFP	28 (78%)	24(67%)	26(72%)
	b) The paid permit system for NTFPs is bureaucratic and expensive.	20(56%)	18 (50%)	17(47%)
Cultivation (MTS)	a) Securing forest land is bureaucratic and causes cultivation delays	22(61%)	8(22%)	-
	b) Land sharing among the farmers is not transparent	9(25%)	-	-
Timber Products	a) Lack of personal/ community access to harvest timber	14(39%)	8(22%)	6(17%)
	b) Lack of community sales outlets for timber products. (Seized lumber is sold to the town dwellers and commercial persons	15(42%)	7(19%)	7(19%)
Alternative livelihoods	a) The more endowed in the community are beneficiaries while the less endowed are ignored	3(8%)	3(8%)	9(25%)
	b) Allocation of the inputs is not transparent enough	3(8%)	-	5(14%)
Timber Harvests SRA	a) Community is not given prior notification of the operations of the contractor	11(31%)	9(25%)	-
Royalties	a) Delayed payment to Landowners	2(6%)	5(14%)	-

There were multiple answers

4.6.5 Suggestions for addressing concerns about procedures

Table 4.27 indicates the recommendations for addressing concerns about procedures for accessing forest rights. In the three regimes, respondents (61% through 75%) recommended strategies for exclusion of domestic NTFP uses from paid permits; decentralization of permit acquisition to the community gate and education on existing official procedures. Besides, 69% of the Plantation regime respondents indicated a simplification of allocation procedure for MTS. In the protection regime most respondents (61%) mentioned development of vulnerability test for identification of the needy in respect of livelihood support. Apart from participatory allocation process to distribute MTS land for farmers and education on existing procedures for accessing timber products mentioned by the plantation regime all other recommendations were made by fewer than 30% of respondents.

It is observable that streamlining permit procedures for accessing domestic use NTFP was the focus across the regimes and land acquisition for MTS simplified was the desire in the plantation regime.

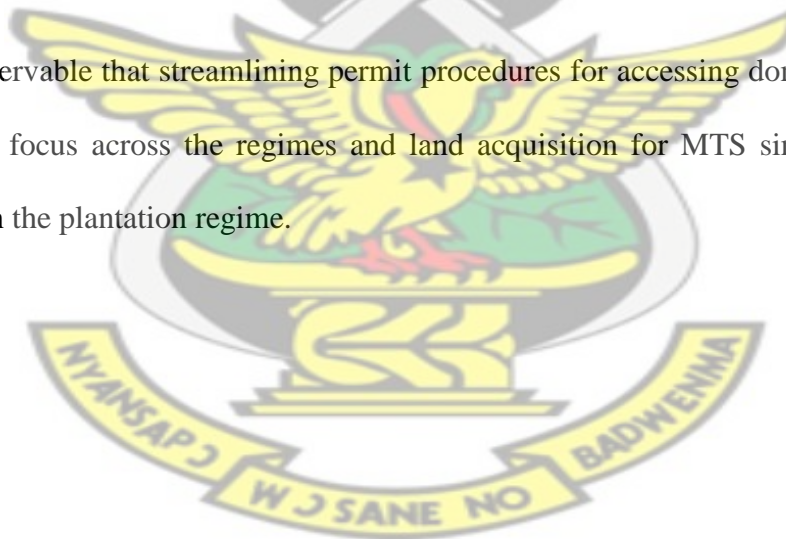


Table 4.27: Respondents' suggested strategies for addressing concerns about procedures for accessing forest uses and benefits in the management regimes

Forest use and benefits	Strategies for procedures concerns	Frequency(n) and percentage (%) of respondents		
		Plantations	Production	Protection
NTFPS	a) Exclusion of domestic uses from paid permits	27 (75%)	23(64%)	25(69%)
	b)Decentralization of permit acquisition to the community gate	25(69%)	21(58%)	24(67%)
	c) Education on existing official procedures	27 (75%)	22 (61%)	25(69%)
Cultivation (MTS)	a) Forestry authority to apply simple land allocation process	25 (69%)	8 (22%)	-
	b) Farmers should adopt participatory land sharing procedure.	17 (47%)	-	-
Timber Products	a) Promote community access to domestic use timber products	13(36%)	9 (25%)	5 (14%)
	b) Education on existing official procedures for accessing domestic purpose timber in the face of chainsaw timber conversion ban	16 (44%)	10 (28%)	7 (19%)
Timber Harvests				
<i>Social responsibilities</i>	Develop mechanism to communicate timber harvesting operations to the community	4(11%)	8(22%)	-
<i>Royalties</i>	a)Develop improved means to ensure prompt and bureaucratic free payments	2(6%)	4(11%)	-
Alternative Livelihoods	a)Develop transparent resource allocation mechanisms	2(6%)	-	9(25%)
	b)Develop livelihood vulnerability tests to identify the more needy community members	2(6%)	-	22(61%)

There were multiple answers

4.7 Rules governing access to forest rights

4.7.1 Awareness status of forest rights rules

The respondents' knowledge of formal rules that govern forest rights is illustrated in Table 4.28. In all the management regimes respondents showed a high level of awareness regarding rules that govern NTFPs and timber harvest. Most of the respondents in the protection regime (83%) mentioned knowledge of rules that govern settlement and sacred site in the reserve but no respondent indicated knowledge of such rules in the plantation and production regimes.

Table 4.28: Respondents awareness levels of rules about rights to identified Forest uses and benefits in the management regimes

Forest uses and benefits rights	Level of awareness of status of procedures for accessing forest resources					
	Plantation N=36		Production N=36		Protection N=36	
	Aware of rules	Don't know	Aware of rules	Don't know	Aware of rules	Don't know
NTFPs	33 (92%)	3(8%)	30(83%)	6(17%)	25(69%)	11(31%)
Cultivation of forestland	28(78%)	8(22%)	26(72%)	10(28%)	22(61%)	14(39%)
Timber products	33(92%)	3(8%)	29(81%)	7(19%)	25(69%)	11(31%)
Forest access routes	-	36(100%)	-	36(100%)	-	36(100%)
Alternative Livelihood	3(8%)	33(92%)	5(14%)	31(86%)	5(14%)	31(86%)
Timber harvest benefits	33(92%)	3(8%)	30(83%)	6 (17%)	23(64%)	13(36%)
Deity Worship	-	36(100%)	-	36(100%)	30(83%)	6(17%)
Settlements	-	36(100%)	-	36(100%)	30(86%)	6(17%)
Total cases	130	158	120	168	160	128

There were multiple answers from the respondents.

4.7.1.1 Association between awareness of rules on community forest rights and management regimes

The null hypothesis to be tested is that awareness of rules is independent of management regimes. The management regimes represent the respondents' relative residence locations to the forest reserve.

Table 4.29: Association between awareness of rules on community forest rights and management regimes in Tano-Offin Forest Reserve.

Observed values:				
Awareness	Plantation regime	Production regime	Protection regime	Total
Yes	130	120	160	410
Don't know	158	168	128	454
Total cases	288	288	288	864

Chi-square = 12.1; Degree of freedom = 2; Probability value (p-value) = 0.002

The p-value is less than the alpha level of significance, 0.05 and hence the null hypothesis that there is no association between awareness of forest rules and management regime is rejected. Thus respondents' awareness of rules governing

community forest rights depended on their residence locations relative to the forest reserve management regimes in Tano- Offin Forest reserve.

4.7.2 Specific forest rules known and sources of knowledge

Table 4.30 shows the specific forest rules known by the respondents and the sources of their knowledge thereof (forebears, government/FC and community). Sixteen specific rules were mentioned across the Management regimes with the prominent ones being ban on chainsaw milling and non collection of very young snails. Most respondents in the Plantation regime (69%) cited the government/FC for their knowledge of ban of chainsaw milling of timber. The corresponding indications of that rule were that 61% and 64% cited the government/FC in the Production and Protection regimes respectively; 14% to 22% referenced the community and none cited the forebears across the three regimes. Forty-four to 56% referenced the community for non pollution of rivers and streams. On awareness of non collection of young snails, most respondents attributed source of knowledge to the community followed by forebears but no reference was made to the government/FC across the regimes.

