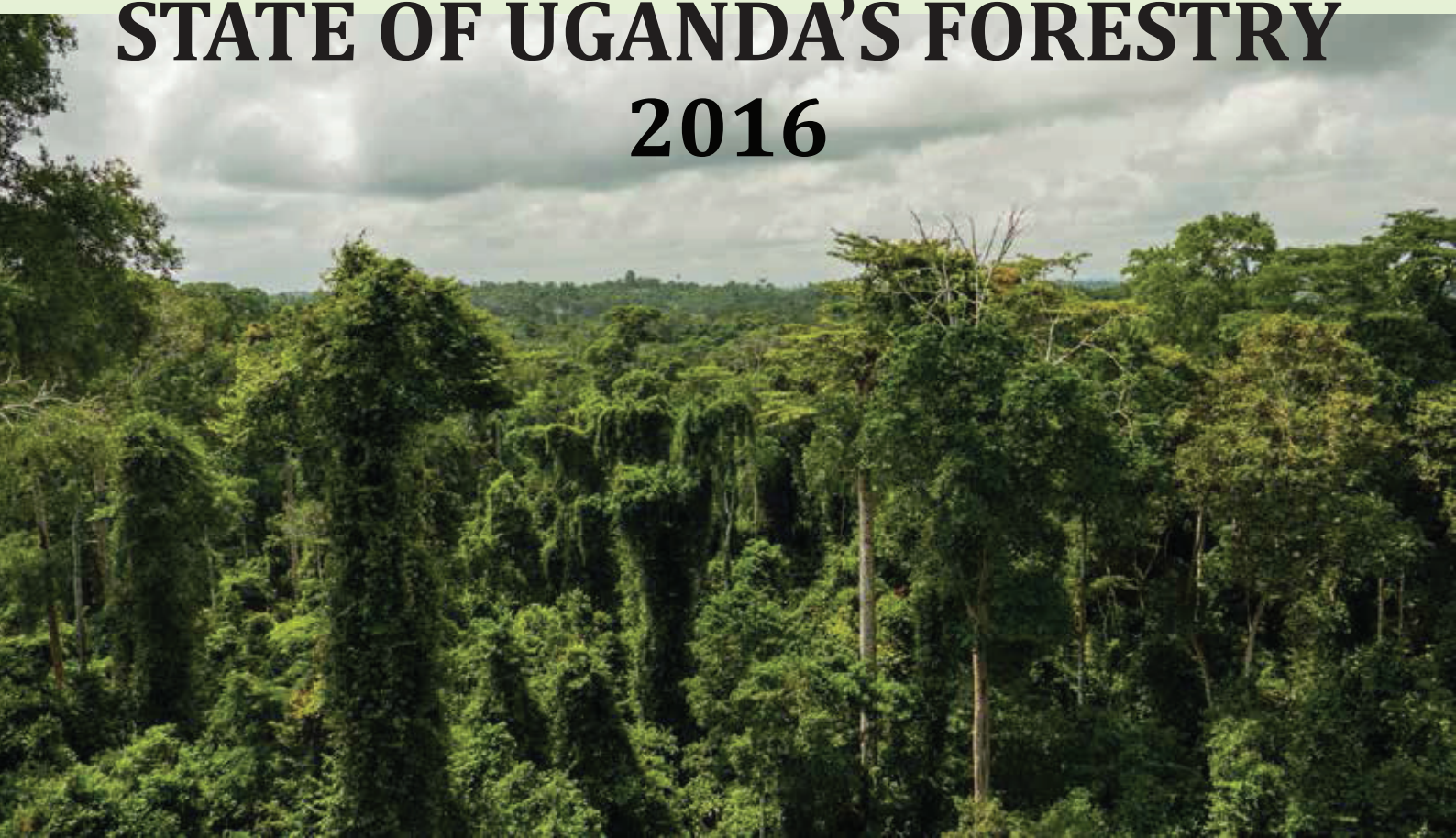




THE REPUBLIC OF UGANDA

MINISRTY OF WATER AND ENVIRONMENT

STATE OF UGANDA'S FORESTRY 2016



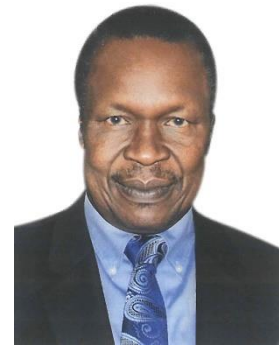
Food and Agriculture
Organization of the
United Nations



Department
for International
Development

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The views expressed herein are those of the authors and do not necessarily reflect the official policies or views of FAO.



FOREWORD

Uganda's forests are an important and treasured natural asset contributing about 8.7% to the national economy based on conservative estimates (NEMA, 2011). Forests provide multiple benefits and sustainably managed forests give environmental benefits, sustainable economic development and improve the quality of life of people across the country. Forests provide habitats for many native flora and fauna species, renewable products and energy and contribute to the development of a green economy. Forests also provide a wide range of wood and non-wood products, clean water resources, and play a vital role in the mitigation of climate change.

A key objective of Uganda's sustainable forest management is to protect and enhance the health and diversity of our forest resources, while ensuring they continue to provide a range of environmental, social and economic benefits for Uganda's present and future generations. The Ministry of Water and Environment, inspired by its commitment to fulfilling its constitutional mandate, has made strides through investment in various initiatives including support to commercial forestry plantations (SPGS) community tree planting (FIEFOC) gazettement national tree planting days and licensing private tree growers in government forest reserves. The other initiatives include National Forestry Authority (NFA) plantations development, Forest Law Enforcement Governance and Trade (FLEGT).

Despite all these initiatives, however, Uganda's forests are faced with continuously worsening trends through encroachment, deforestation and forest degradation through conversion of forest land to other land uses. These include agriculture, urbanization and rampant felling of trees for timber, firewood and charcoal burning on private and government land, rampant fires and livestock damage on forest plantations. Overall, the country has been losing on average 122,000 ha/year of forest every year from 1990-2015. The greatest loss in the country is estimated at 250,000 ha of forests annually according to NFA estimates for the period 2005-2010. On the other hand, on average, only about 7,000 hectares of planted forests are established on a yearly basis in the last 15 years. This imbalance can partly be attributed to weak institutions, uncoordinated implementation of policies between different sectors of the economy, insufficient funding, and limited capacity at all levels which has undermined effectiveness and efficiency in developing and sustainably managing forestry resources in Uganda.

Management of our forests should be supported by the best possible information and

this State of the Forestry Report is a significant contribution to the knowledge required for informed management decisions. It is therefore my privilege to share some thoughts on this State of Forestry Report and to congratulate the Forestry Sector Support Department (FSSD), with technical support from Food and Agriculture Organization of the United Nations (FAO) and financial support from Department for International Development (DFID) for the production of this maiden report. This report is the first of its kind to compile information on the forestry resource, its state, management, stakeholders, its relation with other sectors of the economy, changes that have taken place in the sector and major drivers for these changes. It also provides the future outlook including projections on demand and supply of forestry products and services, changing landscape, emerging issues such as oil and gas, REDD+, climate change and institutional changes.

The report provides an opportunity to reflect on the significance of forestry on the Ugandan economy and the contribution that forestry makes to Uganda's transformation into a green and modern economy. This report paints a clear picture of the major issues surrounding the management of our forestry resources and will guide us to ensure that they are sustainably used by the present generation without compromising benefits to future generations.

I encourage you to read this report to learn and appreciate the successes, the challenges and the ongoing improvements we are striving to achieve for the forestry sector of Uganda.

For God and My Country



Hon. Samuel Cheptoris
MINISTER OF WATER AND ENVIRONMENT

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Accomplishing this work would not have been possible without the input of many colleagues and friends. It is not possible to mention each of you on this page but accept my sincere appreciation for your invaluable support. Nonetheless, I will mention a few individuals who were critical in the preparation of this report. First and foremost I would like to thank FAO for the technical support and DFID for the financial support without which it would not have been possible to prepare this report. Fred Kafeero and Safia Aggarwal of FAO Rome are appreciated for their constructive comments on the drafts, guidance and advice during the writing of the report right from the inception period. FAO Uganda Office and its staff are acknowledged for provision of logistics that facilitated the timely completion of the assignment by the consultant.

Special thanks go to Gershom Gunyalli Onyango, the National Consultant for Preparation of Annual Forest Status Report, who did an incredible job of writing this document, the first of its kind in the Uganda Forestry Sector; Langoya Council Dickson (National Project Coordinator-Forest Tenure Project) who provided invaluable advice during the preparation of the consultancy document as well as during the entire period of report preparation as well as providing quality assurance for content of the report. My thanks also go to Bob Kazungu- Senior Forest Officer, FSSD for being the link between the consultant and the FSSD, arranging programmes for field visits, one-on-one interviews and collection of the many documents for review and being on call, sometimes at awkward hours, to address the many challenges that cropped up from time to time during the preparation of this report.

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All individuals and institutions that I have not mentioned but relentlessly supported preparation of this report in one way or another are appreciated.



Adata Margaret
COMMISSIONER FORESTRY

Acronyms

ACODE	Action Coalition on Environment and Development
AfDB	African Development Bank
EA	Environmental Alert
CARE	CARE International in Uganda
CBO	Community Based Organization
CCF	Chief Conservator of Forests
CF	Commissioner for Forests
CFM	Collaborative Forest Management
CFO	Chief Forest Officer
CFR	Central Forest Reserve
CGIAR	Consultative Group on International Agricultural Research
CIFOR	Centre for International Forestry Research
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLA	Communal Land Association
CODECA	Community Development and Conservation Agency
CRM	Collaborative Resource Management
CSO	Civil Society Organization
DFID	Department for International Development
DFO	District Forestry Officer
DFS	District Forestry Service
DLB	District Land Board
DRC	Democratic Republic of Congo
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
FAOSTAT	Food and Agricultural Organization Statistics
FBEs	Forest Based Enterprises
FCBM	Forest Community Based Monitoring
FD	Forestry Department
FIEFOC	Farm Income Enhancement and Forest Conservation Project
FLEGT	Forest Law Enforcement and Governance of Trade
FMP	Forest Management Plan
FRP	Forest Rehabilitation Project
FSR	Forestry Sector Review
FSSD	Forestry Sector Support Department
FSWG	Forestry Sector Working Group
GDP	Gross Domestic Product
GIZ	German Agency for International Development
ICT	Information and Communication Technology
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
LG	Local Government
LFR	Local Forest Reserve
MFPEd	Ministry of Finance, Planning and Economic Development
MEMD	Ministry of Energy and Mineral Development
MTWA	Ministry of Tourism, Wildlife and Antiquities
MUK	Makerere University Kampala
MWE	Ministry of Water and Environment
MWLE	Ministry of Water, Lands and Environment

NaFORRI	National Forestry Resources Research Institute
NARO	National Agricultural Research Organisation
NBS	National Biomass Study
NCMP	Nature Conservation Master Plan
NDP	National Development Programme
NEMA	National Environment Management Authority
NFA	National Forestry Authority
NFP	National Forest Plan
NFTPA	National Forestry and Tree Planting Act 2003
NGO	Non-Governmental Organization
NPK	Nitrogen Phosphorus and Potassium
NWFP	Non Wood Forest Product
PAs	Protected Areas
PES	Payment for Ecosystem Services
PFE	Permanent Forest Estate
PFOs	Private Forest Owners
RBs	Responsible Bodies
REDD+	Reduced Emissions from Deforestation and Forest Degradation
SDC	Sustainable Development Centre
SFM	Sustainable Forest Management
SMFBEs	Small and Medium Forest Based Enterprises
SPGS	Sawlog Production Grant Scheme
THF	Tropical High Forest
UBOS	Uganda Bureau of Statistics
UFA	Uganda Forestry Association
UFWG	Uganda Forestry Working Group
UGX	Uganda Shillings
ULC	Uganda Land Commission
UNDP	United Nations Development Programme
USD	United States of America Dollars
UTGA	Uganda Timber Growers Association
UWA	Uganda Wildlife Authority
VGGT	Voluntary Guidelines on the Responsible Governance of Tenure
WWF	World Wide Fund for Nature

TABLE OF CONTENTS

FOREWORD	i
ACKNOWLEDGEMENT	iii
Acronyms	v
List of figures	xi
List of tables	xi
Introduction	1
Methodology	2
CHAPTER 1: Background to the forestry sector	3
CHAPTER 2: Forestry policy and legal framework	5
2.2 Forestry policy	5
2.3 National Forestry and Tree Planting Act (NFTPA, 2003)	8
2.4 National Forest Plan (2002)	9
CHAPTER 3: Key institutions and their mandates	12
3.1 Enabling institutions	12
3.1.1 Ministry of Water and Environment (MWE)	12
3.1.2 Ministry of Tourism, Wildlife and Antiquities (MTWA)	13
3.1.3 Ministry of Energy and Mineral Development (MEMD)	13
3.1.4 Ministry of Finance, Planning, and Economic Development (MFPED)	14
3.1.5 Development partners	14
3.1.6 Civil Society Organizations (CSOs)	14
3.2 Delivery institutions	16
3.2.1 National Forestry Authority (NFA)	16
3.2.2 Uganda Wildlife Authority (UWA)	17
3.2.3 District local governments and urban authorities	18
3.2.4 Research institutions	19
3.2.4.1 National Forestry Resources Research Institute (NaFORRI)	19
3.2.4.2 Other research efforts	20
3.2.5 Training institutions	20
3.2.5.1 Technical training	20
3.2.5.2 Professional training	21
3.3 Producers and users	22
3.3.1 Commercial tree growers	22

3.3.2 Private forest owners (PFOs)	22
3.3.3 Farmers and communities	23
3.3.4 Users and dealers in forest products	23
CHAPTER 4: Challenges Facing the Forestry Sector	25
4.1 Encroachments in CFRs	25
4.2 High rates of deforestation and forest degradation	26
4.3 High population growth rate and urbanization	27
4.4 Fires and livestock damage to forest plantations	27
4.5 Pests and diseases	28
CHAPTER 5: Forest tenure systems in Uganda	29
5.1 Background	29
5.2 Pre-colonial era	29
5.3 Colonial era	30
5.4 Post-independence in 1962	30
5.5 Post 1995 constitutional reform era	30
5.6 Explicit ways in which the post-constitutional reforms have affected the rights, access and responsibilities of specific groups	31
5.7 Explicit rights granted under the forestry sector reforms	32
5.7.1 Forest reserves	32
5.7.2. Wildlife conservation areas	33
5.7.3 Private forests	34
5.7.4 Community forests	34
5.8 Implications of institutional reforms for forest tenure	35
5.9 Assessment of Uganda’s forestry sector with the view of strengthening community based forests (CBF)	36
5.9.1 Assessment of policy/legal framework	36
5.9.2 Assessment of forestry institutional arrangements in support of CBF	37
CHAPTER 6: Forestry governance; Key achievements over the last 10 years	40
6.1 Definitions of forest governance	40
6.2 Key governance Issues in the forestry sector (Adapted from Nsita 2010)	41
CHAPTER 7: Status of the forestry estate and changes in forest cover	47
7.1 Uganda’s forest cover change between 1990 and 2015	47
7.2 Changes in forest cover in acreage	49
7.3 Causes of loss in forest cover	52
CHAPTER 8: Forestry’s contribution to the economy	53