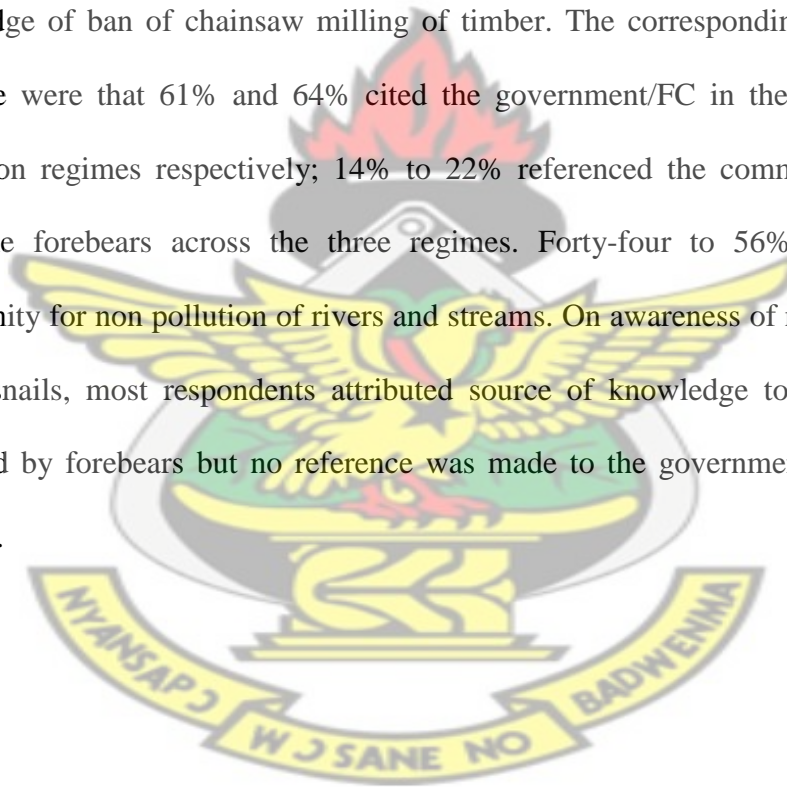


Table 4.30: Respondents knowledge levels and knowledge sources of specific rules about forest rights in the management regimes

Forest uses and benefits rules	Knowledge levels and sources of knowledge								
	Plantation n=36 (%)			Production n=36 (%)			Protection n=36 (%)		
	Forbear	Gov./FC	Community	Forbear	Gov./FC	Community	Forbear	Gov./FC	Community
NTFPS									
a) No hunting or killing of forest animals except rats and grass cutters from August,1 to November, 31 every year (closed season)	-	56%	22%	-	50%	25%	-	50%	25%
b) No killing or hunting of certain forest animals at all e.g. pangolin, porcupine, monkey	-	11%	8%	-	8%	8%	-	11%	22%
c) No pollution of stream or river by any means e.g. fishing with chemicals	-	11%	56%	-	-	44%	-	11%	50%
d) No collection of young snails	14%	-	61%	22%	-	58%	19%	-	61%
e) Should not use fires to hunt animals in dry seasons	61%	-	19%	-	44%	19%	-	33%	22%
Cultivation									
a) No usage of fire for farming in dry season	-	39%	22%	-	39%	22%	-	28%	28%
MTS: a) No planting of cassava and perennial agricultural crops such as cocoa, oil palm	-	39%	-	22%	22%	22%	-	-	6%
b) Farmers must quit after three years of food crop farming but continue to tend tree crops till maturity	-	39%	17%	-	14%	19%	-	-	-
c) No cultivation of food crops in forest reserves without authorization by FSD	-	44%	14%	-	19%	39%	-	17%	31%
Timber produce									
a) No sawing of timber into lumber with chainsaw machine	-	69%	14%	-	61%	19%	-	64%	-
b) Nobody should be found by Forestry Authority carrying chainsaw machine	-	8%	36%	-	25%	33%	-	11%	39%
Alternative livelihoods									
a) Should not depend on the forest while engaged in alternative livelihood e.g. not collect mushroom while cultivating mushroom	-	-	6%	-	8%	-	-	11%	-
Total number cases	27	120	99	16	105	112	7	85	102

There were multiple answers.

4.7.2.1 Association between knowledge sources of forest rights rules and management regimes

The hypothesis to be tested is that knowledge of forest rights rules is independent of management regimes. The respondents' relative locations to the forest reserve are defined classified in terms of the reserve management regimes.

Table 4.31: Association between knowledge sources of specific forest rights rules and management regimes in Tano-Offin Forest Reserve.

Observed values:				
Knowledge Sources	Plantation regime	Production regime	Protection regime	Total
Forebear	27	16	7	50
Gov/FC	120	105	85	310
Community	99	112	102	313
Total	246	233	195	675

Chi-square = 12.5; Degree of freedom = 4; Probability value (p-value) = 0.014

The p-value is less than 0.05 and hence the null hypothesis that there is no association between knowledge sources of forest rights rules and management regime is rejected. Consequently respondents' knowledge sources of rules governing forest rights depended on their residence locations relative to the forest reserve management regimes in Tano- Offin Forest Reserve

4.7.3 Validation of knowledge of forest rights rules

I compared the respondent-identified specific forest reserve rules to the statutory, management and customary provisions for validation: the full validation is presented in Appendix V. Table 4.32 (summary of Appendix V) depicts the validity status in terms of de jure or de facto procedures. The validation shows that, indeed, the

respondents knew the specific identifications as rules governing community forest rights. That one should not possess a chain saw was not accurate and also that alternative livelihood beneficiaries should not access forest products was not traceable to any documentary **rule**.

Table 4.32: Validated respondent-specified rules governing forest rights

Validity status	Specific rules governing forest rights
De jure rights	No hunting of animals during close season; no hunting or killing of specified animals at all times; no hunting of animals with fire in dry seasons; no pollution of streams and rivers; no chain saw milling of timber for sale, buying or exchange; registration of ownership of chain saw; no farming with fire in dry season; no planting of cassava in MTS; to quit traditional taungya after three years; no cultivation without authorization.
De facto rights	quit dependence on reserve under alternative livelihood schemes

4.7.4 Concerns about rules

Table 4.33 shows the concerns of the respondents about rules that govern local forest rights. Across the regimes, over 50% of respondents intimated all the concerns except in the case of the ban on the planting of cassava in the MTS (production and protection regimes) and top-down rule formulation and enforcement (production regime). The topical across-regime concerns related to timber and non timber resources: continuing chain saw milling; restrictive local access to timber; depleting NTFP resources despite restrictions and application of close season hunting regulations outside the forest reserve.

Table 4.33: Respondents concerns about Forest use and benefit rules in the management regimes

Forest use and benefits	Issues of concerns about rules	Frequency(n) and percentage (%) of respondents		
		Plantations	Production	Protection
NTFPS	a) Application of close season outside the forest reserve deprives community of year round access to bush meat	20 (50%)	22(50%)	18(50%)
	b) Continuing depletion despite rules of regulation e.g. snails, Pollution of streams from galamsey	20(56%)	25(69%)	22(61%)
Cultivation (MTS)	a) Exclusion of cassava from MTS deprives community of key staple and cash crop	18(61%)	10(28%)	-
Timber Products	a) Local consumption restrictions imposed by chainsaw ban	20(56%)	22(61%)	20(56%)
	b) Continuing chainsaw milling by outsiders despite ban	25(69%)	22(61%)	25(69%)
General (all uses and benefits)	a) Top-down formulation and enforcement of rules excludes local people's participation	19(53%)	17(47%)	24(67%)

There were multiple answers

4.7.5 Recommendations for addressing concerns about rules

The respondents' recommendations for addressing their concerns on forest rules are found in Table 4.34. Across the regimes respondents (61% to 69%) recommended the development and enforcement of rules for participatory forest management for effective community engagement in forest management. They also called for the exemption of local domestic timber from the chain saw milling ban to facilitate local access to timber. Education on forest laws was recommended by 47% to 56% of respondents whilst the rationalization of the close season for hunting was sparingly

recommended across the regimes. The recommendation to integrate cassava into the MTS was particularly important in the plantation regime. The results show that the major desires of the people across the regimes were to participate in forest rule enforcement and to have access to domestic use timber.

Table 4.34: Respondents strategies for addressing concerns about community forest rules in the management regimes

Forest use and benefits	Strategies for addressing rules	Frequency(n) and percentage (%) of respondents		
		Plantations	Production	Protection
NTFPs	a) Rationalize close season to facilitate local community access to year round bush meat in the off reserve	19 (53%)	17(47%)	18(50%)
Cultivation (MTS)	a) Integrate cassava into MTS to enhance supply of staples and cash crop	18 (50%)	10 (20%)	-
Timber Products	a) Exempt domestic timber supply from chainsaw ban to facilitate local consumption	24 (67%)	22 (61%)	23 (64%)
General (All forest use and benefits)	a) Educate local people on existing rules	20(56%)	18(50%)	17(47%)
	b) Develop participatory rule enforcement to engage co-operation of community	25(69%)	22(61%)	23(64%)

There were multiple answers

5.0 DISCUSSION

5.1 Local socio-economic situation and forest rights implications

The administration of forest rights in the Tano-Offin Forest Reserve is discussed in the socio-economic context of the local people. Since the forest fringe communities depend on forest resources to a large extent, their social and economic character, of a necessity, should reflect a tendency towards an understanding and appreciation of their statutory forest rights provisions.

5.1.1 Literacy status and forest rights implications

The demographic data of the respondents show low literacy rate. This has implications in terms of the community members' ability to read, understand and appreciate statutory rights that traditionally are formulated in formal legal parlance in English and in legal terminologies and jargons. Thus unless the statutory rights are explained to the people in the local language, the rights may remain mere paper guarantees or virtual provisions. This may explain why the respondents' sources of information about forest rights and associated responsibilities, procedures and governing rules were clearly limited to what the people had been told by the government or its agency for forestry; verbally passed on from their forebears and information held within the community.

5.1.2 Key local livelihoods and forest rights implications

Throughout the management regimes the people were mostly farmers and depended a lot on the forest for NTFPs, thus corroborating the observation in the Tano-Offin GSBA management plan for the period, 2007-2011 (FC, 2007). Perhaps, as a necessary condition for the occupation, the sampled population was male-dominated as also was observed by the FC (2007). Most of them were married or once were

while the majority also fell within the very active farming age class of 20-55 years. Additionally, most of the people were family heads, a suggestion that the people have a lot of dependents (households) and by implication, enormous social and economic responsibilities. Thus the livelihoods profile of the fringe communities reflects active farming locals who are highly dependent on the forest reserve for subsistence and economic needs.

It is important to note that 42 village settlements fringe the entire Tano-Offin Forest Reserve (FC, 2007): The people were made up of natives and settlers; the latter formed about 28% to 42% of the respondents with 9% to 20% of them having lived in the locality for over 60 years, the lifetime of the forest reserve. Against this and the preceding background, the implications of the local occupation and related issues for local community forest rights are enormous. Indeed, even in the colonial era when forest resources were relatively abundant, the diversity and magnitude of the local people's dependence and demands on forest resources was enough issue for the colonial authority to have an intergenerational perspective for addressing the forest rights of the people (Thompson, 1908). Thus the search for livelihoods by the local people places actual and potential demands on the forest reserve and it is imperative that they know and understand the provisions and limitations of the forest rights regime in which they operate so as to offset undue crisis that may result from wrong perceptions and expectations. However, across the management regimes, poor knowledge of rights, responsibilities, procedures and rules became evident and education of the people was a common place recommendation.

5.2 Community knowledge of community forest tenure rights

The essence of the local people's traditional dependence on forest and wildlife resources in Ghana is consummated in a key policy guiding principle that enjoins the government of Ghana to recognize and confirm the rights of the people to natural resources and to ensure sustainable use obligations (MLF, 1994). Consequently the local people ought to be conversant with the forest right provisions and to have the necessary capacity to access them in order that the principle may become applicable and relevant. It is in this light that awareness creation and education of the people is a key strategy of the Forest and Wildlife Policy of 1994 and which evaluation is a focus of this study.

5.2.1 The local forest reserve uses and benefits

The range and variety of forest uses and benefits accessed by the communities is largely comparable with colonial (Gold Coast) forest uses and demands of the natives in terms of serving their basic needs as documented by Thompson (1908); Empire Forestry Conference (1933); Oliphant (1934) and Tano-Offin Reserve Working Plan (1958-1968). The result thus confirms the historical and contemporary realization that reliance of the rural communities on forest resources especially the NTFPs for socio-economic support is enormous and indispensable (Thompson 1908; Falconer, 1992; MLF and DFID, 1999). Consequently the admission of local forest rights in the forest estate by the colonial government and in contemporary times a key focus of the forest and wildlife policy and management is amply justifiable (Thompson 1908; MLF, 1994).

All the eight groups of forest uses and benefits, apart from settlement and deity, were accessed by respondents across the management regimes at various degrees but everybody accessed at least one type of NTFP (100% of respondents). This suggests

that the Tano-Offin Forest Reserve is a significant resource for the forest fringe communities. The degree and nature of the overall forest use and benefit streams varied according to the residence location of the people relative to the reserve management regimes. This relationship is traceable to the reservation and contemporary forest tenure and management regimes that sought to admit uses such as settlement and farming in certain parts of the reserve (Tano-Offin Reserve Working Plan (1958-1968; Thompson, 1908). In the light of current community expectations as evidenced by land hunger, forest reserve encroachments, increased demands for timber and non-timber forest products, however, community demand for all forest uses and benefits may transcend locations (management regimes). Consequently, sustained local people's forest rights should be the logical anticipation of the forest management regimes.

5.2.2 Status of community knowledge of forest tenure rights

At reservation the existence, nature and extent of all claims as to rights of the individual or community were evaluated for their legal definition, limitation and regulation (Thompson, 1908). Currently in a legal pluralistic regime, the customary tenure vests the allodial title in the communities represented by the stools and ultimately by the chiefs who execute judicial, governance and land management functions. Meanwhile the Concessions Act of 1962 vests in the state all lands declared as forest reserves when it declares that: the President holds the land in trust for the land holding community, previous interests are retained but management and control are ceded to the President for the benefit of the land holding community (Kotey *et al.* 1998; Kasanga and Kotey, 2001)

In this discourse the local people's understanding and appreciation of their statutory forest rights, concomitant responsibilities, governing rules and access procedures are

evaluated in terms of awareness of them (realization that such provisions are available) and specific knowledge thereof (the identification of specific provisions)

5.2.2.1 The awareness and knowledge of local forest rights

The forest uses and benefits that respondents accessed the respondents' awareness and knowledge of them as community rights and the sources of their knowledge varied relative to the management regimes. For overall cases of 288 (total responses for all 8 categories of forest uses and benefits), 40- 55% accessed varied forest uses and benefits but fewer cases, 19 -30% were aware of them as community rights. The modal response cases in respect of forest use and benefit streams came from the Protection regime but in some cases (30%) were aware of community rights in the Plantation regime.

The reason for the disparity is the availability of most categories of forest uses and benefits in the Protection regime but the rather low awareness of respective categories of rights in the protection regime and across the regimes mirrors a lack of conscious operational interactions between the communities and the District forestry office. This assertion is supported by the exceptionally high awareness in the plantation regime where it was observed that the MTS (cultivation) was facilitated by a conscious programme of education of the communities by the FC. Indeed the District forestry authority should promote public awareness on forest and wildlife management including forest tenure (The FC New Charter, n.d).

Generally fewer than 31% of respondents, other than 56% for MTS in the plantation regime, knew what specific forest rights they have. The high level of ignorance of local forest rights (70% and over) is corroborated by Agyeman *et al.* (2010) who blamed it on disrespect for local forest rights on one hand and lack of documentation

and details thereof that rendered the communities and even the FC officials virtually ignorant of, especially, the communal admitted rights. For overall cases of 288, between 10 -11%; 6 -19% and 19-29% respondents respectively cited their forebears, the government/FC and the community for their knowledge of forest rights across the regimes. For all the cases the community and then the forebears were most cited and the Plantation regime was the mode for all the sources.

The rather high level of community knowledge of rights under the MTS is by reason of the operational knowledge and skills that the government/FC consciously transfers to the community under the current forest plantation development strategy. On the other hand, the cases of high community and forebear justifications reflect the inability of the district FC officials to communicate community rights to the people because they were less knowledgeable to do so and the tendency of the people to fill the vacuum by other knowledge sources other than the government/FC.

The study, therefore, shows that the forest fringe communities of Tano-Offin have limited knowledge of their local forest rights that results from lack of communication of the rights on the part of the forest management agency, the FC.

5.2.2.2 The awareness and knowledge of local forest responsibilities

The respondents were generally aware of local responsibilities in respect of timber and non timber resources and cultivation as also was the case of forest rights but more respondents were aware of perceived obligations than rights, except of cultivation (in plantation and production regimes) and timber harvesting (across the regimes). Respondents' awareness of responsibilities was related to the management regimes. For a total of 288 cases across the regimes 23 to 32% with the mode (32%) in the

Plantation regime were aware of community responsibilities. This represents higher awareness than 19% to 30% for awareness of rights.

Rights are generally associated with responsibilities which should ensure sustainable resource uses (MLF, 1994; White and Alejandra, 2002; Larson *et al.*, 2009). However, the state of greater awareness of responsibilities is an anomaly that poses attitudinal challenges to the effective management of the forest since the forest dependent communities practically get less in return (output of rights) for their investment (input of responsibilities). This is corroborated by Marfo's (2009) observation that Ghana's collaborative forest management places burdensome responsibilities on communities that override their economic expectations of corresponding user rights.

The specific responsibilities were essentially the collaborative goodwill of the people (customary, civic or moral and voluntary) although there were also formal contractual obligations. The situation, thus presents a dual responsibility regime: collaborative goodwill and statutory obligations just as Sunderlin *et al.* (2008) referred to responsibilities based on norms of the state and local customs. The statutory obligations have corresponding resource rights, in this case MTS while the collaborative goodwill does not. It is the knowledge and practical dominance of the latter that poses the attitudinal challenge for forest management and which also is in agreement with Marfo's (2009) observation.

For the respective specific responsibilities, respondents frequently attributed their knowledge to the community across the regimes. Consequently across the government/FC, the forest management authority was a lesser knowledge source of the people. Respondents' knowledge sources were related to the management

regimes. Considered as a whole, most of the respondents cited the government/FC and then the community in the plantation and protection regimes but the reverse in the production regime. Across the regimes only between 2% to 48% knew the responsibilities and this tends to reinforce the forest management issue that key stakeholders frequently have limited knowledge of their rights and responsibilities under reformed tenure arrangements (Gilmour and Fisher, 2010). For the new tenures, MTS and SRA, the knowledge levels about rights and responsibilities tended to be exceptionally high for MTS in the plantation regime (42% and 39% of respondents respectively) but in the rest of the regimes and for SRA the knowledge levels about rights and responsibilities (less than 40% of respondents in both cases) reflected the observation of Gilmour and Fisher (2010). The plausible explanation for the knowledge level discrepancies between MTS and SRA is that, foremost, MTS benefits the individual farmer and thus attracts private attention while the SRA, being basically a community benefit attract a rather low corporate attention.

The study shows that few people are aware and know their local forest responsibilities. The people most frequently obtain the information from the community rather than directly from the government/FC, the legal managers of the forest.

5.2.2.3 The awareness and knowledge of local forest procedures

Generally lower than 30% of respondents were aware of the procedures for accessing forest rights in the communities except in the case of NTFPs (across the regimes) cultivation and settlement in the plantation and protection regimes respectively and timber products in plantation and production regimes. The overall awareness of procedures depended on the management regimes as the association test shows. In terms of the overall cases of 288; 22 to 31% were aware of access procedures across

the regimes. The modal (31%) and the least (22%) cases came from the Protection and Production regimes respectively.