8.1 Forestry's contribution to the Gross Domestic Product (GDP)	53
8.2 Forestry's contribution to livelihoods	54
8.3 Contribution to the energy sector	57
8.3.1 Firewood energy	57
8.3.2 Charcoal production	57
8.4 Contribution to soil and water protection	59
8.5 Biodiversity conservation	62
CHAPTER 9: Consumption and trade in forestry products and services	64
9.1 Consumption in forest products and services	64
9.1.1 Consumption of timber	64
9.1.2 Consumption of firewood	65
9.1.3 Consumption of charcoal	66
9.1.4 Water supply	66
9.1.5 Recreational services	66
9.2 Trade in forestry products and services	67
9.2.1 Domestic trade in timber	67
9.2.2 Domestic trade in non-wood forest products (NWFPs)	69
9.2.3 Illegal logging and timber trade	73
9.2.4 Illegal harvesting of other forest products	74
9.2.5 Trade in endangered species	74
9.2.6. Export trade and value	75
9.2.7. Forest products imports and value	76
9.2.8. Future outlook in external trade	76
CHAPTER 10: Carbon balance sheet based on forest cover	77
CHAPTER 11: Forest restoration	82
11.1 Forest Landscape Restoration Project-IUCN/FSSD/NFA	82
11.2 Agroforestry	83
11.3 Community tree planting programme	84
11.4 Corporate tree planting in forest reserves	84
11.6 Tree Talk Foundation	85
11.7 Green Charcoal Project	86
11.7.1 Addressing barriers to adoption of improved charcoal production technologies and sustainable land management practices through an integrated approach in Uganda.	86
11. 8 SPGS/UTGA plantation development	86
11.9 SPGS Bioenergy Project	87

CHAPTER 12: Financing the forestry sector	88
12.1 Forestry in national planning	88
12.2 Investment financing in forestry	89
12.3 Private sector forest financing	89
12.4 Potential financing mechanisms	90
CHAPTER 13: Future outlook and recommendations for policy	95
13.1 Future outlook	95
13.2 Policy recommendations	97
ANNEXES:	101
ANNEX 1: Summary of steps for registration and management of community and private forests in Uganda	101
ANNEX 2: Institutional arrangements governing various forest tenure types	103
ANNEX 3: Summary of bundle of rights associated with various forest tenure types	108
ANNEX 4: Key donors in the forestry sector since 2005	110
ANNEX 5: Some key highlights of research at NaFORRI in the last few years	112
ANNEX 6: International forest governance initiatives relevant to Uganda	117
ANNEX 7: The importance of conserving Uganda's biodiversity	119
ANNEX 8: The system and procedure for marketing logs and timber described in the Ministerial Public Notice issued in 2004	120
ANNEX 9: Detailed calculation of carbon stocks for Uganda 1990-2005 (Adapted from NFS/NBS Reports)	121
ANNEX 10: Satellite images for some of the selected restoration sites	127
ANNEX 11: Restoration options, intervention and species	130
ANNEX 12: Maps showing change in forest cover between 1990 and 2015	133
REFERENCES:	134

List of figures

Figure 1: Key national and international policy and legal frameworks relevant to the forestry sector.....	5
Figure 2: Guiding principles for forestry sector development in Uganda Forestry Policy 2001.....	6
Figure 3: Bundle of rights to forest resources by communities	35
Figure 4: Protected Areas of Uganda	50
Figure 5: Glenn Bush et al observations on forests' contribution to livelihoods.....	56
Figure 6: Why government should invest in the charcoal enterprise (SDC 2010).....	59
Figure 7: Objectives of forest nature reserves	62

List of tables

Table 1: Policy statements for the Uganda Forestry Policy (2001)	7
Table 2: ENR CSOs investment in the ENR sub-sector (2010/11-2013/14).....	15
Table 3: Number of graduates from Nyabyeya Forestry College (1948-2014)	21
Table 4: Forest Cover Statistics 1990-2010 (in hectares)	47
Table 5: Stock and changes in stock of forested land, 2005 – 2010.....	51
Table 6: Changes in THF areas in selected districts between 1990 and 2005.....	51
Table 7: Deforestation rates in different districts between 1990 and 2005	52
Table 8: Summary of forestry contribution to the economy	54
Table 9: Value of forests to livelihoods	55
Table 10: National level livelihood values broken down into timber and NWFP	56
Table 11: Soil nutrient losses from conversion of forests to agriculture	60
Table 12: Estimated value of forest soil nutrient protection from avoided soil erosion by forest categories.....	61
Table 13: Summary of carbon balance sheet for Uganda	80
Table 14: Deforestation and land degradation at landscape level between 2005 and 2015 in Ha.....	83
Table 15: Potential acreage for restoration in each landscape.....	83
Table 16: Partnership planting by corporate organizations.....	85

Introduction

1. Uganda is a landlocked country in East Africa, bordered by Kenya to the East, Tanzania to the South, Rwanda to the South West, Democratic Republic of Congo, (DR-Congo) to the West and South Sudan to the North. Out of the total area of 241,551 sq. km, about 37,000 sq. km of Uganda is open water (NBS, 2003). Generally the altitude is between 900m and 1500m, save for the Western Rift Valley and mountainous areas which are above and below the stated elevation range respectively. The elevation and location of Uganda being astride the equator causes favourable rainfall and temperature for a diversity of fauna and flora and subsequently, human settlement and a variety of land use types.
2. Forestry is crucial to the lives of millions of Ugandans especially the poorest sections of society. The dependence of poor people on forest resources and their ability to improve their livelihoods through forestry has for long not been adequately recognised in Uganda. Benefits of forests and trees to Ugandans especially the poor has mainly focused on the numerous direct benefits in form of food, energy, employment, incomes, quality of life and increased resilience to shocks and stresses. Little attention has been directed at quantifying and valuing the many environmental and ecological benefits that forests provide. For example forests and trees provide support to agriculture and many environmental services that are taken for granted or are poorly understood. Supply of clean water and maintenance of soil fertility are among major services that are provide by forests and trees and are especially important to the poor who cannot afford alternatives such as piped water or fertilizers. Because these services are considered “free”, they are undervalued and without investment and adequate protection of forests and trees they are declining fast.
3. Although a number of reports have been written on Uganda’s forests, these normally addressed specific issues in the forestry sector. For example Uganda has regularly produced the State of Environment Report every two years. Forestry constitutes a very small portion of these reports and the coverage is in most cases limited to a few specifics. Uganda has also regularly provided data for the preparation of State of World Forests Reports and the FAOSTAT. This report is going to be the first of its kind to bring together information on the forest resource, its state, management, stakeholders, its relation with other sectors of the economy, changes that have taken place in the sector, and the major drivers for these changes. The report will also look at the future outlook including projections on demand and supply of forest products and services, changing landscape, emerging issues such as oil and gas, REDD+, climate change, institutional changes and other relevant activities in the sector.

Methodology

4. This report was largely a desk study in which the consultant used the Terms of Reference for the consultancy, his own knowledge and understanding of the forestry sector in Uganda and an extensive review of a number of documents and reports that were assembled by a team of officers from the FSSD. The documents reviewed were sourced from various institutions and this took a good amount of time. The consultant also held one-on-one discussions with key stakeholders during which clarifications on various issues were obtained. The consultant went on a field validation trip to selected hotspots to acquire more information on the sector. A draft status report and the field validation report were submitted to both FSSD and FAO Rome and Uganda for comments.
5. A revised status report was presented to a stakeholders' workshop for validation. Comments from this workshop were incorporated in a revised version of the forestry status report which was presented to the National Forest Forum where new information was captured and incorporated in the final report. The biggest problem encountered during the preparation of the report was the reluctance of some institutions to release documents in their custody despite the government policy on free access to non-classified information.

CHAPTER 1: Background to the forestry sector

6. Formal forestry management in Uganda dates back more than over 110 years when the colonial administration established the Forest Department (FD) to manage Uganda's forests. About 1.9 million hectares are designated as a Permanent Forest Estate of the country. These are areas that are set aside permanently for the conservation of biodiversity, the protection of environmental services and the sustainable production of forestry products. Half of this area comprises gazetted Central Forest Reserves, while the other half comprises forested areas in national parks and wildlife reserves. From 1934 up to the early 1970s, the Permanent Forest Estate (PFE) was well managed by the Forest Department (FD) and Local Authorities under carefully prepared Forest Management Plans (FMPs). This led to an enviable international reputation for some of the best forest management practices in tropical forestry (MWLE, 2001).
7. By the early 1950s most of the forest reserves had been gazetted and demarcated. However from mid-1972 up to mid-1986, there was unprecedented break down in law and order making it very difficult for the FD to effectively execute its functions of managing Uganda's forests. This period also saw an influx of people invading some forests leading to massive destruction of the forest resource. Some of the drivers for this destruction were state-driven policies such as the double crop production campaign that encouraged the clearance of forests for food production, the clearance of forests near major roads to deny rebels who were fighting the government of the day hiding places and uncontrolled tree cutting for timber, firewood, charcoal burning and settlement. Inadequate funding of the Forest Department and low staffing levels compounded the situation that culminated in the encroachment problem that has dogged successive forest administrations to date (Kagolo, 2010).
8. The change of government in 1986 brought with it new changes in forestry administration. For the first time the Forest Department was de-linked from the shadows of the Ministry of Agriculture and placed under a new Ministry for Environment Protection. This improved the visibility of the FD which later in 1990 led to the Forestry Rehabilitation Project (FRP), a consortium of donors under the World Bank's coordination. The FRP provided the much needed resources including funding, equipment, staff development and the rehabilitation of both forests and infrastructure in them. Total funding for FRP was USD 37.58 million (Kagolo, 2010). Despite the interventions under the FRP (1990-95), however, the Forest Department's performance could not match the increased pressure on forest resources as the reconstruction of the country picked momentum following decades of war.

9. From the mid-1990s government embarked on a number of reforms following the promulgation of a new Constitution in 1995. By the late 1990s it became clear that the forestry sector needed to be reformed in order for it to conform to the overall national reform processes. Government therefore, with the assistance of a consortium of donors under the coordination of the Department for International Development (DFID) of the United Kingdom carried out a Forestry Sector Review (FSR) between 1998 and 2001. The FSR among other outcomes identified major stakeholders in the forestry sector who had hitherto not played a meaningful role in the management of the forest resource as will be highlighted later.
10. The FSR also led to the formulation of a new Uganda Forestry Policy 2001, the development of a National Forest Plan 2002 and the enactment of the National Forestry and Tree Planting Act 2003. Following the decentralization policy that came into force around the same period, government restructured a number of its ministries among which was the Ministry of Water, Lands and Environment (MWLE) under which the Forestry Department fell. New institutions were established to replace the Forestry Department. These included the National Forestry Authority (NFA), a semi-autonomous agency mandated to manage Central Forest Reserves (CFR), District Forest Services under local government to manage Local Forest Reserves (LFR) and provide forest extension services to local communities and private forest owners, and the Forest Inspection Division which has since been transformed into the Forestry Sector Support Department (FSSD) under the Ministry of Water and Environment (MWE) to coordinate all activities in the forestry sector. The forestry sector reforms recognized other players in the forestry sector including UWA which manages five former CFRs which are now managed as national parks which were transferred in the mid-1990s, private forest owners (PFOs), and community forest owners.

CHAPTER 2: Forestry policy and legal framework

2.2 Forestry policy

11. Uganda's first forestry policy was developed in 1929. Since then the forestry policy has undergone a series of changes with emphasis alternating between stricter conservation and more liberal economic use of the forest resources. The current Uganda Forestry Policy 2001 was formulated through a wide range of consultations with the different stakeholders. It is one of the major outcomes of the forestry sector review that took place between 1998 and 2003. The policy provides new directions for sustainable development of the forestry sector and takes into consideration other national policy and legal frameworks that have an impact on the forestry sector as listed in Figure 1 below. It also recognises key international obligations which affect the forestry sector and to which Uganda is party as noted in Figure 2 (MWLE, 2001). The 2001 policy also incorporated recent advances in principles and standards for sustainable forest management that have been widely adopted internationally in recent years.

Figure 1: Key national and international policy and legal frameworks relevant to the forestry sector

- Constitution of the Republic of Uganda 1995
- National Environment Management Policy for Uganda 1994
- National Environment Act (CAP 53)
- The Uganda Forestry Policy 2001
- National Forestry and Tree Planting Act 2003
- The National Forest Plan 2011/12- 2012/22
- The Forest Reserves Order 1998
- The Uganda Wildlife Policy 1999
- The Uganda Wildlife Act (CAP 200)
- The International Convention on Biological Diversity (CBD), 1992
- The Convention on International Trade in Endangered Species (CITES) 1973
- The United Nations Framework Convention on Climate Change (UNFCCC), 1994
- The Convention to Combat Desertification, (UNCCD), 1994
- Voluntary Guidelines on Responsible Governance of Tenure (VGGT), 2012
- The Water Statute 1995
- National Policy for the Conservation and Management of Wetlands Resources 1995
- The Ramsar Convention on Wetlands 1971
- The National Water Policy 1999
- The Land Act (CAP 227)
- The National Agricultural Research Act 2005
- The Convention for the Protection of World Cultural and Natural Heritage 1972
- The Bonn Convention on Migratory Species, 1979
- The Local Governments Act 1997
- The Gender Policy 1997
- The Traditional Rulers (Restitution of Assets and Properties) Act (CAP 247)

12. The Uganda Forestry Policy 2001 sets out the guiding principles for forestry sector development which are reflected in the National Forest Plan (MWLE, 2002). The core themes are conservation and sustainable development, livelihood enhancement, and institutional reform with new roles for central and local government, the private sector, local communities and NGOs. These are presented in Figure 2 below.

Figure 2: Guiding principles for forestry sector development in Uganda Forestry Policy 2001

Uganda Forest Policy (2001) Guiding Principles:

- Consistency with the **Constitution and Vision 2025** in guiding sustainable development;
- Commitment to **conservation and sustainable development**, meeting the needs of this generation without compromising the rights of future generations;
- **Improvement of livelihoods** as a major goal in all strategies and actions for the development of the forestry sector so as to contribute to poverty eradication;
- Safeguarding the nation's **biodiversity and environmental services**;
- Development of **partnerships in governance**, to enhance efficiency, transparency, accountability and professionalism, and build confidence in all forest stakeholders:
 - Reforming the **role of central government** to withdraw from activities that can be carried out more effectively by the private sector or other stakeholders, but to maintain core functions of policy development and regulation
 - Enhancing the **role of local government** with more devolved responsibility for resource management wherever practical and advisable
 - Developing the **role of the private sector** as investors and managers
 - Encouraging more active **participation of local communities and farmers** in the management of the country's forests;
- Enhancing the role of **NGOs/CBOs** to strengthen civil society, build capacity and grassroots participation, and help develop the rights and responsibilities of forest users;
- Enabling the **active participation and affirmative action** of all women and men, young people and the elderly, and vulnerable or disadvantaged groups in forestry sector development;
- Respecting the attributes of **cultural and traditional institutions** in forestry sector development given the respect they are accorded by their subjects in respect to the administration of customary tenure as in Northern Uganda;
- Supporting the implementation of current and future **international commitments** that affect the forestry sector; and
- Ensuring that **environmental and social values** are used in assessing strategies to implement the Forestry Policy.