It is worth comparing rights with procedures, under the assumption that if the local people were aware of their entitlements (rights) they should be equally aware of the means (procedures) to access them in order that the rights may become effective. Commonly, respondents were better aware of the related procedures except in respect of timber harvesting (all regimes) and cultivation (plantation and production regimes). Overall, 22% to 31% cases were aware of procedures compared with 19% to 30% cases in respect of rights. The plausible explanation for the discrepancy is the overwhelming desire for the people to obtain their forest needs despite the rights that legitimize the procedures. Thus forest rights may receive equal attention from the people as the procedures for accessing them if the rights are amenable to effective access and thus imputing that rights need to be effectual through guaranteed access (Sunderlin *et al.*, 2008).

The specific procedures mentioned by the respondents were indeed stipulations and consequently the respondents actually knew the procedures they mentioned. But the distribution of the knowledge and sources of knowledge thereof is equally important. The overall knowledge sources of procedures were related to the management regimes as the association test shows.

For overall cases of 288; 1% to 20%; 17 to 28% and 20 to 25% respondents respectively cited their forebears, the government/FC and the community for their knowledge of forest rights across the regimes.

Thus very few cases cited the forebears across the regimes. The Plantation regime cited the government/FC most frequently across the regimes. The individual

procedures and the knowledge sources detail the regime situations. The highest percent of respondents knew the MTS procedures per the information from the government/FC in the plantation regime and the NTFP procedures (paid and free permits) by the community testimonies across the regimes. Apart from these, generally less than 40% of respondents knew any procedures on the basis of all the information sources (government/ FC, forebears and community).

The exceptions, in the case of MTS, are attributable to the operational engagements between the community and the FC as already stated.

5.2.2.4 The awareness and knowledge of forest rights rules

Across the regimes most respondents indicated that they have knowledge that rules exist that govern tenure rights, predominantly, in respect of NTFPs, cultivation and timber (75% to 92% respondents) and settlement in the protection regime (86%). Compared with rights, apart from cultivation in the Plantation regime, respondents were better informed of the corresponding forest rules. For the overall cases of 288; 42 to 56% were aware of rules governing the various forest uses and benefits but fewer cases, 19 to 30%, were aware of them as community rights.

This disparity lends credence to their concern that the forest management authority emphasized what should or should not be done (rules) to the detriment of what the rights provide. Under the circumstance the observation by Colchester *et al* (2006) that commonly forest management laws that restrict local community forest access and uses are applied more vigorously than complementary measures that recognize community rights is relevant.

The specific rules mentioned were indeed stipulations: de jure, customary or conservation good practices e.g. non collection of very young snails. Thus the

respondents actually knew the forest rules they mentioned, but the perceived rule that possession of a chain saw was forbidden is an over-exaggeration. The law actually is that the owner of a chainsaw is required to register with the District Assembly and District Forestry office (L.I 1649).

The sources of community knowledge about forest rules were related to the management regimes as shown by the association test. Of the overall cases, most respondents mentioned the government/FC in both Plantation and Production regimes but the community in the Protection and Production regimes. Across the regimes fewer respondents cited the forebears. For the individual specific rules modal respondents of 67% in plantation regime and 56% in the production regime cited the government/ FC for ban of chain saw milling. The modal case of 39% in the protection regime however cited the community. Across the regimes and mostly in the plantation, most respondents mentioned the restrictions on hunting, chain saw milling and use of fires in the dry season and attributed their knowledge frequently to the government/ FC. These rules are seasonally and operationally reminded by the government/ FC hence the high level of knowledge particularly in the plantation regime which has a greater government/ FC and community interactions due to the MTS. It, thus, lends support to the community concern that the government/ FC emphasize the don'ts of forest management.

The community testimonies across the regimes essentially were in reference to snail collection restrictions and stream pollution which are basically of cultural and moral significance and therefore typically reside in the community knowhow.

Generally, fewer respondents across the regimes knew the rules but the degree of awareness was influenced by the type of rule and that community knowledge tended to be higher in rules which were often emphasized by the government/FC.

5.3 Concerns and mitigation strategies about community forest rights

The recognition and confirmation of forest rights and corresponding responsibilities to ensure sustainable use (MLF, 1994) may come to naught if the people cannot practically access the rights. Certainly, years of implementation of Ghana's 1994 forest and wildlife policy should provoke concerns about the forest rights which require examination and address.

5.3.1 Concerns about forest rights

Across the regimes, respondents expressed concerns in respect of timber and non-timber forest products, timber exploitation and forest cultivation rights but most frequently about NTFPs. It was also clear that respondents from the plantation regime had the highest level of concerns. The situation reflects the lack or inadequate knowledge of the total community rights or the critical resource needs of the local people.

In this discussion, the concerns are put into seven categories: uncertainties; restrictions on access; competition; unstable benefit flow; resource depletion; cost burden and documentation of rights.

a) Uncertainties

The uncertainties imply the lack of understanding of the realities of the rights in question: the concerns were about the quantum of benefits and actual beneficiaries of SRA and the payment of farmers' future MTS benefits. Two types of SRA benefits were indicated: community development and customary fulfillments. The concern of

apparent lack of clarity between the two benefits was indeed buttressed by Larson *et al.* (2009). They observed that the SRA had been largely controlled by chiefs and there was little indication that the communities benefited. The suspicion about non-payment of farmers' MTS benefits for the reason that it is a new right need not arise if the land lease and benefit sharing agreements had been concluded and were signed.

b) Cost burden

Related to the MTS was the concern about management cost to be borne upfront by the farmer. Forty- two percent of respondents in the plantation regime considered it as a huge burden. Legger (2010) had observed that the majority of the MTS farmers yearned for loans, even as part of their future benefits, to offset the cost burden of tending trees.

The uncertainties about MTS and SRA, which are new community forest rights in Ghana, signal the need to pay attention to the implementation of new tenure rights (forest tenure reform).

c) Restrictions on access

The restrictions on access to timber and non timber forest products brought about by threats of arrest by forestry personnel was most mentioned in the plantation regime because the restrictions tended to aggravate their limited access to the already depleted resources. The perceived restrictions suggest that the people felt unnecessarily incapacitated to access the benefit streams of their forest rights, especially the communal admitted rights to NTFPs and for timber. These concerns, however signify lack of understanding of the implementation of community forest rights regime and supports the assertion of a virtual ignorance of communal admitted

rights by both the community and staff of the Forestry Commission (Agyeman *et al.*, 2010).

d) Resource depletion

The illegal use of forest land and resources by people outside the community leading to resource depletion is a fore challenge in Tano-Offin Forest Reserve that should have generated serious community concerns, however only a few respondents across the regimes (6% to 42%) expressed this concern. The situation tends to lend credence to the observation made by the visiting FC Commissioners and Board members that the intruders were the community members themselves or were known to them (FC, 2008). That being the case, a forest protection challenge manifests because the fringe communities are clearly perpetrators and condoners or connivers of forest illegalities. On the other hand, to be concerned about other users competing for the same resources is a tendency towards the desirability and the right to exclude others and hence a decision making right to control access.

e) Documentation of rights

The security of title to admitted farming rights was the crux of the concern on documentation of rights. The bane of the concern was the apparent difficulty the farm owners or inheritors faced in accessing their farms without the evidence of title documentation as demanded by the District forestry authority. The assertion was that the reservation dossier should authenticate any claims. Indeed the concern reflects the observation that, often the people's inability to authenticate their rights provides the basis for the local authorities to label the claims as illegal even when official documentary evidence is available (Mayers *et al*, 2006).

f) Unstable benefit flow

Declined and irregular benefit flow from timber royalties (stumpage) was of greatest concern, to the stool/ landowners and traditional council who are the legal and traditional community recipients of timber royalties (Constitution of the Republic of Ghana, 1992). Thus the few respondents, 11% to 22%, that expressed the concerns certainly might represent the chiefs and elders. Nonetheless, the fact that the concerns were raised across the three regimes shows their importance and the need to address them. In the plantation regime, the drop in timber revenue may be a temporary setback since with the maturity of the plantations substantial benefit flows (5% of timber revenue) are expected to accrue to landowners (Agyeman *et al*, (2010). In the production regime decline in royalty may be a reflection of the decline in timber stocks or non availability of mature coupes in the reserve. However in the protection regime where no logging is allowed, timber royalties are not expected and it behooves the FC to find ways of compensating the forest owners for lost of revenue. In all the cases the royalty, of course, is related to the availability of timber whose protection should engage the serious attention of the stool/ landowners and traditional council.

5.3.2 Concerns about responsibilities

The concerns emanated from respondents' conviction that fringe communities have the duty to ensure the sustainable use of the forest resources that provide the benefit streams that they enjoy.

Across the management regimes, between 53% and 75% of respondents were concerned about the lack of formal community authority (empowerment) to ensure sustainable use of forest resources. It was observed that respondents equated formal responsibilities with the authority to control and take decisions about the forest reserves. Consequently, the lack of statutory responsibility meant an incapacitation

(disempowerment) to stem the forest abuses i.e. inhibit resource depletion. The respondents' concerns are endorsed by literature that when forest-dependent communities secure control over forest resources, they can protect them against a third party's destruction (Accra Caucus on Forest and Climate Change, 2010).

The community forest responsibilities were largely customary, moral or voluntary and their potential impacts appear less effective than statutory responsibilities. This may explain why respondents asked for statutory responsibilities which presumably will come with statutory powers. The majority of respondents that expressed the concerns came from the protection regime that was observed to be beset with resource depletion; and certainly this is a further manifestation of the perceived efficacy of formal responsibility. The apparent communities' belief that formal responsibilities have empowering capabilities over customary charges corroborates Larson *et al.* (2009) intimation that even where effective local customs are available, forest rights are combined with cumbersome statutory responsibilities to protect the forests.

The lack of logistic support for the execution of responsibilities was a serious concern in the plantation regime. This concern reflects the MTS farmers' protest against the perceived huge upfront management costs and hence an expectation for the government/FC to support them to maintain the plantations. Certainly the situation suggests an underestimation of the enormity of the MTS farmers' responsibilities by the government/ FC and hence a prompting for a tenure review in this regard.

The concern of limited responsibilities reflects the respondents' desire for broader formal responsibilities. The respondents indicated that they were limited in their responsibilities to the MTS, yet they were threatened by events beyond (e.g. wildfires, water pollution, resource depletion) while they depended on the adjacent forest.

Consequently they want to have broader responsibilities beyond their contract area. The concern further emphasizes that the local people's empowerment comes from formal responsibilities and which must accompany rights to use the forest resources.

The concerns about social responsibility agreements and timber royalties indicate partial and lack of clarity of responsibilities. For SRA, respondents indicated that they held opinions instead of definite knowledge of responsibilities. Common opinions were that the community was required to provide accommodation for the contractor's workers and also provide security for the harvesting equipment as reciprocity of SRA benefits. Indeed the community is expected to create the conducive environment for timber harvesting operation, but the opinions that suggest that SRA is goodwill to the community undermine its essence as a community right and thus expose it to abuse.

The respondents deplored the apparent laxity on the part of FC to ensure prompt disbursement of royalties. The concern reaffirms the demand by the chiefs and elders for the FC to make prompt payments of royalties when the visiting FC Commissioners and Board members solicited their support in stemming the illegal use of Tano-Offin forest resources (FC, 2008)

All together the concern about community responsibility for the forest reserve was the absence of clear official responsibility that would enable the communities to make decisions and be able to exercise control. This also means the community desires to have management rights.

5.3.3 Concerns about procedures

The procedures outline the lawful steps and processes for accessing forest rights and hence the concerns in relation to them seek to identify the obstacles imposed by their applications.

Of the array of concerns (deprivation, bureaucracy and transaction costs, lack of transparency, process delays, process biases equity), the deprivation of access to NTFPs appeared most important to the community. The majority (67% to 78% of respondents) lamented that requiring payment for collection of NTFPs for domestic uses deprived them of access to NTFPs. The highest level of concerns (78%) came from the plantation regime, certainly because they already faced NTFP depletion challenges and also most unlikely to evade compliance due to the routine presence of forestry officials for MTS operations.

The perceptions of the people were that subsistence collections ought to be free, implying a certain 'open access' regime for the fringe communities. Indeed subsistence collections (by communal rights) require permits from the FC (formerly FD) but they should be free (Tano-Offin Reserve Working plan, 1958 to 1968; Mayers and Kotey, 1996). But Mayers and Kotey (1996) indicated that the FD imposed permits, levies and fines to further restrict the rights when commercialization of forest products had a great vogue and the outsider benefited the most. Effectively, the Forest Protection Decree of 1974 annulled most communal rights: the FC may grant some free permits for domestic use collection of NTFPs but all other uses require written permission and payment of a fee. Clearly there is ambiguity over what NTFPs pass as communal rights and hence attract free permits. The missing link then is lack of comprehensive understanding of the operation of the communal right by the communities as well as the forestry officials as confirmed by Agyeman *et al.* (2010).

Certainly it is the requirement to secure written permission from FC and payment of a fee for non domestic uses (as stipulated by the Forest Protection Decree of 1974) that underlies the concern of process bureaucracy and cost implications. Fewer number of respondents expressed this concern across the regimes: the majority was in the

plantation regime and the least in the protection regime. The views of the respondents were in agreement to those expressed about villagers in a similar study by Mayers and Kotey (1996). Indeed just as these authors observed even the most prudent and law-abiding may not bother to observe these requirements to obtain a resource that is just within reach.

The concerns of bureaucracy in the acquisition of forest land for MTS were most frequently indicated in the Plantation regime as expected since they are the ones who observe the requisite procedures. If these bureaucratic procedures persist the people may be inclined to avert them through illegal options.

Generally less than 40% of respondents expressed concerns about other procedures. However, this cannot be taken as an acceptance of the procedures. Against the background that the knowledge of the procedures was also generally low, the plausible explanation may lie in the ignorance of the procedures.

The lack of transparency in the allocation of MTS land and of alternative livelihood inputs among beneficiaries was raised as an issue. This shows that access to information is critical in tenure administration (FAO, 2002).

5.3.4 Concerns about rules

The results show that respondents across the regimes were mainly concerned about the forest tenure rules in relation to timber and non timber forest products and forest land cultivation.

The concern that rules were apparently ineffective to safeguard the timber and non timber resources was attributed to the outsider circumvention of the rules. While the outsider is blamed, the concern about the top-down rule enforcement is again brought

to the fore because it suggests that given the opportunity the local communities can stem the outsider abuses.

Forest rule formulation and enforcement touch on fundamental component of forest rights because every property right has rules that authorize or require particular actions in exercising it (Schlager and Ostrom, 1992). The community concerns about them typically raise a governance challenge since they reflect decision making and implementation regarding rights (Larson *et al.*, 2009). The concerns clearly point to a disaffection for a top-down rule making and enforcement and thus brings into question the effectiveness of the collaborative forest management practices in the study area especially in the protection regime where most (67%) respondents raised the concerns. Indeed the apparent top-down rule making and enforcement suggests the perpetuation of command-and-control approach to forest management whose criticism created the co-management of forest resources (Larson *et al.*, 2009).

Respondents adjudged close season in the off reserve, chain saw ban and cassava cultivation ban as undue restrictions because they tended to place limitations on their forest resource uses and hence their forest rights. The concerns raise a dilemma between satisfying community forest resource needs and rules intended to ensure sustainable forest management and which eventually sustains the needs. Indeed restrictive access rules diminish the economic value of the forests to the local people while destroying their conservation drive but lax rule enforcement creates a de facto open access resource (Lawry, 1990 as cited in Banana and Gombya-Ssembajjwa,(n.d).

5.4 Mitigation strategies for community concerns about forest rights, responsibilities, access rules and procedures

The education of the people on their forest rights, responsibilities, access procedures and governing rules, appears as a key community forest strategy across the management regimes. The desire of the communities to be educated on their forest rights, especially on NTFPs and SRA clearly shows they are ignorant of their rights. Agyeman *et al.* (2010) has made similar observation in forest fringe communities. Education on rights would not only enhance the people's knowledge of their rights but would empower them to protect these rights (FAO, 2002).

Other key community strategies for addressing the shortfalls in forest rights were improved ways of monitoring and evaluation to ensure effective implementation of rights and tenure reforms and tenure security to build farmer confidence and optimism under MTS.

The strategies in respect of responsibilities involved shared responsibilities and rapport between the communities and the government (forestry authority) which touches on co-management (collaborative resource management, in Ghanaian parlance). Co-management seeks to promote greater state-community collaboration by circumventing command-and-control approach to forest management (Larson *et al.*, 2009). Therefore a recommendation for its promotion or enhancement within the reserve area suggests a weakness in its current form. Consequently the communities want to see forest laws that will compel forest stewards to be committed to collaborative forest management principles through participatory rule enforcement. Clearly the local people are questioning the lip service that often accompanies participatory resource management. Indeed Marfo (2010) observed that Ghana's collaborative management regime places burdensome responsibilities on the

communities to the detriment of the economic expectations. That the community role was burdensome might be the reason for the recommendation for logistic support and reward system apparently to compensate or cushion the financial commitments. The quest for expanded role beyond MTS coups where the right holder farmer has a share in the plantation timber reflects the observations made about community responsibilities by the Accra Caucus on Forest and Climate Change (2010): forest communities tend to expend their human and financial resources to defend their new rights against encroachments and when they have control over the forest resources they can stem the destruction of others.

The focus on NTFPs across the communities emphasizes their local importance and hence the need to enhance community access to them. Therefore, the observation by Kotey *et al.* (1998) that forest laws tend to deny communities meaningful right to admitted rights because of the requirement to obtain written permission from the forestry authority needs serious attention.

As White and Alejandra (2002) observed, cumbersome and bureaucratic process tend to render statutory rights almost impossible to exercise by the forest communities and precisely this is the reason for a strategy to simplify land acquisition for MTS.

The quest to design and apply vulnerability identification system for alternative livelihood schemes is to address the suspicion that the less endowed community members were neglected.

Some of the recommendations made to address community concerns on forest rules essentially seek to soften forest rules for communities. Indeed food and income from the forest are important for the poor if access to the forest is relatively unrestricted

(Warner, 2000). However community needs should be balanced with conservation needs.