Source: Uganda Forestry Policy 2001

13. The Uganda Forestry Policy 2001 addresses 11 policy statements. Each policy statement is accompanied by a broad outline of what it intends to achieve followed by a list of strategies for its implementation. Table 1 below shows the policy statements and what they intend to achieve.

Table 1: Policy statements for the Uganda Forestry Policy (2001)

1. Forestry on government land	The Permanent Forest Estate (PFE) under government trusteeship will be protected and managed sustainably. The main functions of the PFE include conservation of biodiversity, protection of environmental services, and sustainable production of domestic and commercial forest produce.
2. Forestry on private land	The development and sustainable management of natural forests on private land will be promoted. The main purpose is sustainable production of forest resources within the context of the wider integrated land use, and expanding agricultural needs.
3. Commercial forest plantations	Profitable and productive forestry plantation businesses will be promoted. Forest plantations may be established on private or institutional lands, either by the land owners themselves or under contract arrangements with other parties.
4. Forest products processing industries	A modern, competitive, efficient and well-regulated forest products processing industry will be promoted in the private sector.
5. Collaborative forest management	Collaborative partnerships with rural communities will be developed for the sustainable management of forests of both government and private forest lands. The purpose of this policy statement is to “... <i>address the disincentives associated with a protectionist approach to forest management, and the destructive practices associated with open access to forest resources</i> ”.
6. Farm forestry	Tree-growing on farms will be promoted in all farming systems, and innovative mechanisms for the delivery of forestry advisory services will be developed.
7. Conservation of forest biodiversity	Uganda's forest biodiversity will be conserved and managed in support of local and national socio-economic development and international obligations.
8. Watershed Management	Watershed protection forests will be established, rehabilitated and conserved.
9. Urban forestry	Urban forestry will be promoted.
10. Education, training and Research	Government will support sustainable forestry sector development through appropriate education, training, and research.
11. Supply of tree seed and planting stock	Innovative mechanisms for the supply of high quality tree seed and improved planting stock will be developed.

2.3 National Forestry and Tree Planting Act (NFTPA, 2003)

14. The NFTPA (2003) repealed the Forests Act (1964) Cap 246, and the Timber (Export) Act 1965 Cap 247. The Act consolidated and operationalized the Uganda Forestry Policy (2001), the National Forest Plan (2002) and also established the National Forestry Authority (NFA) as a legal entity to manage CFRs, while the District Forestry Services (DFSs) under local governments manage LFRs and provide advisory services to local communities and private forest owners on management of their forests which constitute a larger percentage of forests in the country (MWLE 2002). The Act is an enabling law that provides new and positive opportunities for better management of the forestry sector to balance the traditional “regulatory” functions of government. It provides for new opportunities for collaboration of all sectorial partners, an invigorated private sector and an empowered civil society. The NFTPA (2003) clarified institutional roles and responsibilities, including those for law enforcement in forest governance (Kamugisha-Ruhombe, 2007).
15. In particular, the purposes of the NFTPA (2003) as stated in Section 2 are:
- (a) to create an integrated forestry sector that will facilitate the achievement of sustainable increases in economic, social and environmental benefits from forests and trees by all the people of Uganda;
 - (b) to guide and cause the people of Uganda to plant trees;
 - (c) to ensure that forests and trees are conserved and managed in a manner that meets the needs of the present generation without compromising the rights of future generations by safeguarding forest biological diversity and the environmental benefits that accrue from forests and trees;
 - (d) to promote the improvement of livelihoods through strategies and actions that contribute to poverty eradication;
 - (e) to encourage public participation in the management and conservation of forests and trees;
 - (f) to facilitate greater public awareness of the cultural, economic and social benefits of conserving and increasing sustainable forest cover
 - (g) to promote the decentralisation and devolution of functions, powers and services within the forestry sector; and
 - (h) to ensure that environmental benefits, costs and values are reflected in strategies and activities related to forestry.
16. The minister retains the overall responsibility to ensure that the PFE is managed responsibly. The protection of the PFE is guaranteed by the NFTPA 2003 through

the long and laborious process that has to be followed to have any forest reserve degazetted (Sections 8 and 9). Unlike in the Forest Act (1964) where the minister had the powers to excise a forest or part of it for other uses, the NFTP (2003) requires a forest reserve to be degazetted through parliamentary resolution. The NFTP (2003, Section 97) provides for the preparation of regulations and guidelines to enforce its implementation (See summary of guidelines in Annex 1). However, it has taken over 10 years to have the forestry regulations that were drafted in 2003 approved. This has hampered the enforcement of some sections of the law. A number of guidelines have continued to be prepared for use by various stakeholders in the forestry sector.

17. NFTP (2003) has facilitated the creation of 192 LFRs totaling just below 5,000 ha and 506 CFRs totaling about 1.2 million hectares (Kamugisha-Ruhombe, 2007). The Act also provides for the declaration of community forests and registration of private forests. However, the process of declaring a community forest and registering a private forest is tedious and expensive for the poor local communities. FSSD in collaboration with UFWG with support from FAO and DFID are implementing a project that aims at strengthening the process of registration of private forests and the declaration of community forests. The project, with FSSD approval, developed simplified (or popular version) guidelines for the registration and declaration of private and community forests respectively. Under this initiative, NGOs have worked with pilot communities of Ongo, Tengele, and Alimugonza in Masindi district to form and register their CLAs so that they can have their forests declared as Community Forests by the minister. Likewise, a number of private forest owners are at different stages of having their forests registered.

2.4 National Forest Plan (2002) revised in 2012

18. The objectives of the NFP conform to national planning framework, the Poverty Eradication Action Plan (PEAP), later replaced by the National Development Plan 1 (NDP1)-2010/11-2015/16 (GoU 2010a) and the NDP 2 (2015/16-2019/20) (GoU 2015). The main focus of the first NFP (2002) was on the management of tree and forest resources for the economic, social and environmental benefits for all the people of Uganda, in line with the pillars of PEAP. To this end, the NFP was designed to improve the livelihoods of Ugandans, especially those living in rural areas through raising the incomes of the poor, increasing the number of jobs and enhancing the contribution of forests to Uganda's economic development, while ensuring that the future of the country was not jeopardized in the process.

19. Although the NFP was designed as a ten-year rolling strategic development plan for the forestry sector, the MWE however recognized new developments which had occurred in the sector and the national landscape as a whole. This necessitated a new strategic outlook for the sector as described below:

- The national planning framework changed from a poverty eradication approach to the national enterprise approach, which was the main philosophy in Uganda's National Development Plan1 (GoU, 2010a). The NDP required "...all ministries, departments, and autonomous and semi-autonomous entities to realign their development priorities with the NDP". The NDP also placed forestry at the centre of Uganda's development agenda by categorizing it as a primary growth sector, alongside other sectors like agriculture, tourism, industry, and oil & gas. The NFP had therefore to be refocused to portray this position. The recognition of the role of forestry in national development today offers favourable prospects for increased investment for forestry within the national budget and donor programmes, and through the private sector.
- Uganda's population continued to increase at an average of 3.2% annually, rising from 24.2 million in 2002 to 31.8 million people in mid-2010 (UBOS, 2009). With the increasing population, there is greater demand for land for agricultural expansion, increased pressure on forest lands, and increased consumption of forest products like timber, charcoal, & firewood. Therefore, the strategies for the management and conservation of forests and trees urgently needed to be recast to address these increasing demands.
- Uganda's Gross Domestic Product (GDP) grew at an average of 7.5% between 2002 and 2008 (UBOS, 2009). Such growth meant that the various sectors (e.g. construction, energy for small & medium-scale processing industries, and farmland) which use forest products increased their demand, thus escalating pressure on forest resources and forestlands.
- New opportunities for financing sustainable forest management (SFM) from forest revenues had emerged. For example, forest products and services which were not prominent as generators of forestry revenues were becoming more marketable and a promising source of income for the forest owners. The non-traditional forest revenue sources emerging include ecotourism, art & crafts, bee products, carbon and biodiversity, among others. An emerging non-forest source of investment funds is corporate social responsibility among large private companies (mainly with international connections) and national statutory bodies.
- The institutional framework that came with the forestry sector reform has not delivered in many of the prescribed functions as had been envisaged. The FSSD was still struggling to recruit staff, nine years down the road. Further, government funding from the Consolidated Fund had not been as forthcoming as had been anticipated, leaving the FSSD poorly equipped to execute its policy and legal mandate of oversight and coordination of the entire forestry sector. NFA had been dogged by governance issues and had failed to achieve self-financing by

the fourth year of its formation and still depended on external support, a situation that was exacerbated by the depletion of its timber plantations that provided the bulk of its internally generated revenue. DFS were poorly resourced and had failed to implement their mandate of supervising the management of forests on private land and providing other extension services. Although private and community forests failed to take off, leading to many of them being converted into agriculture, the private sector had become more vibrant especially in commercial forest establishment.

- There were emerging global forestry-related instruments and markets like the international initiative on Reducing Emissions from Deforestation and Forest Degradation (REDD+), which was formally agreed during the Bali Climate Conference in 2007. The international community is now actively engaged in developing the REDD+ operating mechanisms. Uganda was preparing plans to take advantage of REDD+ to benefit from restoration of natural forests and other conservation and SFM activities. Also emerging are global markets that are responsive to products harvested from forests under sustainable management standards, especially forest certification.

20. In line with the National Development Plan 1, the focus of the forestry sector under the revised NFP (2012) will be the development of products and services which have high contribution towards social-economic transformation. The business approach in the NDP 1 provides a re-orientation of forestry resource management with special attention to developing forestry-related enterprises that contribute to economic growth, employment, prosperity and improving public service delivery. The achievement of the NFP objectives depends on the improvement of the forest resource base and its productivity to counter deforestation and forest degradation, and to step up supply of goods and services that support enterprise development in the sector. Therefore, all efforts in the sector will focus on increasing the quantity and quality of planted trees, and enhancing the productivity of natural forests both within the Protected Areas (PAs) and on private land. The NFP implementation is based on 13 programmes, five of which are classified as core programmes and the rest as support programmes. The projected budget of the NFP is UGX 915.22billion (USD 416.01 million) with the private sector expected to contribute 44%, government 41% and civil society organisations (CSOs) 15%.

CHAPTER 3: Key institutions and their mandates

21. The forestry sector in Uganda is complex due to its many stakeholders with diverse interests. Following the review of the sector in 1998-2004 however a new grouping was instituted to enable the new institutions to execute their mandates effectively and efficiently. The new institutions were defined in the National Forest Plan (2002) and continue to be relevant for the implementation of the revised National Forest Plan for the period 2010/11-2012/22 (MWE 2011). There are two major categories of institutions which are broadly referred to as Enabling Institutions and Delivery Institutions. These are linked to another group of institutions which is referred to as Producers and Users or beneficiary institutions. The following sections provide an overview of each institution and its mandate in the sector. The relationship between them will also be discussed.

3.1 Enabling institutions

3.1.1 Ministry of Water and Environment (MWE)

22. The mandate and key functions of the MWE are derived from the 1995 Constitution, the Local Government Act of 1997, and the 1998 Report for the Restructuring of Government Ministries and the NFTP (2003). The ministry exercises its mandate through the FSSD which is the technical arm of the ministry on forestry matters. The ministry's roles in the sector are:

- Formulation and oversight of appropriate policies, standards and legislation for the forestry sector.
- Coordination and supervision of technical support and training to local governments.
- Inspection and monitoring of local governments and NFA performance in forestry sector development.
- Coordination of implementation of the NFP and cross-sectoral linkages.
- Mobilization of funds and other resources for the forestry sector.
- Promotion, public information, and advocacy for the forestry sector

23. Although the ministry produced a new Forest Policy (2001), a National Forest Plan (NFP) (2002) and NFTP (2003), its performance over the 10 years following the reforms has not matched expectations. The rate of deforestation and forest degradation in the last decade has been the highest in the history of the sector. FSSD has been ill equipped and ill resourced to adequately fulfil its mandate. **Private forest resources have been mined for quick financial gains by owners and revenue collection by local governments points to the ministry's failure to provide adequate oversight functions to local governments and private forest owners.**

24. However, on a positive note the ministry with support of the EU-funded SPGS has created a favorable environment that has seen heavy investments by the private sector in commercial forest plantations both in the forest reserves and on private land. Tree planting by communities has also increased through the ministry's

support to 56 local governments (DFSs) under the Farm Income Enhancement and Forest Conservation (FIEFOC) Project financed by the African Development Bank, Nordic Development Bank and government, and through government allocations to NFA to raise seedlings for the Community Tree Planting Programme for the last two financial years.

3.1.2 Ministry of Tourism Wildlife and Antiquities (MTWA)

25. The Ministry of Tourism, Wildlife and Antiquities (MTWA) is the parent Ministry for Uganda Wildlife Authority (UWA) and Game Department. It determines policy for trade and investment in UWA. The MTWA is responsible for sustainable management and conservation of wildlife in national parks and wildlife reserves, other PAs and private land. In the early 1990s, government transferred some of the important Central Forest Reserves (CFRs) to National Parks. These included the Rwenzori Mountains National Park, Kibale National Park, Mt. Elgon National Park, Mgahinga National Park and Bwindi Impenetrable National Park. This change in management status from forest reserves to national parks was to provide them high conservation status for mainly nature based tourism. The protected wildlife estate is currently comprised of 10 national parks (11,180 sq. km), 10 wildlife reserves (8,764 sq. km), 7 wildlife sanctuaries (850 sq. km) and 13 community wildlife areas (27,604 sq. km) adding up to 14% of the total land cover of Uganda (UWA 2012). MTWA has attracted both donor and government funding for these new parks and developed appropriate infrastructure to meet demand for their products. The mandate of MTWA is:

- Domestication of the multi-lateral environmental agreements which are important in the control of trans-boundary trade, e.g. under CITES.
- Supply of the capital base (natural resource and biodiversity) on which the tourism industry is based.
- Formulation of regulations, guidelines, standards and provisions for effective management of biodiversity and ecosystems for effective promotion of tourism industry.