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6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

1. In the Tano-Offin Forest Reserve the fringe communities are made up of natives and settlers who are mainly farmers. Most of them are unable to read and write and consequently lack the ability to self read, understand and appreciate the statutory forest rights that are formulated in legal terminologies and jargons in English, unless same is communicated to them in the local language.
2. The fringe communities make substantial uses of the forest reserve land and products as well as timber harvest benefits and livelihood supports. The forest uses and benefits consist of eight categories: NTFPs, timber products, timber harvest benefits, forest land cultivation, and forest settlement, sacred sites for deity worship, forest reserve routes and alternative livelihood support. The forest uses and benefits reflect a relationship to community locations and circumstances relative to the forest reserve management regimes.
3. The local community forest uses prior to the constitution of Tano-Offin Forest Reserve reflected an adequate forest resource use. But the constitution of the reserve and attendant regulation of the local community access tended to restrict the local uses of the reserve in many cases. There is a growing local community demand for forest uses that engenders pragmatic forest tenure and forest resource management strategy.
4. The fringe communities have rather limited knowledge of their statutory forest rights and concomitant responsibilities and formal procedures and rules that govern access. Their awareness and knowledge of them depended on their residence locations and circumstances relative to the reserve management

regimes. In the plantation regime where there was sustained educational and information sharing engagements between the community and FC the people's knowledge was enhanced, especially in respect of MTS.

5. Overall, 40% to 55% accessed forest uses and benefits across the regimes but as fewer as 19% to 30% were aware of community rights. Yet more people were aware of forest rules (42% to 56%), community responsibilities (23% to 32%) and procedures (22% to 31%) than were aware of tenure rights.
6. The Communities acquire knowledge of their forest rights, responsibilities and access protocols per the government/FC, community members and their forebears with the community being the commonest sources. In the absence of a structured awareness creation and educational programme on forest, knowledge passed on from the forebears and the community has shaped people's perceptions and attitudes to the forest. There is urgent need, therefore, to assist the people to adopt new attitudes.
7. The reserve appears indispensable in the livelihood strategies of the people. They recognize that the FC is responsible for the official management of the forest reserve but the communities' support should complement the FC's efforts; yet their potentials remain untapped as they lack formal responsibilities in many respects while the forest is in danger of resource depletion that threatens their socio-economic wellbeing.
8. The fringe communities reckon that the FC is the ultimate decision maker but other local institutions exist that can play complementary roles. They shelve their concerns from the FC because they perceive that it is not sensitive to their concerns as it pursues forest management principles that tend to exclude their course.

9. The fringe communities suggest that education on their forest rights and improvements in their access to forest resources as well as a participatory management regime will facilitate realistic achievement of management objectives of the reserve.

6.2. RECOMMENDATIONS

1. The FC should realign its collaborative resource management machinery to include a pragmatic programme to educate the forest fringe communities on the forest tenure regimes and to monitor and evaluate their implementation.
2. The management of the forest reserve should accommodate more socio-economic aspirations of the local communities for better livelihood support and sustainable management.
3. The management of the forest rights regime should accommodate the local governance structures in a bottom-up decision making environment in order to secure a real partnership with the FC who is the main government agency responsible for the management of forest and wildlife resources.
4. Further research is required to cover wide forest areas and management regimes to assess the functionality of the forest tenure regimes.

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APPENDICES

Appendix I : Interviewer-administered questionnaire for fringe communities in Tano-Offin Forest Reserve.

Forest Reserve Management Regime..... (Plantation, Production, Protection)

Interview No.:..... Date..... Village:.....

Time(start):..... Time(end).....

Forest District..... Administrative District:..... Region:.....

Interviewer:.....

Section 1: Personal Data

1.1 Gender: (1) Male (2) Female

1.2 Age (1) 15-24 (2) 25-34 (3) 35-44 (4) 45-54 (5) 55-64 (6) 65+

1.3 Social status (1) Chief/Queen (2) Head of household (3) Sub chief / Elder (4) Assemblyman / Unit Committee (5) Ordinary community member (6) other.....

1.4 Occupation (1) farmer (2) petty trader (3) public servant (4) other.....

1.5 Residential status: (1) Native (2) Migrant. (If migrant, home region).....

1.6 Years of stay in the village years

1.7 Marital status: (1) Married (2) Single (3) Divorced (4) Widowed

1.8 Education Level: (1) Middle/JHS (2) SHS (SSS) (4) Voc/Tec. (5) Non-formal (6) Tertiary (7) No education (8) other....

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Section 2: Community Forest Rights

2.1 The forest reserve uses and benefits accessed by the local communities.

2.1.1 What forest reserve uses and benefits do you access currently or have accessed in the past?

Tick: Yes = accessed or No = not accessed as applicable .State any other and complete the table.

Forest uses and benefits obtained from reserve	Yes	No
I) NTFPs (e.g. potable water, fish, bush meat, snail, firewood. and others such as fruits, ropes, wrapping leaves, wild yams, pestles, medicinal plants		
II) Cultivation of forestland (e.g.taungya farming(old system), MTS (new system), admitted farms)		
III) Settlement (village land)		

IV) Timber Products (e.g. <i>individual/household uses</i> as roofing, furniture etc.. <i>community uses</i> as bridges, school furniture and roofing and Commercial uses(e.g. sale of chainsaw products)		
V) Timber Harvest Benefits <i>SRA</i> benefits from timber harvesting (provided by timber contractors), <i>Stumpage(royalty)</i> from timber harvesting		
VI) Passage through reserve (e.g footpaths or roads)		
VII) Alternative livelihood (e.g snail, grass cutter rearing, mushroom cultivation)		
VIII) Deity worship (e.g. grove, river, rock, tree)		
X) Others (specify)		

2.2 Knowledge of Existing Community Rights

a. Awareness of Rights

2.2.1 Indicate whether or not you are aware that the local community have rights to the forest uses and benefits you mentioned in 2.1.1 Tick (1) Yes, rights (2) No rights (3) Don't know against: [NTFPs, cultivation, settlement, timber products, timber harvest benefits, access routes, deity, alternative livelihood] as may apply in table.

b. Knowledge of specific rights

2.2.2 If you answered "yes" to (2.2.1), identify the specific use/ benefit right and the sources of your knowledge as follows: (a) Check the applicable **specific** use/benefits that fall under the use/ benefit category. (b) check your response for (a) against the applicable knowledge sources: (i) forebears ii) Government./FC (ii) Community (iv) other (state)

.Forest uses and benefits	Awareness of rights (1)Yes (2) No (3)Don't know	Specific rights (check)	Source of knowledge			
			(i)	(ii)	iii)	(iv)
<i>NTFPs</i>						
1 Portable water (drinking)						
2 Fish						
3 Bush meat						
4 Snail						
Firewood						
Other NTFPs(eg fruits,wild						

yams,pestles, medicines)						
Cultivation						
1. Taungya farming(old system)						
2. MTS						
3. Admitted farms						
4. Settlement						
Timber Products						
2 Individual/household (eg roofing, furniture)						
3 Domestic uses- community projects						
Commercial uses(sale of chainsaw products)						
Timber Harvest Benefits						
SRA						
Royalty						
Passage through Reserve paths						
Roads						
Alternative Livelihoods						
Deity						
Sacred grove						
Sacred river						
Others (specify)						

2.3 Concerns about community rights to forest uses and benefits

2.3.1 What are your major concerns about the local community forest reserve rights? (Check the following concerns and complete the Table below):

What concerns?

(1)FC officials constrain/ prohibit access (2) outsider commercial collection competes and reduces subsistence collections (3) increasing depletion threatens security of resource use (4) uncertain payment of MTS benefits (5) upfront tending and protection cost on MTS may become unbearable (6) original documentation on admitted farms not accessible (7) Not certain about quantum of SRA benefit (8) lack of clarity about SRA beneficiaries (community or traditional authority) (9) declining timber royalty (10) lost timber royalty (11) other.....

Forest uses and benefits	Concerns
<i>NTFPs</i>	
<i>Cultivation</i>	
<i>Settlement</i>	
<i>Timber products</i>	
<i>Timber harvest benefits</i>	
<i>Passage through reserve</i>	
<i>Alternative livelihood</i>	
<i>Deity</i>	
<i>Others (specify)</i>	

2.4 The Improvement needs for community rights

2.4.1 What improvements do you recommend for addressing your concerns as for 2.3.1?

(Check the recommendations provided and complete the Table below):

(1) Promote education on existing rights (2) Develop extension system to monitor and review implementation of rights (3) Build farmer confidence by finalizing benefit sharing agreement (4) Provide periodic outlooks on MTS to inform & manage farmer expectations (5) develop transparent and easy farmer access to admitted farms (6) Extension system to monitor, enforce and review implementation of SRA (7) periodic outlooks on royalty to inform & manage land owner expectations (8) Other.....



Forest uses and benefits	Improvement needs
<i>NTFPs</i>	
<i>Cultivation</i>	
<i>Reserve access routes</i>	
<i>Settlement</i>	
<i>Timber products</i>	
<i>Timber harvest benefits(SRA & Timber Royalties)</i>	
<i>Alternative livelihood</i>	
<i>Deity</i>	
<i>Other (specify)</i>	

Section 3: Community Forest Responsibilities

3.1 Knowledge of Existing Community Forest Rights Responsibilities

a. Awareness of Responsibilities

3.1.1 Indicate your awareness or otherwise of local community responsibilities associated with the rights to the categories of reserve uses and benefits that you have mentioned in 2.1.1. Tick the appropriate option :(1) Yes, responsibilities (2) No responsibilities (3) Don't know against the categories of forest uses/benefits.

b. Knowledge of specific rights Responsibilities

3.1.2 If you answered "yes" to (3.1.1), identify the specific responsibilities and the sources of your knowledge as follows: (a) check the applicable responsibility options that fall under the forest use/benefit categories. (b) check your response for (a) against the applicable source of knowledge in the table: (i) forebears ii) Government /FC (ii) Community (iv) other (state)

What responsibilities?