3.1.3 Ministry of Energy and Mineral Development (MEMD)

26. The first NFP identified the MEMD as one of the enabling institutions with a mandate of developing and implementing strategies for biomass energy conservation, focusing on households, charcoal producers and industrial consumers. MEMD has worked with artisans to produce a variety of fuel wood and charcoal saving stoves for households and commercial users such as schools, hotels prisons and hospitals. The mandate of MEMD is:

- Formulation of policies, laws, regulations, standards and guidelines for sustainable production and provision of energy from various sources.
- Promotion of biomass energy conservation technologies.
- Promotion of energy substitution (solar, hydro power, petroleum etc.)
- Environmental-related funding mechanisms (global funds) that support the energy sector, e.g. Clean Development Mechanism (CDM), Voluntary Markets, and Payment for Ecosystem Services (PES) etc.

3.1.4 Ministry of Finance, Planning, and Economic Development (MFPED)

27. The MFPED has a responsibility of allocating resources to the forestry sector within government budgetary provisions. The mandate of MFPED is to:

- Provide policies, standards and guidelines and information that are needed for planning.
- Oversee sector budget allocations.
- Ensure coherence of forestry policy and practices.
- Oversee the NFA performance contract.
- Mobilize funds and other resources for the sector.
- Provide information on green accounting.
- Ensure macro-economic stability by promoting sustainable natural resource management through levies and licenses
- Implement social and environment assessments to facilitate planning and economic stability.
- Provide various incentives and disincentives (economic instruments).

28. During the period of the NFP 2002-12, inadequate allocations were made to the sector resulting in non-achievement of many of the sector targets. In the case of the NFA the MFPED did not provide all its agreed share of start-up funds which contributed to non-achievement of its self-sustenance by year four as had been projected.

3.1.5 Development partners

29. Development partners have for a long time played a large role in the forestry sector providing a big portion of its budget and technical expertise. During the forestry sector reform process 1998-2004, EU, DFID, Norway, the World Bank, GTZ (now GIZ), UNDP, FAO provided resources and technical advisors that enabled the finalization of the legal and institutional reforms of the sector. This report will highlight those that have supported and/or continue to support the sector since 2005, which has been used as the base year. Details of the different development partners are provided in Annex 4.

3.1.6 Civil Society Organizations (CSOs)

30. Civil Society Organizations were identified among the leading enabling institutions given their mobilization potential. CSOs play an important role of providing advocacy and forestry advisory services targeting farmers, private forest owners, and managers of important watersheds. The first NFP had proposed the concept of community-based extension workers for the CSOs to provide hands on technical and organizational skills such as nursery management, tree planting and organizing community groups. CSOs operating in the environment sector are grouped under their umbrella called ENR CSOs Network. There are over 100 CSOs operating in the ENR subsector of the water and environment sector (MWE, 2014). The ENR CSOs have invested over USD 20 million as shown in Table 2 below.

31. What must be noted, however, is the fact that most of these CSOs are funded by development partners, and hence part of the investment quoted could be attributed to the various development partners who support the sector.

Table 2: ENR CSOs Investment in the ENR sub-sector (2010/11-2013/14)

Financial Year	No. Of CSOs	Investment USD
2010/2011	29	3,856,802
2011/2012	35	4,102,624
2012/2013	42	6,050,170
2013/2014	48	6,549,950
Total		20,559,446

Source: ENR CSOs Performance Report 2013/14

32. The ENR CSOs have been actively contributing to the activities that aim at sustainable management of the natural resource of the country. Their notable contributions in the last five years are:

- During the 2013/14 Financial Year the ENR CSOs carried out an assessment of governance of the forestry sector in Uganda based on the 6 Principles of: Accountability, Effectiveness, Efficiency, Fairness/Equity, Participation, and Transparency. The assessment found that overall, performance against the six principles was poorest at the implementation level, particularly in aspects of enforcement and compliance. This confirmed the widely held view that Uganda has relatively good policies, which are poorly implemented. The ENR CSOs believe the weakness in enforcement and compliance is due to inadequate institutional capacity in terms of human and financial resources and corruption in the sector, but also lack of political support to the sector.
- The Community Development and Conservation Agency (CODECA), Uganda Forestry Working Group (UFWG), Uganda Agroforestry Development Network (UGADEN), and Environmental Alert (EA) built capacity of over 5000 PFOs in various districts of the country in strategies to reduce deforestation by sustainably harnessing forests resources through engaging in sustainable small and medium scale forest business enterprises (SMFBEs) to provide alternative sources of income in order to reduce pressure on natural forests. Some of the successful SMFBEs promoted beekeeping, herbal medicine extraction, processing and marketing, handicrafts, and growing of fruit trees.
- The advocacy role of CSOs in protecting Uganda's forests came to the fore when ACODE, Green Watch and Environment Alert successfully lobbied against the give-away of some of the CFRs in Kalangala district to Oil Palm Uganda Limited for establishment of oil palm plantations. As a result, the government had to look for alternative land from private individuals in the district.

- In a bid to promote the use of Information and Communication Technology (ICT) in curbing corruption and illegalities in the forestry sector the Anti-Corruption Coalition Uganda in partnership with Joint Efforts to Save the Environment began implementing the Forest Community Based Monitoring (FCBM) platform. Under this ICT platform which is supported by the Community Based Monitoring (CBMs) structures citizens participate through monitoring and reporting any suspicious forestry activity observed within their vicinity and by providing practical solutions. This technology is being piloted in 26 sub-counties in the districts of Kibaale, Hoima, Kyenjojo, Mubende, Kyegegwa and Kabarole with 190 volunteer community-based forest monitors. The monitors report suspicious activities by sending an SMS to 6006. The SMS is then forwarded to a respective duty bearer in the area. The mobile phone application provides evidence in the form of images and location where the suspected illegal activity is being carried out. The information is collected on the server, analysed, and plotted on Google maps, shared with duty bearers through direct access on a website for action. Preliminary results indicate that the public is participating, competence and confidence in reporting is being built, and there is increase in arrests and impounding of illegally acquired forest products.
- World Vision Uganda with funding from World Vision Australia is working with over 40 farmers in each of the pilot sub-counties in the districts of Nakasongola (Nakitoma sub-county), Abim district (Nyakwae sub-county), Kotido district (Nakaperumoru sub-county) and Kibale district (Nalweyo sub-county) to implement a simple method of growing trees known as Farmer Managed Natural Regeneration. It is a system where coppices of naturally occurring trees or self-germinating seedlings are managed through pruning and thinning to produce poles and firewood cheaply. Over 40 farmers in each of the pilot sub-counties have been trained by champions, and this is increasingly becoming the easiest and cheapest way of growing trees. Since the method involves indigenous trees, survival rates are high and deaths due to termite attacks remain low.

3.2 Delivery institutions

33. The second group of players in the sector is that of the delivery institutions. These are institutions that are responsible for the implementation of government plans, policies and programmes in the sector. The mandate and roles of each of these institutions are outlined in the following sections. See also Annex 2 for roles of these institutions with respect to governance of the various tenure systems in Uganda.

3.2.1 National Forestry Authority (NFA)

34. As noted earlier, the NFA was established by the Act of Parliament in 2003 to replace the century-old FD which as a purely government department had failed to address the challenges that the forestry sector was facing in the 1970s through to the 1990s. As a semi-autonomous institution, the NFA has enjoyed financial and other technical flexibilities that the FD did not have. The mandate of the NFA is to manage CFRs on a sustainable basis and to supply other high quality forestry-

related products and services in accordance with sound financial and commercial practice. NFA in its execution of its mandate is directly under the supervision of the minister through the FSSD.

35. The role of NFA in the forestry sector is mainly to:

- Develop and manage all CFRs so as to provide quality goods and services to the people of Uganda;
- Manage CFRs in partnership with the private sector and local communities, and to develop innovative approaches for local community participation in the management of CFRs;
- Provide advisory, research, or commercial services on contracts;
- Provide high quality seeds and other planting materials to the sector through the National Tree Seed Centre;
- Regularly carry out national forest inventory and other technical services through its National Biomass Studies; and
- Prepare and implement management plans for CFRs, report on the state of CFRs, and perform other duties as the minister may require.

36. The NFA is supposed to operate under a performance contract with the MWE on behalf of government. This contract is supposed to be reviewed bi-annually by the FSSD. However, due to resource constraints, FSSD has since NFA's inception in 2004 managed to execute only one performance contract between NFA and the government. There is a need for the revival of the performance contract arrangement if the government is to carry out its supervisory role effectively.

37. Overall, the NFA has not fared as anticipated at its inception. It has failed to become self-financing and continues to derive funding from both government and donors. The wave of encroachments and other illegalities that have thrived for long in forests outside Protected Areas (PAs) have spilled over into some of the CFRs and forced NFA to spend a sizable portion of its annual budget on law enforcement activities. The support that it enjoyed at its inception has been overridden by political expediency. Encroachments are difficult to manage since the culprits enjoy political patronage. The forest resource base that was expected to be the main source of NFA's internally generated revenue is exhausted while the replanted areas have a long way to go before they can generate income for the organization.

3.2.2 Uganda Wildlife Authority (UWA)

38. The UWA manages forest reserves as national parks. These are high revenue earners for the UWA. Tourism being one of the leading foreign exchange earners for the country has enabled UWA to receive substantial resources from both government and donors. UWA has managed to contain external threats to its forested parks due to the fact that its law enforcement officers are well-armed and enjoy support even from the military. Within the forestry sector UWA plays the following roles:-

- Management of the forest resources in national parks, wildlife reserves and wildlife sanctuaries (about 50% of the gazetted forests).

- Joint-management with NFA of some CFRs under co-management arrangement (e.g. Budongo, Zulia, Morungole and Maramagambo CFRs).

39. The UWA is mandated to manage the protected wildlife estate comprising 10 National Parks with an area of 11,180 sq. km., 10 wildlife reserves measuring 8,764 sq. km, seven Wildlife Sanctuaries measuring 850 sq. km, and 13 Community Wildlife Areas measuring 27,604 sq. km, making up 14% of the total land area of the country. In the management of these wildlife PAs the conservation approach in use mainly focuses on law enforcement, community conservation, research and monitoring, and financial sustainability. The UWA policy on Collaborative Management of the PAs recognizes that it does not have the capacity to effectively manage all PAs alone. There is need for a harmonious relationship between UWA and local communities, and a shared approach for the management of the PAs. For their roles in the management of the NPs the communities benefit through Collaborative Resource Agreements, which allow them to access some park resources, or through revenue sharing arrangements (currently, communities receive 20% of the annual revenue from gate entry fees). However, just like in the case of CFM under NFA, the UWA law recognizes the rights of local communities to use park resources, but it does not provide them tenure security over the portions of the PAs that they may have been allocated access to (UWA, 2012).

40. Overall UWA has done a commendable job in managing and protecting the forested national parks. Despite the rampant encroachment, deforestation and forest degradation that have bedeviled other forest reserves, these national parks have to a large extent remained intact save for some infractions on Mt. Elgon National Park and occasional poaching of wild animals in Bwindi and Kibaale national parks.

3.2.3 District Local Governments and Urban Authorities

41. Local governments and urban authorities are responsible for decentralized forestry services. Their roles in the forestry sector are:

- To establish District Forestry Services;
- Strengthen forestry in production and environment committees and District Development Plans;
- Implement international and national policies on forests;
- Issue permits, licenses, fees and tax collection;
- Mobilize funds for forestry development;
- Develop and enforce bye-laws relating to forestry;
- Support and quality control of forestry extension, brokering between farmers and service providers, providing market information;
- Manage LFRs in partnership with communities and private investors; and
- Land administration, surveying and approval of Community Forests.

42. The roles of DFSs under local governments are to:

- Advise the district council on all matters relating to forestry;
- Liaise with NFA and other lead agencies on matters relating to forestry;

- Promote forestry awareness in the district;
- Promote tree planting;
- Manage LFRs;
- Advise and support the management of community forests;
- Assist in the development and provision of advisory services relating to private forests; and
- Cause to be prosecuted, any person wilfully destroying any forest resources in contravention of the NFTP (2003).

43. Given the above wide ranging roles, DFSs have to a large extent not performed to their expected levels mainly due to low staffing and inadequate resources even in districts that are endowed with abundant forestry resources like Mukono, Masindi, Hoima and Kibaale.

3.2.4 Research institutions

3.2.4.1 National Forestry Resources Research Institute (NaFORRI)

44. Forestry research is undertaken by the National Forestry Resources Research Institute (NaFORRI) which is one of the 17 public agricultural research institutes under the National Agricultural Research Organisation (NARO). NARO was established by an Act of Parliament, The National Agricultural Research Act of 2005. Research that NaFORRI carries out focuses on developing technologies and practices for conservation of natural forest ecosystems; sustainable management of plantation forests; growing and managing trees on farms; developing and promoting tree/forest products and services; integrated pests, diseases control and fire management; tree improvement and production of quality germ plasm as well as nature-based recreation. Emerging issues such as climate change, bio-fuels, oil and gas and any other areas that may be identified by clients or stakeholders also form part of the institute's mandate (Agaba Hillary pers. comm. 2015).

45. NaFORRI research activities are grouped under four programs namely:

- i) Forestry management and conservation research program.
- ii) Agroforestry research program.
- iii) Forestry products and services research program.
- iv) Tree improvement and germ plasm research program.

46. Main users of research products include government institutions mandated with the management of PAs, private companies or individuals involved in tree planting, CSO operating in the forestry sector, small holder farmers, researchers, students and policy makers. NaFORRI works in partnership with other players in the sector including the NFA, Makerere University, Uganda Timber Growers Association, and the World Agroforestry Centre (ICRAF).

47. Funding for research is mainly from government through the development budget. Development Partners such as the World Bank and others have supported off-

budget projects e.g. Australian Center for International Agricultural Research; the EU and USAID have also funded forestry research in the past. Details of some of the recent notable breakthrough research achievements are presented in Annex 5.

3.2.4.2 Other research efforts

48. The mandate for forestry research and development rests with the NaFORRI and to a lesser extent the NFA. However, in the absence of a well-developed commercial forestry industry for the past 30 years, there was limited Research and Development (R&D) relating to commercial forestry. As the area of plantations increased, the need to support applied and practical R&D programs became apparent. Subsequently the Commercial Forestry Research and Training (COMFORT) steering group was formed to spearhead the R&D needs for the industry (SPGS, 2015). Members of COMFORT include NaFORRI, Makerere University, Nyabyeya Forestry College, NFA, SPGS, UTGA and representatives of tree farmers. Support to R&D consultancies was based on the priority needs recommended by COMFORT. During SPGS II, the priority areas under R&D were: tree improvement and nurseries; pests and diseases, and yield monitoring; market development and timber research; and direct support to the Ugandan Timber Grower's Association (UTGA) (SPGS, 2015).

3.2.5 Training institutions

49. Forestry training in Uganda can be categorized as formal or informal. Formal training takes between one to four years and is conducted by technical and professional forestry training institutions, and leads to an award of an academic certificate, diploma or a degree. Informal training takes a couple of days or weeks and is tailored to impart specific forestry skills to the trainees. On completion the trainee is normally awarded a certificate of attendance.

3.2.5.1 Technical training

50. The only institution offering technical forest training in Uganda is Nyabyeya Forestry College, located in Masindi district and neighbouring Budongo CFR. The College was first established in 1932 at Kityerera Forest School at Kityerera in Mayuge district and offered certificate training in forestry. It was moved to its current location at Nyabyeya in 1948/49. It became Nyabyeya Forestry College in 1970 with the commencement of a full time diploma.

51. For a long time the college syllabus comprised the traditional forestry subjects, but with time and in keeping with the changing environment new subjects such as Agroforestry (at diploma level), Beekeeping (at both certificate and diploma), Biomass Energy Technology (at diploma level) and Carpentry for artisans were added. In 1982 the college opened its doors to its first female students. The college also offers tailor-made training on specific forestry topics as and when requested. Table 3 below shows the numbers of graduates who have passed out of the college since its inception.

Table 3: Number of graduates from Nyabyeya Forestry College (1948-2014)

Course	Males	Females	Total
Certificate in Forestry	1,414	374	1,788
Certificate in Beekeeping	80	65	145
Diploma in Forestry	540	219	759
Diploma in Agroforestry	279	92	371
Diploma in Biomass Technology	48	16	64
Diploma in Beekeeping	50	31	81
Total	2,411	797	3,208

Source: Nyabyeya Forestry College Alumni Records (2015)

3.2.5.2 Professional training

52. Prior to 1970, professional forestry training used to be undertaken at universities abroad mainly in the United Kingdom. This arrangement allowed only a handful of professionals to be trained given the high costs involved. However in 1970 as part of the Government of Norway's support to the FD, a Department of Forestry was started under the Faculty of Agriculture and Forestry with the first lecturers coming from Scandinavian countries. Initially the three-year course was to serve the original East African Community states of Kenya, Tanzania and Uganda, with each of the states contributing to its sustenance. The introduction of a forestry degree course at Makerere led to a rapid increase in forestry graduates entering the service (Kagolo, 2010).
53. The Forestry and Nature Conservation Department at Makerere has since the mid-1970s been training mainly Ugandan students, after Tanzania and later Kenya started their own departments of forestry. Important to note is the fact that up to 1976, training of professional foresters was a male affair. The first female to enrol for the professional forestry course was Ms Rachel Musoke, a former Commissioner FSSD. Since then a number of females have graduated in forestry (Kagolo, 2010).
54. Forestry training at Ndejje University was started in 2007, with the establishment of the Faculty of Forest Science and Environment Management. This was in response to the growing need of forest scientists and environment managers to provide solutions to the challenges of environment degradation and sustainable development. The faculty started with 11 students. In 2009, it merged with the Department of Agriculture to form the current Faculty of Environment and Agricultural Sciences with three departments namely; Forestry, Agriculture and Environment. In addition to Ugandans, students come from neighbouring countries like Kenya, South Sudan, Rwanda and Democratic Republic of Congo. Since its establishment in 2009, the faculty has been turning out an average of 25-30 agriculture and 10-15 forestry students per year (Kityo P. pers. comm. 2015).

3.3 Producers and users

55. Among this category of players are commercial tree growers, private forest owners (PFOs), farmers and forest products traders. The roles played by each of them are discussed in the following sections.

3.3.1 Commercial tree growers

56. Interest in commercial tree growing started in the late 1990s when FD started licensing individuals who were harvesting its softwood plantations to replant harvested areas, a condition of harvesting licenses. However, the first foreign private companies to be licensed to establish commercial industrial plantations were Dutch Forst Consult (a German company renamed Global Woods) in Kikonda CFR in Kiboga district; Busoga Forest Company (a Norwegian company that is now part of Green Resources) in South Busoga CFR in Mayuge district, and later Kachung CFR in Dokolo district; and New Forest Company (a British Company) in Namwasa CFR in Mubende district, and later Luwunga CFR in Kiboga District.

57. After its inception, and in a bid to scale up industrial plantations establishment, the NFA set aside 150,000 hectares in its CFRs mainly those in the woodlands for this purpose. Out of this area NFA was to plant 50,000 hectares, while the private sector was to plant 100,000 hectares. The private sector commercial forest plantation establishment was boosted by the inception of the Sawlog Production Grant Scheme (SPGS) Project in 2005 with funding from the EU. The SPGS provided subsidies to individuals and companies that fulfilled set criteria. It also provided technical advice and training for the recipients of the subsidy. During the second phase of the project, Government of Norway and the Uganda government extended more funding to the project. This support has led to the establishment of a couple of commendable large scale softwood industrial plantations on woodland CFRs and a good number of medium and small plantations in CFRs and on private land. To date, 180 communities have been supported by SPGS to establish woodlots amounting to 3,960 hectares while commercial tree growers have established 42,108 hectares of plantations. These commercial tree planters and others that have not benefited from SPGS funding have constituted themselves into the Uganda Timber Growers Association (UTGA). This association with a membership of over 300 individuals makes up 47.8% of commercial tree planters in the country. NFA on its part has to date established around 15,000 hectares of plantations. Capital investment by the private sector in commercial tree growing has also increased overtime (MWE, 2015 c).

58. During the period 2002-08 it is estimated that the private sector invested UGX 90 billion (USD 40 million) in commercial tree growing (NDP 2010). To date over 50,000 hectares have been established with some already undergoing first and second thinning. This is quite a great achievement considering that at the start of SPGS there were roughly about 6,000 hectares of softwood plantations that NFA had inherited from FD.

3.3.2 Private Forest Owners (PFOs)

59. Up to the late 2000s, Private Forest Owners (PFOs) in natural forest invested very little in deliberate forest management. This was mainly due to their lack of

appreciation of the value of these forests as a whole. Many of them viewed these forests as sources of income in form of timber, charcoal, firewood or as potential agricultural land. Some of these forests were cleared and planted with softwoods which were considered more profitable. In the late 2000s, the FSSD using funds from the FIEFOC project supported some PFOs in preparation of Forest Management Plans (FMPs) as a starting point in the process of registering their forests as private forests under the NFTP 2003 (MWE, 2010).

60. As noted earlier, members of the ENR-CSOs Network have built capacities of over 5000 PFOs in various districts of the country in reducing deforestation by sustainably harnessing forest resources through the establishment of sustainable Small and Medium scale Forest Business Enterprises (SMFBEs) to provide alternative sources of income, and in order to reduce pressure on the natural forests according to the ENR CSO report, 2010 (MWE, 2011).

3.3.3 Farmers and communities

61. Farmers and communities are to a large extent net users of forest resources mainly in the form of firewood, charcoal and non-wood forest products (NWFPs). However, planting of trees within farming systems in central, western, and some parts of eastern regions of the country is an age-old practice. Farmers also grow trees around their homesteads, as boundary markers, as woodlots and in compounds as shade trees, fruit trees, and ornamentals. Cognizant of the importance of trees to farmers and to rural livelihoods, the Uganda Forestry Policy (2001) promoted tree growing in farming systems through innovative mechanisms for delivery of forestry extension and advisory services (MWLE, 2001). This commitment was further emphasized in the NFTP (2003).
62. A number of initiatives by the government, some in partnership with development partners, NGOs and CBOs have been implemented in the past two decades to increase the tree planting by farmers and communities. Some of these efforts which are highlighted in detail in other sections of the report include the Farm Income Enhancement and Forestry Conservation Project (FIEFOC), The Sawlog Production Grant Scheme (SPGS), The Community Tree Planting Programme to mention but a few. Through these and other efforts farmers have been provided with tree seedlings for planting on their farms for different purposes. The response has been overwhelming with demand for seedlings surpassing supply (DFOs Pader, Masindi, Bushenyi pers. comm. 2015)

3.3.4 Users and dealers in forest products

63. Apart from pitsawyers who at one time attempted to form an association and owners of industrial plantations under the Uganda Timber Growers Association (UTGA), producers of forest products work in small groups or mainly as individuals. This has hampered their ability to access markets directly and to negotiate good prices for their products. Middlemen have taken advantage of this loophole to pay low prices to smallholders and so make huge profits. As a result most of the producers have remained poor due to the meager returns on their labor (UFA, 2013).
64. Consumers of forest products include households in rural and urban areas, institutions such as the construction industry, schools, hospitals, army and police

barracks, restaurants, bakeries, lime and cement industries, makers of bricks, steel industries, sugar factories, jaggery and oil mills. Consumers of forest products do not have any entity that can speak for them so the issue of quality of the products on the market has not been taken seriously. The market is awash with sub-standard products such as undersize, low quality timber. Availability of cheap wood from private forests and trees on public land and imports for South Sudan and the DRC are the major sources of low quality cheap timber on the market. This has resulted in market distortions that have affected legal producers such as big plantation owners and saw millers who incur high costs of production and also pay taxes and other fees to government (WWF 2012). Whereas commercial timber growers are also consumers, they have nevertheless, played a major role in increasing the timber stakes of the country with current planting in excess of 70,000 hectares both on private lands and within CFRs.

65. **Rattan** cane is one of the NWFPs that is largely harvested illegally from forest reserves. Rattan cane outside PAs is now fully depleted. In the past, a number of forests in Uganda supported large wild stocks of rattan but they are declining rapidly due to commercial exploitation. The trade chain started in central Uganda forests in late 1980s, however, due to depletion the focus has now shifted to the west. It is believed that the remaining rattan in Uganda is found in very small quantities only in Budongo and Bugoma CFRs. Generally, the quantity and quality of rattan delivered to the market has also declined substantially since 2002. If wild populations of rattans are decimated from the forest, the rattan traders and carpenters are ready to harvest other materials (especially vines) that are considered substitutes to rattan. The climber (*Alchornea cordifolia*) is already being harvested as a rattan substitute in central Uganda (Kamugisha-Ruhombe 2007).
66. Other NWFPs which are harvested for both domestic and commercial use comprise food products and food additives, medicinal products, clothing, and product used for house construction amongst other uses. The notable ones are sand, thatch grass, fitteos, palm leaves, wild coffee, butter flies, pet animals, edible rats and other small animals, honey, Aloe Vera, drums and fiddles, tonic root (*Mondei whytei*), bark powder from *Prunus Africana*, bark cloth, medicinal extracts from *Warburgia Ugandensis* and other plants, bamboo shoots, shea butter, tamarinds (*Termarindus indica*), African tulip (*Spathodea campinulata*), gum arabica and mushrooms (*Termitomyces auranticus*).

CHAPTER 4: Challenges facing the forestry sector

4.1 Encroachments in CFRs

67. Forest encroachment has its genesis from the era of President Idi Amin in the mid-1970s when the government encouraged clearance of forests first to deny the perceived “enemies” of the state hiding places, and secondly to increase areas for implementation of government’s policy of double crop production. Large areas of CFRs especially those near urban centres were targeted because of the availability of markets for the forest produce such as timber, charcoal, and firewood which were produced during such clearings. As a result of the breakdown in the rule of law during this era, coupled with inadequate funding for FD most forests became no go areas for staff of the department. Following the overthrow of President Amin, the successor government of Dr. Milton Obote compounded the situation of encroachment as it battled guerrillas who were fighting to topple it in what became the ‘Luwero Triangle’ in the districts of Luwero, Mpigi and Mubende. Due to the insecurity that prevailed in that area for over five years, forests such as Lwamunda, Zirimitti Range and Luwunga suffered as FD staff could not access them while the local communities cleared forests for farming and for harvesting forest products. Other forests including Mabira, Mt. Elgon, and Kibale were also heavily encroached upon (Kagolo, 2010).
68. Although the government attempted to evict people in 1989 with successes in Mabira, Mt. Elgon and Kibaale CFRs, soon encroachment became politicized. It has been the norm for people facing eviction to seek protection via their elected representatives. Over the years the problem of encroachments has exacerbated with population increase and inadequate land available for food production. Tension between institutions managing forests and local people worsened after government’s directive to halt removal of encroachers from forest reserves. This has led to serious conflicts, including those between government institutions and local people, often encouraged by local politicians. Staff and local people have sometimes been injured in the scuffles. The situation becomes more serious in the period leading up to the general elections when politicians of all ranks promise the electorate that they would fight for their rights over the forests if they are elected (Kagolo, 2010). There is an urgent need for the government to identify humane ways of addressing existing and new encroachments.
69. Conflict related with encroachers also drastically affect forest plantation programmes where licensed tree planters plant trees that are later uprooted by local people. This has affected companies that were allocated large areas such as Busoga Forest Company in South Busoga, Global Woods in Kikonda, and New Forest Company in Namwasa and Luwunga. These three companies have planted over 50% of the area licensed out to private tree growers in CFRs but they could not cover all the allocated areas due to the conflicts (Busoga Forest Company Managing Director, pers. Comm.).

70. Meanwhile, the NFA has made efforts to remove people from forests such as Matiri in Kyenjojo district, Luwunga in Kiboga district, Namwasa in Mubende district, Bukaleba in Mayuge district and Kisombwa. This was done by deploying environmental police personnel following a court decision to evict them (NFA 2015).

4.2 High rates of deforestation and forest degradation

71. Deforestation and forest degradation has led to loss of large areas of forest cover and degradation of forest land in Uganda. Private forests are some of the most affected areas, as owners have gained more benefits from converting these areas to farmlands than retaining them as forests. Many forests in the central region and Masindi and Hoima districts have been turned to farmlands due to their perceived fertile soils and the lure of high returns from investments in agriculture. Masindi and Hoima forests have been converted to sugarcane plantations. Provision of inputs such as tractors and seeds by Kinyara Sugar Company to sugarcane growers in the two districts has indirectly fueled the clearance of many of the natural forests. Unfortunately much of the clearing is perpetrated by migrants from West Nile and the DRC who come to border districts and end up settling near forests which they eventually clear (DFO Masindi pers. comm. 2015). Forests in Kibaale district, both CFRs and privately owned, have been heavily degraded as a result of migrants from Kabale and Kyenjojo districts, and the absentee landlords. In the early 1990s, following the evictions of encroachers from the game corridor of Kibaale National Park, majority of them was settled in Kibaale district. There were also many migrants from Kabale district (already facing acute land shortage) moving to Kibaale district. These migrants and settlers have in a period of 20 years transformed dense natural forests into farmlands (NFA 2011).

72. Deforestation and forest degradation has also been rampant in the savannah woodlands both in and outside of CFR. While in CFRs the drivers are mainly illegal charcoal burning and firewood cutting, drivers outside of CFRs include opening up land for agriculture, ranching, and settlements. The cattle corridor and the savannah woodlands of the northern region have been most affected. These are the major areas of charcoal production, supplying all urban centres as well as the neighbouring countries of Kenya, Rwanda, and South Sudan. The tree vegetation in the savannah woodlands of the northern region, which had recovered during the 20 years of insurgency as a result of people being confined to internally displaced peoples' camps, are now disappearing at an alarming rate. As people returned home after the disbandment of the camps, they started clearing land for farming. However, the majority of the youth who were born in the camps have turned to charcoal burning for quick gains, rather than till the land (DFO Pader, pers. comm. 2015). Even important species like the shea nut butter tree are being cut due to the good quality of charcoal they produce. Parts of the woodlands of Adjumani and Moyo districts have been put under pressure for firewood and building poles by refugees from South Sudan, while some of the woodlands of Masindi and Nakasongola districts have been cleared to pave way for the establishment of cattle ranches.