(1) protect forest against wildfires as customary/ moral/ formal/private/ CBAG/FVG charge (2) protect community life and property against fires from reserve as customary/ moral/ formal/private /CBAG/FVG charge (3) regulate NTFP and timber harvesting (eg snail collection) (4) Protect MTS plantation till maturity (5) ensure that operating timber contractors obey local customs(6) carry out reserve boundary patrols (7) ensure that timber royalty is paid to land owners (8) check illegal entry into

reserve (9) establishment and tend MTS plantation till maturity (10) nil (11) other (state).....

Forest uses and benefits	Awareness of responsibility	Specific responsibilities	Source of knowledge			
	(A)Yes (B)No (C) Don't know	(check)	(i)	(ii)	(iii)	(iv)
<i>NTFPs</i>						
<i>cultivation</i>						
<i>Settlement</i>						
<i>Timber products</i>						
<i>Timber harvest benefits</i>						
<i>Passage through reserve</i>						
<i>Alternative livelihoods</i>						
<i>Deity</i>						
<i>Others (specify)</i>						

3.2 Concerns about Community Responsibilities

3.2.1 What are your major concerns about the local community forest reserve responsibilities?

(Check the following concerns and complete the Table below):

What concerns?

(1) Responsibility is limited to MTS area but potential threats from wider reserve/ have wider use of reserve. (2) no formal assigned role and hence feel disempowered (3) assigned with too many responsibilities (4) ignorant of role of community hence can't be effective in decision making (5) widespread forest resource depletion yet community potential for protection is untapped (6) lack of logistic support to undertake responsibilities (7) limited authority to enforce payment of royalty; (8) speculative view of SRA responsibility (5) other (specify)...

Forest uses and benefits	Concerns
NTFPs	
Cultivation	
Settlement	
Timber products	

Timber harvest benefits	
Passage through reserve	
Alternative livelihood	
Deity	
Others (specify)	

3.3 The Improvement needs for community responsibilities

3.3.1 What improvements do you recommend for addressing your concerns about local forest right responsibilities? (Check the recommendations provided and complete the Table below):

(1) assign formal responsibilities for management and protection (2) educate community on existing formal responsibilities (3) provide logistic support to execute responsibilities (4) extend formal responsibilities over entire reserve (5) provide reward system for performance of responsibility (6) develop shared responsibilities between community/traditional authority and FC (7) institute frequent interactions between community and FC to discuss challenges responsibility (5) other (specify).....

Forest uses and benefits	Improvement needs
NTFPs	
Cultivation	
Reserve access routes	
Settlement	
Timber products	
Timber harvest benefits	
Alternative livelihood	
Deity	
Others (specify).....	

Section 4: Procedures For Accessing Forest Resources And Benefits

4.1 Knowledge of existing procedures for accessing the forest reserve uses and benefits

a. Awareness of procedures

4.1.1 Indicate whether or not you are aware that there are formal procedures for accessing the forest uses and benefits you have mentioned in 2.1.1. Tick as appropriate in the table below: (a) Yes, procedures (b) No procedures (c) Don't know.

b. Knowledge of specific procedures

4.1.2 If you answered "yes" to (4.1.1), identify the specific use/benefit procedures and the sources of your knowledge as follows: (a) check the applicable procedure options that fall under the forest use/benefit categories. (b) check your response for (a) against the applicable source of knowledge in the table below: (i) forebears ii) Government /FC (ii) Community (iv) other (state)

what procedures?

(1) paid permits (2) free permits (3) chief as intermediary between community and forestry authority (4) community applies for MTS land govt./FC approves (5) community allocates approved MTS land among farmers (6) chief & elders appeal to timber contractor for project support under SRA (7) govt./FC sells timber and pays royalty to land owners (8) purchase lumber from saw mills (9) govt./FC provides alternative livelihood options for community selection (10) purchase confiscated lumber from govt./ FC (11) govt./FC supplies inputs for alternative livelihoods and beneficiaries manages livelihoods (12) community, by custom accesses deity that existed before reservation (13) community accesses village land that was in existence before reservation (14) nil (15) other (state).....

Forest uses and benefits	Awareness of procedures	Specific procedures (check)	Source of knowledge			
	(A)Yes (B)No (C) Don't know		(i)	(ii)	(iii)	(iv)
<i>NTFPs</i>						
<i>Cultivation</i>						
<i>Settlement</i>						
<i>Timber products</i>						
<i>Timber harvest benefits</i>						
<i>Passage through reserve</i>						
<i>Alternative livelihoods</i>						
<i>Deity</i>						
<i>Others (specify)</i>						

4.2 Concerns about Procedures for accessing forest resources and benefits

4.2.1 What major concerns do you have about the procedures you have mentioned for accessing the forest reserve uses and benefits? (Check the following concerns and complete the Table below):

What concerns?

(1) permit acquisition is bureaucratic and expensive (2) paid permit stifles access to resource use (3) intermediaries create alien relationship between community and forestry authority (4) securing MTS land is bureaucratic and creates cultivation delays (5) sharing of approved MTS land among farmers is not transparent (6) lack of personal/community opportunity to access timber for private use (7) lack of community sales outlet for timber products (8) More endowed community members are beneficiaries of alternative livelihood support (9) no prior notification of timber harvesting by contractors (10) delayed payment of timber royalty to landowners (11) other (specify).....

Forest uses and benefits	Concerns
NTFPs	
Cultivation	
Settlement	
Timber products	
Timber harvest benefits	
Passage through reserve	
Alternative livelihood	
Deity	
Others (specify)	

4.3 The Improvement needs for the procedures

4.3.1 What improvement needs do you identify for addressing your concerns about forest reserve access procedures?

(Check the recommendations provided and complete the Table below):

(1) exclude domestic use NTFPs from paid permits (2) decentralize permit acquisition from forestry district office to community gate(3) education on all formal procedures (4)simplify land acquisition procedures for MTS (6) community should adopt participatory land sharing procedures for MTS (7) develop mechanism to communicate timber harvesting operations to community (8) prompt and bureaucratic free payment of timber royalty (9) vulnerability tests to identify more needy

community members for alternative livelihood support (10) transparent allocation of alternative livelihood inputs (11) other (state).....

Forest uses and benefits	Improvement needs
NTFPs	
Cultivation	
Reserve access routes	
Settlement	
Timber products	
Timber harvest benefits (<i>SRA, timber royalties</i>)	
Alternative livelihood	
Deity	
Other (specify).....	

Section 5: Rules Governing The Rights To Forest Uses And Benefits

5.1 Knowledge of Existing Rules on Forest Rights

a. Awareness of Rules

5.1.1 Indicate whether or not you are aware that there are formal rules governing the rights to the forest uses and benefits you have mentioned: [NTFPs, cultivation, timber products, access routes, alternative livelihoods, timber harvest benefits, deity worship, settlements, other...] (Tick as appropriate) : (1) Yes, rules (2) No rules (3) Don't know.

b. Knowledge of specific rules

5.1.2 If you answered "Yes" to (5.1.1), identify the specific rules and the sources of your knowledge as follows: (a) check the applicable rules options that fall under the forest use/benefit categories. (b) check your response for (a) against the applicable source of knowledge in the table below: (i) forebears ii) Government /FC (ii) Community (iv) other (state)

D) what rules?

(1) close season for wildlife (2) no hunting of certain forest animals (3) no use of fire for hunting in dry season (4) no use of fire for farming in dry season (5) no pollution of rivers or streams (6) no collection of young snails (7) no planting of cassava and perennial crops in MTS or TS (7) farmers to quit TS after 3 years (8) farmers to quit

planting food crops but to tend MTS till maturity(9) no farming in reserve without authorization from FSD (10) no use of fire for hunting in dry season (11) chain saw ban for lumber production (12) no use of fire for farming in dry season (13) other (state).....

Forest uses and benefits	Awareness of rules	Specific rules	Source of knowledge about rules			
	(A)Yes (B)No (C) Don't know	(Check)	(i)	ii)	(iii)	(iv)
<i>NTFPs</i>						
<i>Cultivation</i>						
<i>Settlement</i>						
<i>Timber products</i>						
<i>Timber harvest benefits</i>						
<i>Passage through reserve</i>						
<i>Alternative livelihoods</i>						
<i>Deity</i>						
<i>Others (specify)</i>						

5.2 The Community concerns about forest rights rules

5.2.1 What are your major concerns about the forest reserve rules that you have mentioned in terms of your knowledge and understanding and their application?

(Check the following concerns and complete the Table below):

What concerns?

(1) application of close season in off-reserve areas deprives community of year-round bush meat (2) exclusion of cassava from MTS deprives farmers of key staples and cash crop production (3) increasing spate of illegal chain sawing by outsiders in spite of ban. (4) top-down formulation and enforcement of rules exclude local participation (5) local consumption of timber is constrained by chain saw ban (6) continuing depletion of forest resources despite rules of regulation (7) other.....