4.3 High population growth rate and urbanization

73. Uganda's population growth rate of 3.5% is among the highest in the world and it is putting a lot of pressure on natural resources especially forests. Increasing population has contributed to mushrooming of urban centres, and rural-urban migration. The increasing population requires more food to be produced which in turn requires opening up more land for agriculture. In many cases the search for extra land for farming results in clearing of forests or woodlands. The high population growth is also putting a lot of pressure on trees and forests for the supply of firewood and charcoal which are the main sources of energy for cooking for the majority of Ugandans. The over reliance of much of the population (approximately 96%) on biomass and the reluctance of many households to adapt energy saving technologies has raised the demand for fuelwood and the resultant destruction of forests (UBOS, 2006).
74. The booming construction industry is one of the agents fueling illegal pitsawing that has more or less wiped out private natural forests and trees on farms. Due to the scarcity of trees for conversion into timber, pitsawyers have gone as far as cutting trees such as mangoes, jackfruit that they claim have good timber. The remaining trees in PAs are therefore under constant threat from the illegal timber dealers, who access CFRs during the night, fell trees, cut them into short billets of about seven feet and ferry them to trading centres for conversion into timber. Notorious places are Bwaise and Ndeeba in the outskirts of Kampala. This has forced NFA to step up its law enforcement activities to protect its estate (Kagolo, 2010).

4.4 Fires and livestock damage to forest plantations

75. Fires are posing a very big threat to forest plantations, with tree planters incurring heavy losses every year. Even NFA's plantings in North Rwenzori and Katugo have not been spared. The effects of climate change that are being manifested in uncommonly long dry seasons lead to accumulation of dry matter in and outside plantations, conditions that cause rapid spread of fires. The absence of firefighting trucks and skilled personnel, save for the big tree planters, compound the situation of firefighting. Many of the fires are intentionally set by herders at the onset of the dry season in order to encourage re-growth of new grass for their animals during the rainy season. Some of the fires are set by hostile communities neighbouring forest plantations in retaliation to the planters' refusal to allow them to use parts of the licensed areas to grow food crops.
76. Habitual dry season grazing of large herds of livestock in CFRs located in the cattle corridors (Kapimpini, Kamusense, Kabwika-Mujwalanganda, Nsowe, Kalombi, Wamale, Kasagala, and Kikonda among others) and as far as South Busoga which are some of the priority forests for commercial forest plantation development, causes damage to young trees through compaction of soils, rendering them prone to erosion and nutrient loss (Kagolo, 2010). Some of the effects of this practice are manifested in crooked stems as the crop matures. This is clearly visible in some of the plantings for Busoga Forest Company in South Busoga, and Global Wood at Kikonda which were visited by the Board of Directors of NFA in mid-2015. In order to reduce dry

matter in the plantations, some licensees have requested NFA to permit them to use animals such as sheep as a form of weed control. However, in the absence of documented evidence of the practicability of such a method of weed control in Uganda, NFA has as of now declined to approve this request.

4.5 Pests and diseases

Termites

77. Termites have hampered the growth of eucalyptus especially in drier parts of the country, and in woodlands where they build large mounds. Destruction of termite mounds can only help to a limited degree since the most destructive ones are the subterranean type. The attack on eucalyptus seedlings and trees is most intense in the dry season when tree growth is slow. Since it is during this period that termites devour vegetation, spot weeding around trees and seedlings can provide some protection.

Blue gum Chalcid

78. Blue gum chalcid (*Leptocybe invasa*) is an important pest hampering eucalyptus plantations in Uganda. Research has sought to develop biological means for controlling it. To this endeavor, an exotic parasitoid wasp (*Selictroid esneseri*) was identified as a suitable control measure. An import permit for introducing it in Uganda from South Africa has been secured.

Pine wooly aphid

79. An indigenous natural enemy for the control of the pine wooly aphid (*Cinara cronortii*) attacking pines in Uganda was identified in Kiirima and Mafuga, as *Chelomenes propingua*, *C. aurora* and *Exochomus* spp. Efforts are now being made to multiply them for use in other areas in the country.

CHAPTER 5: Forest tenure systems in Uganda

5.1 Background

80. Forest tenure is a broad concept that includes ownership, tenancy and other arrangements for the use and control of forests. It is a combination of legally or customarily defined forest tenure rights and arrangements to manage and use forest resources.
81. Forest tenure determines who can use what resources, for how long and under what conditions. According to FAO (2011), the majority of worlds' forests remain under public ownership and state control, especially in developing countries, but increasingly a diversification of forest tenure arrangements is taking place in various regions of the world as part of revised forest policies and laws. The nature of these new tenure settings varies considerably, reflecting the past and recent history of the countries, the different approaches selected by governments to improve forest management, but also the growing voices of local stakeholders demanding recognition of their rights and a role in decision making.
82. In Uganda, the Constitution sets up the broad framework for land ownership. The Land Act (1998) prescribes in detail how land can be owned, administered, and disputes managed. Over the years, it has come to be accepted that responsible forest management must include the diverse stakeholders who are affected, or who have an interest in the country's forests and trees. Accordingly, the new policy, legal, and planning frameworks governing forest ownership, management and use, Uganda has shifted from the command and control approach to more inclusive approaches.
83. A number of studies have been undertaken on aspects of forest tenure and its impact on user groups. This part of the report is based on four recent reports: by Tumusiime (2016) "Assessment of Uganda's Forest Sector with a view to Strengthening Community Based Forestry: *Policy and Legal Framework Assessment*"; Turyomurugyendo (2016) "Assessment of Uganda's Forest Sector with a View to Strengthening Community Based Forestry: *Institutional Arrangement*"; Nsita (2014) "An overview of forest tenure and related reforms in Uganda" *a report prepared for CIFOR*, and Khaukha and Nsita (2013) "Assessment of Forest Tenure Systems and their Impacts on Sustainable Forest Management in Uganda," a report prepared for FAO and MWE.
84. According to Khaukha and Nsita (2013) and Nsita (2014) forest tenure in Uganda has evolved through four major eras: the pre-colonial era, the colonial era, post-independence era, and the post-1995 period following constitutional reforms.

5.2 Pre-colonial era

85. During the pre-colonial period, much of Uganda's land and resources belonged to clans, and were administered by chiefs. In areas that had kings, chiefs appointed by the kings administered the land on behalf of the kings. The chiefs controlled all

resources on the land, and his/her subjects used the resources with his blessing. In this control, there were restrictions on cutting certain trees such as the shea nut tree in the Acholi sub-region. Access to trees and tree products other than those restricted by the chief was open to all clan members as long as they were not destructive.

5.3 Colonial era

86. The colonial era gave birth to four different land tenure systems: mailo land (allocated to the chiefs and other faithful), freehold, leasehold and crown land. Customary land tenure was recognized but was basically on crown land. Forests were an early priority for the colonial administration. Under the 1900 Buganda Agreement, the colonial administration reserved forests on which no private claim could be made. These forests were protected and maintained as contiguous woodlands for the general good of the country. This set the stage for the establishment of protected forest areas (forest reserves and national parks/wildlife reserves) in Uganda.

87. In areas where no formal agreements were made with the local chiefs, the Governor had the right under the Protectorate laws to appropriate areas which he considered were required for forests, with the provision for consulting the local chiefs in the process of appropriating the area. This in essence took away the rights of the indigenous people on their own land, and left them only “privileges” of a subsistence nature at the Governor’s discretion.

5.4 Post independence in 1962

88. The 1962 independence Constitution established the Uganda Land Commission (ULC) which continued to manage public land (formerly crown land) on behalf of the State. Other forms of land tenure mailo, freehold and leasehold were also retained. Under the 1964 Forests Act, forests in Uganda were managed by the FD. The Chief Conservator of Forests (Commissioner for Forestry), was empowered by the Act to manage all forest reserves and issue licenses for harvesting of forest produce on private and public lands (Republic of Uganda, 1964). Under this legal regime, local people could only freely take forest products from forest reserves for domestic use (Forests Act 1964, Section 15). Otherwise, they were obliged to obtain a license from the FD if they wanted to trade in such products, even if the land on which the forests or forest resources were located belonged to them (Section 14).

5.5 Post 1995 constitutional reform era

89. The land reform that was ushered in by the 1995 Constitution vested all land in the citizens of Uganda and provided for four types of land tenure systems: customary, mailo, freehold and leasehold. Citizens could now own and use the land under any of the four tenure systems for forestry purposes. Early during this period, a number of laws and policies that had a bearing on tenure of forest land were enacted. These include the Land Act (1998) and other land related laws, the Wildlife Act (1996), the Local Government Act (1997), the Forest Policy (2001) and the NFTP (2003).

90. As noted earlier, the Forest Policy of 2001 provided the guiding principles for the forestry sector in Uganda (see Table 1), with priority given to forests on government land largely for conservation and protection of environmental services, and production of forest products; natural forests on private land to promote sustainable production of forest products on private lands; private commercial forest plantations on forest reserves; collaborative forest management (CFM) of government and private lands; and promotion of trees on farm lands.

5.6 Effects of the post-constitutional reforms on the rights, access and responsibilities of specific groups

The key specific groups affected by the post-1995 land reform laws include:

91. **Customary leaders:** Under the Buganda, Toro and Ankole Agreements, the customary leaders had been allocated mailo land. This land had been taken away from them under the 1975 Land Reform Decree. The 1995 constitutional land reforms restored these lands to the institutions of customary leaders. In pursuit of this constitutional right of ownership, Section 25 of the NFTP (2003) provided for ownership and management of forests by traditional or customary institutions or leader, subject to such directions as the minister may prescribe. According to Article 246 (1) of the Constitution, customary leaders are corporate entities that can hold assets or properties in trust for themselves and the people concerned. This category of forests does not fall in the forest classification provided for under Section 4 of the NFTP 2003.
92. **Customary local communities:** The Land Act (1998) enables local communities to claim customary communal lands that are still held by the State. Local communities can now legally own such land within the framework of CLAs for specific developmental purposes contained in the common land management scheme (Sections 25 & 26). Consequently, establishment of Ongo, Motokai, Tengele and Alimugonza community forests through CLAs is being piloted in Masindi district.
93. **Customary private owners:** A ground-breaking aspect of the reforms has been that customary land ownership and use was recognised legally for the first time. In order to increase the confidence of the market for such land, and thus increase its value, the law provided for certificates of customary ownership to enable documented ownership of the land. This is very important for the emerging developments in forestry such as PES for carbon and watershed functions for forests found outside PAs.
94. **Private Forest Owners:** The NFTP (2003) recognises ownership of the forests and trees within the context of private forests under Sections 21, 22, 23, & 29. The Act requires that before a private forest owner (PFO) is legally recognized as a responsible body, she or he must first register her/his forest with the DLBs. Lack of clarity about the benefits of registering their forests has stalled the process of registration. As a result, no private forest has legally been recognized as such within the context of the NFTP.

95. **License holders in PA lands:** Individuals can now enjoy security of ownership of the trees they plant in forest reserves under license. This has spurred private sector investment in CFRs to the extent that the private sector is now taking the lead in commercial timber plantations. Meanwhile, the government has committed itself to supporting the private sector.
96. **On-farm tree growers:** Formerly trees on one's land would be harvested by any person wielding a license from the FD. This was identified as a disincentive to land owners during the forestry sector reform process. Currently the land owners also own the forests and tree resources on their land. The NFTP (2003) specifically promotes tree growing by assurance of ownership of the trees ... *"for avoidance of doubt, Government or local government has no ownership of trees or forest produce situated on private land"* Section 27(1)].
97. **Women and children:** Prior to the 1995 constitutional reform, women did not have legal powers regarding selling of family land. Under the reforms, the family head cannot sell family land without the written consent of the spouse and older children. On behalf of the young children where there is no spouse, the Land Act requires the written agreement of the Parish Land Committee. This was expected to give confidence to women to invest in income-generating enterprises, including tree growing and forest management.
98. **The government:** The Land Act (1998) prohibits alienation of natural resources under public trusteeship (including forest reserves, national parks and wildlife reserves). Access to these resources is through concessions, licenses or permits. Legal provisions for the administration of the PFE (degazettement procedures, licensing and protection, among others) provide good security of tenure that is conducive to long term investments and protection of the forest resources.

5.7 Explicit rights granted under the forestry sector reforms

99. The forestry sector reforms of the 2000s introduced several rights to a range of stakeholders. The various laws codify the bundle of rights granted to government institutions (MWE/FSSD, NFA, local governments and UWA), the private sector and local communities. For each of the forest tenure category, the bundle of rights ascribed to the various stakeholders is described below (see also Annex 2).

5.7.1 Forest Reserves

100. The Constitution vests the ownership of the forests on PAs in the citizens of Uganda. The administration of forest reserves is the responsibility of Central Government or LGs, on behalf of, and for the common good of all citizens of Uganda. In this respect, FRs are not under the absolute ownership of the Central Government or responsible LGs, but they are managed in a trust relationship with the citizens of Uganda (Khaukha and Nsita, 2013). The right to manage, maintain and control the CFRs is granted to NFA (NFTP 2003, Sections 5 and 54), while LGs are granted the same rights for LFRs (NFTP 2003, Section 5 and 9). To this end, NFA and LGs have powers to decide who can access and use what forest

resources and under what arrangements. In this light, NFA and LGs grant licenses and also ensure that legally prohibited activities are monitored. Members of local communities are granted subsistence rights to use forest resources such as dry wood and bamboo from forest reserves free of charge. However, it must be noted that even the 1964 Forests Act granted these privileges.

101. The NFTP (2003) also authorizes the NFA to enter into collaborative forest management (CFM) arrangements with local communities (Section 15) for the management of forest resources in the reserve. This partnership includes a process for sharing power among stakeholders to make decisions and exercise control over the resource, based on negotiated relationships, rights, responsibilities, and returns. The process of developing the CFM arrangements is conditioned upon guidelines issued by the minister (MWLE, 2003). However, the standard CFM agreement is not clear on the rights that accrue to the local communities under this partnership. It states that the community shall be entitled to the rights and benefits set out in this Agreement and as specified in the CFM Plan. But the agreement goes into detail about roles and benefits in the CFM plan without stating whether the benefits are theirs by right, or they are privileges which can be withdrawn at will by the forest management institutions.
102. The NFTP (2003) Section 28(1) provides for a management plan for a forest reserve or community forest to be prepared in consultation with the local community. This gives the local people a say in the way the forest reserve is managed and to what extent they can access and use resources in the reserve. With respect to the vulnerable groups, the policy provides for increase in security of tenure over forest resources for women and youth, and active participation of women and youth in decision-making, resource management and sharing of benefits. It also provides for support to the poor in access to livelihood opportunities, security of access to forest resources, and active participation and sharing of benefits in forest management. However, these policy provisions were not translated into law in the NFTP (2003), and therefore participation of women and youths, their security of access and withdrawal cannot be enforced through the Act. Consequently, any rights for these groups would have to be claimed through the rights provided for in the Constitution (1995) and the Land Act (1998).