Forest uses and benefits	Concerns (check)
NTFPs	
Cultivation	
Settlement	
Timber products	
Timber Harvest benefits	
Passage through reserve	
Alternative livelihood	
Deity	
Others (specify)	

5.3 The Improvement needs for forest reserve rules

5.3.1 What improvements do you recommend for addressing the concerns you identified for the forest reserve rules?

(Check the following recommendations):

(1) rationalize close season for community to have all year round access to bush meat in off reserve areas (2) educate community on all existing rules (3) integrate cassava into MTS to enhance production of staples and cash crops (4) adopt participatory rule enforcement to engage co-corporation of community (5) exempt domestic timber uses from chain saw ban to facilitate local access (7) streamline rules to enable community benefit from timber exploitation (8) other (state).....

Forest uses and benefits	Improvement needs (check)
NTFPs	
Cultivation	
Reserve access routes	
Settlement	
Timber products	
Timber harvest benefits (<i>SRA & Timber Royalties</i>)	
Alternative livelihood	
Deity	
Other (specify).....	

Appendix II: Validity status of respondent-specified forest rights in relation to statutory, management, and customary provisions

Specific Use/ Benefit	Forest Right	Description of Right	Type of provision-statutory, management or customary	Validity as de jure or de facto right
Snail		Communal admitted right	Tano-Offin Working Plan (1958-1968)	De jure
Firewood		Communal admitted right for dead wood	Tano-Offin Working Plan (1958-1968)	De jure
Water (potable)		Communal admitted right	Not specifically mentioned in Tano-Offin Working Plan (1958-1968)	De facto
Traditional Taungya		Right to farmers planted food crops only without share in timber	Ghana government massive plantation development programme using Taungya system in 1970 but cancelled in 1984	De jure
Modified Taungya		Right to farmer's planted food crops as well as a share of revenue from the tree crop	Timber Resources Management (Amendment) Act, 2002 (Act 617)	De jure
Personal use timber		Chainsaw milling of timber into lumber for personal use (not for sale, exchange or commercial purpose) implied in LI 1649	Timber Resources Management Regulations, 1998 (L.I. 1649)	De jure
Community use timber		Number of trees for social purposes only under Timber Utilization permit (TUP)	Timber Resources Management Regulations, 1998 (L.I. 1649)	De jure
Foot paths		Access right to exercise admitted right in forest reserve	Section 23 of CAP 157	De jure
Forest roads		i). Access right to exercise admitted right in forest reserve ii). Access right to public roads through forest reserve	Section 23 of CAP 157	De jure
Community development SRA		Forest fringe communities within TUC area entitled to Social amenities valued at not more than 5% of annual stumpage as social obligation on the part of the timber contractor	Timber Resources Management Regulations, 1998 (L.I. 1649)	De jure
Customary SRA		Customary protocols	Guidelines on SRA negotiation and implementation	De jure
Timber royalties		Stool land owner and Traditional Authority share of revenue from timber exploitation	i). The Constitution of the Republic of Ghana, 1992. ii). Stumpage/Rent Disbursement Reports of Office of the Administrator of Stool lands and Forestry Commission.	De jure
River deity (worship)		Communal religious right	Section 23 of CAP 157	De jure
Sacred grove (worship)		Communal religious right	Section 23 of CAP 157	De jure
Village land		Admitted human settlement(village)	Tano-Offin Working Plan (1958-1968)	De jure
Farm land		Admitted farming	Tano-Offin Working Plan (1958-1968)	De jure

Appendix III: Validity status of respondent-specified forest rights responsibilities in relation to statutory, management, and customary provisions

Specific Responsibility	Description of responsibility	Type of provision-statutory, management or customary	Validity as de jure or de facto right
TIMBER AND NTFPs			
1. protection	a) Protection from wildfires of ancestral forest heritage	• Community tradition Collaborative management good will of community	Customary
	b) Protection of life and property including forest resources from wildfires and encroachments	Collaborative management good will and civic responsibility	Moral/civic
2. Patrols	General patrol duty of FC mandated community forest group (CBAG) to carry out regular patrols to prevent forest offences	Collaborative management good will of community	Voluntary
3. Wildfire prevention	Wildfire protection duty of FC mandated community forest group to carry out regular patrols to prevent wildfires	Collaborative management good will of community	Voluntary
CULTIVATION (Traditional and Modified taungya)			
1. Establish and tend MTS plantation	farmer groups should supply labour for establishment and tending of plantation timber till maturity	Equitable Forest Reserve Plantation Revenue Sharing in Ghana (Agyeman et. al,2010)	Contractual obligation
2. Wildfire protection	Wildfire protection obligation for MTS farmers as watchdogs and fire protection	Equitable Forest Reserve Plantation Revenue Sharing in Ghana (Agyeman et. al,2010)	Contractual obligation
3.Tending	Tend and protect traditional taungya for three years.	Equitable Forest Reserve Plantation Revenue Sharing in Ghana (Agyeman et. al,2010)	Contractual obligation
TIMBER HARVESTING (direct exploitation benefits) (SRA and Royalty)			
1.Ensure respect for local customs(SRA)	Chief and elders have the charge to ensure that operating timber contractor respects local customs and beliefs e.g taboos, sacred areas. (code of conduct)	FC guidelines on SRA negotiation and implementation	Enforcement /monitoring charge
2.Ensure fulfillment of social obligations of SRA	Chief and elders and community leaders have charge to ensure that contractor provides agreed social infrastructure e.g. boreholes, schools, building materials	FC guidelines on SRA negotiation and implementation	Enforcement /monitoring charge
3.Ensure payment of royalties	Traditional Authority and stool land owners have beneficiary charge to ensure that they are paid the appropriate royalties due them by government/FC	FC guidelines on SRA negotiation and implementation.	Enforcement /monitoring charge

Appendix IV: Validity status of respondent-specified procedures for accessing forest rights in relation to statutory, management, and customary provisions

Specific procedure	Description of procedure	Type of provision-statutory, management or customary	Validity as de jure or de facto right
TIMBER AND NTFPs			
NTFPs			
1. Collect by free permit			
Timber			
1. Purchase products	confiscated Public allowed to purchase confiscated timber from illegal timber operations	Timber Resources Management Regulations, 1998 (L.I. 1649)	De jure
2. Purchase saw mill products	a) Special TUPs to selected sawmills to produce lumber exclusively for domestic consumption b) TUC holders to supply 20% of their lumber to domestic market	Directives in accordance to Timber Resources Management Regulations, 1998 (L.I. 1649)	De jure
3. Apply to harvest trees for social purpose	Procedure to access TUPs for communities to harvest timber for development purposes	Timber Resources Management Regulations, 1998 (L.I. 1649)	De jure
CULTIVATION (Traditional and Modified taungya)			
1. Community applies for land	Taungya allocation requirement		De jure
2. Community allocates approved land	Taungya allocation requirement		De jure
TIMBER HARVESTING (direct exploitation benefits) (SRA and Royalty)			
1. Negotiate SRA	SRA requirement for community to negotiate with timber contractor	Timber Resources Management Regulations, 1998 (L.I. 1649)	De jure
2. Observe local forest rituals during timber harvesting	SRA requirement for community to negotiate with timber contractor	Timber Resources Management Regulations, 1998 (L.I. 1649)	De jure
3. Access royalty payments	Royalty disbursement requirement	Timber Resources Management Regulations, 1998 (L.I. 1649)	De jure
SACRED SITES			
Respect and obey customary rituals	Customary demand		Local customs
SETTLEMENT			
Occupy settlement as native			De jure

Appendix V : Validity status of respondent-specified forest rules in relation to statutory, management, and customary provisions

Specific rules	Description of rules	Type of provision-statutory, management or customary	Validity as de jure or de facto right
NTFPS			
1.No collection of young snails	Young snails should be protected	Custom of the local people and traditional best-practice conservation.	Customary
2.No hunting of animals in close season	Absolutely protected animals between August 1 to December 1 in any year	Wildlife Conservation Regulations, 1971, L.I. 685	De jure
3.No hunting or killing of certain animals	Completely protected animals (They are not to be hunted, captured or destroyed	Wildlife Conservation Regulations, 1971, L.I. 685	De jure
4.No pollution of streams and rivers	In forest reserve without written consent of competent forestry authority	Forest Protection Decree 1974 (NRCD 243) as amended by The forest protection (amendment) ACT, 2002	De jure
5. No hunting with fire in dry season	In forest reserve without written consent of competent forestry authority	Forest Protection Decree 1974 (NRCD 243) as amended by The forest protection (amendment) ACT, 2002	De jure
		Wild Animals Preservation Act, 1961 (Act 43)	De jure
TIMBER PRODUCTS			
No chainsaw milling	Milling not for sale, buying and exchange specified by law	Timber Resources Management Regulations, 1998 (L.I. 1649)	De jure
No possession of chain saw	Not accurate. Law does not ban possession but should be registered	Timber Resources Management Regulations, 1998 (L.I. 1649)	De jure
CULTIVATION (Traditional and Modified taungya)			
No farming with fire in dry season	Forest reserve protection rule		
No planting of cassava in MTS	Taungya farming conditionality	Timber Resources Management Regulations, 1998 (L.I. 1649)	De jure
Quit traditional taungya after three years	Taungya farming conditionality		
No cultivation without authorization	Forest reserve protection rule		
Alternative livelihoods	Quit dependence on reserve		