5.7.2. Wildlife conservation areas

103. The Wildlife Act CAP 200, Section 5) gives the right to manage WCAs to UWA. The UWA grants licenses, and also ensure that legally prohibited activities are monitored. The rights to local communities are not guaranteed in the Act. Customary uses of communities are allowed as privileges which may be given at the discretion of UWA. Section 25(2) of the Act states that UWA may establish guidelines for access by communities neighbouring conservation areas to resources which are crucial to the survival of those communities. Ultimately, access, withdrawal, management and exclusion privileges are incorporated into Memoranda of Understanding between UWA and local communities.

104. Section 29 of the Wildlife Act establishes wildlife use rights, but they must be applied for, and the onus of granting or rejecting to grant the right applied for is on UWA [Section 32(3)]. If granted, the grantee is required to pay an initial fee and thereafter an annual fee [Section 32(5)], and is subject to a host of conditions.

5.7.3 Private forests

105. Forests outside the PAs form the bulk of the forests of the country, constituting about 38% of the total forest cover in Uganda (NFA, 2015). The Uganda Forestry Policy (2001) defines private land to include all non-gazetted land owned under mailo, freehold, leasehold and customary land tenure. The management of forests on such land is the responsibility of the PFOs, either individually, through family arrangements, or by a corporate body (MWLE, 2001). The private land owners are free to utilize their land in the way they may decide. Although no land use policy exists, private land owners are expected by the NFTP (2003) to utilize their land in accordance with the relevant laws of Uganda, such as the National Environment Management Act (1995).
106. Prior to the forest reform, the forest produce on private land, especially what was considered to be “reserved species”, was managed by the FD, which issued permits for harvesting. Under Section 27 of the NFTP (2003), PFOs have ownership of trees or forest produce on private land or forests on land in respect of which a license has been granted. PFOs have full rights to sell, lease, or use the land as collateral, including the sale of all other rights. The LGs (District Forestry Officer) hold regulatory rights, requiring the owner to manage the trees or forest produce in a professional and sustainable manner.
107. Despite the legal provisions, no private forest has been registered to date. As a result, management rights are being shared between the PFOs and the MWE. The MWE can, and often does, exercise the right to deny the PFOs to harvest trees from their own forests by declining to issue a license to harvest.

5.7.4 Community forests

108. The Land Act (1998) provides for formation of CLAs for any purpose connected with communal ownership and management of land. And The NFTP (2003, Section 19) provides the right for local community institutions appointed by the minister to manage a community forest on behalf of that community. For these forests to be legally recognized, they need to be gazetted in accordance with the provisions of Section 17 of the NFTP (2003). On this basis, attempts are being made in Masindi district to enable Ongo, Motokai, Tengele and Alimugonza communities to manage natural forests on former public land as community forests. Similar attempts are being made in Lamwo district for the communities of Katum and Orom-Gogo.
109. Following gazette, the community can claim all land, tree and carbon tenure rights; however, they cannot change land use without the consent of the minister and the district council. The said community institution has the right to use the revenue derived from the management of a community forest for the sustainable

management of the forest and the welfare of the local community.

110. Prior to the reforms, and under the Forests Act (1964) local authorities had powers to declare village forests within a given community, however, the revenues from village forests went to LGs and not to the local community (Sections 9 and 10). Thus, the NFTP (2003) provides greater assurance in terms of communities using revenues from their forests for their own development purposes. Figure 4 below provides a summary of bundles of rights that a community can exercise over a community forest.

Figure 3: Bundle of rights to forest resources by communities

- a) **Access right** is the right held by a community to enter a forest area.
- b) **Withdrawal right** is the right held by a community to use and benefit from NWFPs and wood resources from the forest area. A community may have a withdrawal right for subsistence and/or commercial purposes.
- c) **Management right** is the right held by a community to regulate internal use patterns or transform the resource. The management right is exercised within the limits of the other rights and is not conditional to the right to withdraw wood for commercial purposes.
- d) **Exclusion right** is the right held by a community to decide who can use the resources and who cannot.
- e) **Alienation right** is the right held by a community to sell, lease, or use the land as collateral, including the sale of all other rights.

Source: Khaukha and Nsita, 2011.

5.8 Implications of institutional reforms for forest tenure

111. Immediately before the forestry sector reforms, the government encouraged the formation of local pitsawyers' associations as a way of organizing the pitsawing industry so that the players could better negotiate rights of access, harvesting, and control in forest reserves. Membership of these associations was drawn from local communities and other pitsawing operators. These associations were formed throughout the forestry sector reform process and continued to operate up to 2004. Bushenyi All Pitsawyers and Wood Users Association worked well before 2004, and local communities enjoyed the access and control they had. However, when NFA came onto the scene, it did not see the association's rights as being important for an institution that was designed to operate in a business-like manner. The insecurity it created led to the association halting its activities of protecting the forest against illegal harvesting. Illegal activities resumed with intensity, and the NFA was left to deal with illegal operators on its own. The Budongo Pitsawyers Association, which had operated with mixed success in securing the rights of its members, met a fate similar to the Bushenyi association. In essence, setting up the NFA to operate as a business organisation that offered forest products to the highest bidder killed the associations.

5.9 Assessment of Uganda's forestry sector with the view of strengthening community based forest (CBF)

5.9.1 Assessment of policy/legal framework

112. As noted earlier, this section is based on information from two most recent studies that were carried out in 2016 (Tumusiime 2016 and Turyomurugyendo 2016). As part of the support to the forest tenure project, studies on policy/legal and institutional frameworks with a view to strengthen community based forestry were undertaken. The overall objective of the studies was to provide a good understanding of the long-time vision of Uganda's forestry sector and how the various sectoral and cross-sectoral components, programmes and initiatives complement each other to promote CBF regimes.
113. Tumusiime's (2016) assessment of policy and legal framework for the forestry sector aimed at evaluating Uganda's tenure related policies and laws to assess the extent to which the general principles of the Voluntary Guidelines for the Governance of Tenure (VGGT) are provided for in the national policy and legal framework with a view to strengthening CBF in Uganda. The study points out that although the Uganda Forestry Policy (2001) identifies undefined and insecure rights of forest communities as a major underlying cause for the continued loss and degradation of Uganda's forests, the rights of access, ownership, and management of forest resources by communities has continued to be restricted through various statutory provisions under the different CBF regimes.
114. The study, nevertheless, found out that the Uganda Forestry Policy (2001) and the legal framework is consistent at the national level and also with existing obligations under international law. It recognizes the conservation value of forests as well as their social, cultural and economic values, and it is reasonably well aligned with VGGT. The study, however points out that the policy and legal framework is generally weak on protection of tenure rights of forest communities. This is particularly so in the cases of Collaborative Resource Management (CRM) under the UWA, and CFM under NFA and DFS where communities have to negotiate their rights to social, cultural, spiritual and economic values through signing of resource use agreements and Memoranda of Understanding (MoU). This is disadvantageous to local communities who are in most cases weak negotiators since they lack the required skills and abilities to engage strong stakeholders such as government agencies. The policy/legal framework was also found to be deficient in vital provisions such as enforcement of tenure rights of local communities and inadequate and effective remedies in case these rights are violated.
115. The study recommends that rights of forest communities to access resources which are crucial to their survival should be explicitly provided for as legal entitlements and not subjected to negotiations. The policy/legal framework should provide clear and effective remedies (including restitution, indemnity, compensation and reparation) in case local community tenure rights are violated. In addition there

is need to develop a number of guidelines e.g. for access to rights including historic rights, gender equality, involvement of youth and meaningful engagement that ensures effective representation of community interests in decision making processes as provided for in the legal frameworks. It is also recommended that there is need to provide a mechanism for evaluating and reporting on public participation by responsible agencies in decision making processes and government agencies should be required to regularly disclose to communities information regarding tenure rights.

5.9.2 Assessment of forestry institutional arrangements in support of CBF

116. The study by Turyomurugyendo (2016) assessed the effectiveness and efficiency of existing institutions which are supporting or promoting the development of CBF as well as the status of implementation of CBF as envisaged in the NFP 2012/2022 including tenure to forest land and forest products, organizational and technical capacities, market access and financial services. The study applied FAO 2015 CBF framework to assess the extent and effectiveness of the existing institutional framework. The study further noted four CBF regimes that are operational in Uganda: CFM which is implemented by NFA, CRM implemented by UWA, Community Forests implemented by communities in communally-owned forests, and Private Natural and Plantation Forests implemented by individuals and corporate organisations.
117. The UWA Statute (1996) provides the legal framework for communities to collaborate with UWA in wildlife management. The statute does not devolve management of any portion of WCA nor does it grant users, rights to govern these areas. The rights under CRM are privileges because they are allowed at the discretion of the Executive Director, and can hence be withdrawn at any time. UWA through the Community Conservation structure has an elaborate institutional mechanism through which CRM is implemented. The structure is strong at the protected area level but weakly linked to the headquarters. The study points out that by the end of 2015, only 184 CRM groups were operational and implementation of CRM is only active in areas where there is external support. In the absence of such support, implementation is on an ad hoc basis. Institutional program for training/inducting new Community Conservation staff and periodic re-orientation is weak, leading to reduced capacity to implement CRM. The CBOs of Resource User Groups (RUGs) are discrete and independent of each other. There are no institutional mechanisms for CBOs within and between WCAs to coordinate and network for information sharing, building partnerships especially in governance, effective performance monitoring, and for lobbying and advocacy.
118. Collaborative Forest Management (CFM), the most popular participatory forest management regime in Uganda is implemented by NFA in CFRs. It is provided for in both the Uganda Forestry Policy (2001) and the NFTP (2003). CFM refers to the genuine involvement of communities in the management of the forest resources through a negotiated process in which the rights, roles, responsibilities and returns are defined. It is implemented by community members who are organized in RUGs that are registered as CBOs at the local government level. CFM under NFA are

coordinated under one CFM Coordinator and implemented at field level by quasi-trained law enforcement officers. By 2015, only 49 communities had signed MoUs with NFA to harvest forest resources in 76,200ha and/or plant commercial trees in degraded parts of 20 CFRs. Currently CFM is implemented in 27.4% of the CFR areas. Implementation of CFM is constrained by limited staffing capacity within NFA and DFS. The staffing situation is worse in the DFS with some districts not having any technical forest staff to handle forestry functions. Another constraint is the low budget allocation for CFM with NFA releasing only about 1% of its budget for CFM operational activities. Local governments are weak, and often do not allocate resources for implementation of forestry activities. Only Kisoro district reported implementation of CFM in one small LFR.

119. As noted earlier, Community Forests provided for under the NFTP (2003, Section 17) allow for the registration and declaration of CFs after consultation with the District Land Board and the local communities, and upon approval by a resolution of the District Council as Responsible Bodies (RBs). CFs are declared by the minister by statutory order upon receiving confirmation of a district council resolution. Community Forestry is expected to be implemented under CLAs that are provided for in the Land Policy. Likewise, CLAs may be formed of a forest adjacent community, groups of forest adjacent community, forest user groups, cooperative societies, or an NGO that draws its membership from the local community living in close proximity to a forest and identified by common history, common culture, or common residents have tenure rights or interest; communities may be formed of part of or all households or interested persons in a group or association. Section 26 of the NFTP 2003 provides for the ministry, LGs and NFA to technically support local communities to develop CFs and PNFs while Section 48 (2) (f) of the same Act mandates the DFS advise and support the management of CFs. District Local Governments and their agencies (the District Councils, DLBs, District Land Registrars, and DFS) as well as the Commissioner for Surveys and Mapping play critical roles in the registration and eventual declaration of CFs. A pilot project for the declaration of CFs is currently underway in Masindi and Lamwo districts, under a FAO/DFID supported VGGT program. By July 2016, the process for declaration of pilot CFs was in advanced stages. Problems in the legal recognition and declaration of CFs, despite the provisions in the law, can be attributed to the following:

- a. Lack of public awareness regarding benefits of declaration of CFs, and process of declaration of CFs;
- b. Requirements for the development of FMPs for the CF registration and declaration process, and lack of capacity at local level to develop them;
- c. Scanty data and information on communities (number, acreage, location, management situation, tenure etc.);
- d. At the district level, absence of functional DLBs due to resource limitations;
- e. Inadequate financial resources to support Land Committees at all levels; and
- f. Limited financial resources to support the coordination and networking activities.

120. Likewise, Private Natural Forests (PNFs) are provided for in the NFTP 2003. In particular, Section 21 of the Act provides for individual owners of natural forests to register these forests with the DLBs as Private Natural Forests (PNFs). Section 25 of the Act provides for the registration of natural forests owned or managed by cultural or traditional institutions. Institutional arrangements, extent of implementing PNFs and plans for implementation of PNFs are more or less similar to those described for CFs above. As of July 2016, no private forest had been registered in Uganda. However, under the FAO/DFID VGGT program noted above, legal recognition and registration of approximately 50 private plantation and natural forests is underway in Masindi, Rubirizi, and Bushenyi districts. As with the declaration of CFs, pilot registration of these private forests was in advanced stages by end of July 2016. Additionally, WWF is helping six PNF owners to have their forests registered. Other development partners like IUCN and CARE international are helping communities and PFOs have their forests registered and/or declared. Problems in the legal recognition and registration of PNFs are the same as those for CFs.

CHAPTER 6: Forestry governance and key achievements over the last 10 years

6.1 Definitions of forest governance

121. Governance is about the process of decision-making as much as it is about the actual decisions that are made (World Resources Institute, 2009). According to CIFOR's Forest and Governance Programme, forest governance is *"...about how decisions that affect forests and the people who depend on them are made: Who is responsible, how do they exercise their authority and how are they accountable? It encompasses decision-making processes and institutions at local, national, regional and global levels..."*
122. The World Bank (2009) identifies five pillars of forest governance:
1. Transparency, accountability, and public participation
 2. Reliability of forest institutions and conflict management
 3. Quality of forest administration
 4. Coherence of forest legislation and rule of law
 5. Economic efficiency, equity and incentives
123. The above pillars are interconnected. For example, institutions which put a premium on participation of people will often be equitable in benefit sharing. Where there is rule of law (in practice), there will be transparency and accountability.
124. A lack of forest law compliance and good governance can have far-reaching environmental, social and economic consequences, leading to political instability, increased income disparity, and the loss of biodiversity and habitats. Although the extent of illegal forest activities is notoriously difficult to quantify, their economic cost is likely to have negative impact especially on forest dependent communities. FAO and ITTO (2009).
125. Uganda has actively participated in a number of regional and international initiatives in forest law enforcement and governance. Some of these regional and international initiatives are presented in Annex 6.

6.2 Key governance issues in the forestry sector (Adapted from Nsita, 2010)

126. The Uganda forestry sector reforms (1998 – 2003) aimed at providing more efficient and effective forest administration, management and utilisation of Uganda's forest resources, through the Forestry Policy (2001), the National Forestry Plan (2002), the NFTP (2003) and a new institutional framework for the management of forestry resources in the country. The reforms recognised the multi-stakeholder nature of forest governance and replaced the FD, which had been the sole institution responsible for managing and regulating forestry resources in the country, with new responsible bodies: the NFA, the UWA, the DFS, private forest owners (PFOs), and community forests owners (CFOs). Likewise, the reforms distributed responsibilities between the central government CG, LG agencies, the private sector, NGOs, community based organisations (CBOs), and the local communities. It was envisaged that this institutional arrangement would promote multi-stakeholder participation and promote transparency, integrity and professionalism in the sector. Despite these good intentions, the forest estate has continued to shrink from 4.9 million hectares in 1990 to currently 2.3 million hectares NFA (2015) a loss of over half of the forests in a span of 25 years! The reasons for this decline are mostly attributed to poor forest governance, and particularly problems with forest law enforcement and governance, and associated institutional issues (Nsita, 2010).
127. In 2010 the World Bank, in collaboration with the Government of Uganda, piloted a forest governance diagnostics approach with the aim of helping the country's forestry sector to identify governance areas that needed improvement, prioritize governance reform actions to be taken, and monitor progress thereafter. It was envisaged that measurement of the components and key attributes in each building block would set a baseline for the quality of forest governance, help to identify areas which needed improvement, formulate targeted and actionable interventions to improve forest governance, make informed choices regarding reform priorities, and provide indicators to monitor the progress of interventions. This approach also provided a basis for building consensus for reform among the wide spectrum of stakeholders in the forestry sector.
128. The governance issues below came up during a stakeholders' workshop on forest governance that was organized by the MWE in July 2010. They are categorised according to the five pillars elaborated by the World Bank in *Roots for Good Forest Governance, 2009*.

Transparency, Accountability, and Public Participation

129. Mechanisms for transparency and accountability are well grounded in the laws and institutional procedures, but they are not always followed. Sometimes forest officials are held accountable if they fail to perform their duties or fail to act lawfully, but it is not a regular practice. To improve transparency in the concessions, the NFA and UWA have established licensing procedures according to a broad framework provided for in the laws. Licensing for harvesting in private forests is done by the LGs, but the FSSD issues guidelines on the licensing.

130. The culture of public consultations before laws and programmes are adopted is very strong in Uganda. The NFTP 2003 makes local community consultations mandatory in many cases. However, mechanisms to enable people who are affected by the forest policy and related actions to influence decision making are inadequate. Those that exist are not widely respected. For transparency, accountability, and public participation to take place, it is important that information is made available to stakeholders in formats that are user-friendly. Only some of the data on forest inventories, management plans, laws, and budgets for all types of forests is readily available and easily accessible. The situation is particularly wanting for non-public forests.

131. Local community participation has been fostered mainly through an elaborate and structured collaborative forest management approach, but there have also been other arrangements with specific user groups like pitsawyers associations where the structured collaborative forest management approach was not used. Both approaches have achieved mixed results. CFM is just beginning to take root around some of the CFRs and WCAs. However, local community meetings are sometimes held even outside CFM areas to deal with various issues of forest management. There are formal mechanisms for stakeholders to report issues of concern to the Centre, (e.g. to the Inspector General of Government) but access to some of the reporting mechanisms is not easy or even possible for the people in rural areas. All forest dependent communities have legal access (licenses, free issues) to the necessary forest resources, but their rights are not fully respected. Security of access provided for in the law is sometimes violated by individual local forest managers on personal grounds.

132. During the National Forest Forum (November 2015) participants were asked to rank the governance scorecard on the five pillars of forest governance and this particular pillar was given a score of 5 out of 10. The reasons cited for this score were:

- Limited public participation;
- Transparency and accountability mechanisms are just improving; there are delays and uncertainties e.g. issuance of permits, bureaucracy, corruption tendencies; and
- Conflict of interest (relatives of duty bearers get permits).

Reliability of Forest Institutions and Conflict Management

133. Government forest institutions are generally stable, even if they are under-resourced. Laws, policies and plans require systematic reviews and consultations, before they can be changed. This makes it difficult to change the institutions thereby making them relatively reliable. The National Development Plan 2010 places forestry at the centre of Uganda's development agenda by categorizing it as a primary growth sector. This offers favourable prospects for increased investment for forestry. In addition, the Environment and Natural Resources Sector Investment Plan provides a good basis for the forestry institutions to negotiate for increased funding.

The National Forest Plan, 2002 provided holistic planning for forestry for a period of 10 years. The Plan has since been revised to bring it in line with the changing operating environment. However, under the Medium Term Expenditure Frameworks, (national and local government levels) the budgets show that natural resources are ranked quite low. Institutions spend mostly according to the budget, but there are sometimes shortfalls, or changes in allocations to programs. Sometimes annual budgets are cut during implementation of annual plans, so that the money can be re-allocated to non-forest activities that government considers more urgent. The LGs recognise the importance of forests but this is not reflected in their budgetary allocations. In addition, under-resourcing (staff and money), coupled with corruption, result in very low revenue collections.

134. Resolution of the conflicts is variable. For example, while some conflicts are resolved easily and quickly, there are confrontations between NFA and local people over encroachment and CFR boundaries that remain unsolved. The conflicts in turn make it difficult to manage the forests, often discouraging investors. Quite often, political interference tends to exacerbate the conflicts.

135. The National Forest Forum participants gave this pillar a score of 4 out of 10 on the governance scorecard for the following reasons:

- Limited resources (financial, personnel and logistics for FSSD, NFA, and DFS); and
- Outright corruption at most levels, some institutionalized.

Quality of Forest Administration

136. The 2001 Forestry Policy has been operationalized through the National Forest Plan, 2002 and the NFTP (2003). Forestry is also well covered in the Environment & Natural Resources Sector Investment Plan. In these documents, government expresses its commitment to sustainable development of the forestry sector. However, in carrying out the commitments in these documents, government shows inconsistencies in implementation of the provisions. Adequate sustainability safeguards and standards exist but there is a disconnection planning and budgeting processes. In addition, negative political interventions in the application of standards and procedures make it difficult to apply the safeguards and standards. In terms of administration and management, the UWA has existed for a long time and therefore has had time to stabilize. NFA has been relatively well-resourced (finance and personnel) and in its early years showed that it could deliver. The FSSD and District Forestry Offices have never been resourced well enough to enable assessment of organizational performance.

137. Sectors that directly depend on forests and those that directly affect forests provide for forest- and tree-related activities in their plans and budgets to a variable extent, but implementation is limited by funding prioritization. For all the institutions engaged in managing forests, the ultimate coordinator, mobilizer, monitor and evaluator is the minister of Water and Environment represented by the FSSD.

However, since FSSD is grossly under-resourced, the roles have not been effectively played. Additionally, FSSD and LG forestry departments are monitored through the established hierarchical public service arrangements, but these are not routinely done.

138. Codes of conduct to ensure professionalism and guard against corruption and bribery are enshrined in the manuals of the government institutions responsible for forestry. For all institutions, leaders at a certain levels are required by the Leadership Code Act (2002) to declare their assets and liabilities to the Inspector General of Government once every two years. This requirement has, however, not managed to eradicate corruption in government institutions. For the LGs, their forestry activities are highly geared towards collecting revenues, sometimes to the extent of ignoring illegal harvesting activities including in CFRs. Since they are required to meet most of their expenditure, both the NFA and UWA often prioritize forests which generate revenue. FSSD on the other hand is highly dependent on donor funding for its field activities.

139. All CFRs have FMPs. A few are approved but most are still in draft form, awaiting approval by the minister as required by law. Parts of these FMPs are being implemented. Meanwhile, none of the LFRs have FMPs, although arrangements are being made now by the FSSD to have them prepared. Most of the large National Parks and Wildlife Areas have management plans. In the tropical moist forests, NFA has developed a system for natural forests which involves harvesting based on timber & biodiversity inventories, use of permanent sample plots, GIS-based monitoring of harvesting, tracking of legal timber, and assisting in regeneration after harvesting. In plantations, the private sector is now taking the lead. In private woodland forests, NGOs have started promoting methods of assessing plant populations, but it is too early to tell whether the private forest owners will embrace these practices.

140. This pillar was given a score of 5 out of 10 on the governance scorecard by the National Forest Forum participants for the following reasons:

- DFS and NFA are poorly facilitated;
- Shortage of staff in both institutions;
- Political interference in the operations of the institutions; and
- Corruption.

Coherence of forest legislation and rule of law

141. The 2001 Forestry Policy is rooted in the Constitution of Uganda (1995) and the subsequent amendment in 2005. The legal framework provides a good basis for responsible forest management. The extent to which the policy is implemented and the laws enforced affects the responsible forest management spirit. And so, in spite of the good policies and laws, forest crime has continued to increase. In general, the laws governing use of forest resources are consistent and clear. The forest policy and law contain very clear principles of sustainable forestry in Uganda. However, the commitment of government in implementing the provisions in these documents is

less than desired. Where the law grants discretion to government officials, standards within which to exercise that discretion exist but are not consistently documented, applied or accessible. In most cases, the standards do not attract the enabling force of law (e.g. licensing without doing stock mapping) and citizens have no legal capacity to challenge the discretionary actions of the agencies. The government's forest law enforcement strategies include a variety of preventive measures, including timber tracking units, informants from among the local communities, public education and community sensitisation, and supporting communities to start forest-based enterprises to take pressure off the forests. However, there is little coordination of effort, inside or outside of the forest agencies.

142. In increasing cases, offenders are becoming very aggressive, resulting in confrontations which have sometimes resulted into death of the offender or the defender of the resource. There are dispute resolution processes but the formal ones are perceived as being inaccessible or unfair. In many cases the disputes are politicized, there is social exclusion, and corruption mars any honest resolution decisions. In addition, the cost of access to justice in courts is high. The decisions of the courts are rarely enforced. **Culprits have used political connections and economic clout to defy court. Meanwhile, the informal processes are hardly used to resolve forest-related conflicts.**

143. Ownership of other resources tied to the land such as genetic resources, wildlife, water, minerals is generally clear and ascertainable for each land tenure type where the land itself is free from legal ownership challenges, but carbon is a more recent benefit and therefore, ownership can be contested. Property rights records are neither complete nor free of fraud and therefore, land ownership can be contested in many cases. The Uganda Wildlife Act CAP 200 provides for 20% of the total revenue being passed on to local communities. On the other hand, the forestry law does not make an explicit statement but the sharing is implied through CFM. Under CFM, the emphasis is on community participation in management and sharing the negotiated roles, rights and benefits.

144. This pillar was given a score of 4 out of 10 on the governance scorecard for the following reasons:

- Some provisions of the NFTP (2003) have not yet been operationalized (regulations, the tree fund are not yet in place); and
- Coherent laws, but poor implementation.

Economic Efficiency, Equity and Incentives

145. **Due to inadequate information, it has been difficult to assess the supply and demand of forest products.** Ecosystem values (e.g. watershed, soil conservation, climate change) are still not included in the government Statistical Abstracts, the main source of information for planning in government. However, the Uganda Bureau of Statistics, which is responsible for compiling the statistical abstracts on an annual basis, is beginning to talk about greening of the national accounts. Forest products prices are based on what the market offers instead of the true value of the

products. It is still not yet feasible to include ecosystem values into the forest product prices. Illegal timber on the market tends to negatively affect the prices of timber.

146. The incentive schemes under the Uganda Investment Code 1991 were designed with medium to large investment sums in mind, and yet most business operators in forestry (tree growers, private owners of natural forests, beekeepers, etc.) are small operators and therefore do not qualify for the incentives contained in the Code. The Forestry Policy (2001) and the National Forestry Plan 2011/12-2012 provide for third party certification but not much has been done to actively promote certification. However, the NFA has been steadily developing technical guidelines which will be necessary to activate the certification scheme. Meanwhile, some forms of incentives have been provided in the form of grants to commercial tree growers under the Sawlog Production Grant Scheme. The grants were paid retrospectively to growers who met the required standard.
147. Virtually all forest dependent communities living near the natural forests with opportunities for timber harvesting are complaining that timber harvesting licenses are being given to “foreigners”. They feel that they are being side lined. Technologies are generally antiquated. An exception is inventory technology, where biomass, biodiversity, and timber inventories are done using GIS and the respective staff is well trained. However, the technologies for processing forest products are still antiquated and inefficient.
148. This pillar was given a score of 3 out of 10 on the governance scorecard by the National Forest Forum participants for the following reasons:
- NFA still not self-financing as envisaged;
 - Lack of benefit sharing mechanisms/equitable sharing (unclear issues of who the beneficiaries are, resources to be shared);
 - Lack of incentives; and
 - When available, incentives are given to a few individuals e.g. well to do farmers.

CHAPTER 7: Status of the forestry estate and changes in forest cover

7.1 Uganda's forest cover change between 1990 and 2015

149. Table 4 below shows that the forest estate has shrunk from 24% of the total land area in 1990 to 9% in 2015. In terms of acreage a total of 3.05 million hectares were lost in a span of 25 years. Out of this loss about 2.2 million hectares were from the woodlands. The records also indicate that the forest estate outside PAs reduced from 68% of the total forest land area in 1990 to 61% in 2005 and down to 38% in 2015. This means that almost half of the unprotected forests have been cleared in just 25 years. However, there were some significant gains in the broad leaved and conifer plantations as a result of tree planting efforts by NFA and the private sector. Between 2005 and 2015 the area of forest plantations both conifers and broadleaved increased to 37,000 hectares on private land and 64,000 in CFRs. Table 4 below shows how the forest cover has changed between 1990 and 2015. **Annex 12 shows maps of change in forest cover between 1990 and 2015.**

Table 4: Forest Cover Statistics 1990-2010 (in hectares)

Forest ownership	Forest type	1990	2000	2005	2010	2015
PRIVATE	THF well stocked	172,274	127,022	79,789	50,662	20,439
	THF degraded	175,052	160,883	149,008	50,423	35,400
	Woodland including montane	2,971,763	2,258,873	1,948,534	945,221	605,146
	Plantation	12,000	7,000	11,000	19,000	37,000
Sub total		3,331,090	2,553,778	2,188,331	1,065,306	697,986
PROTECTED	THF well stocked	419,456	549,140	419,972	431,259	410,449
	THF degraded	83,911	57,792	36,536	55,160	100,880
	Woodland including montane	1,028,027	842,756	907,752	703,113	556,464
	Plantation	18,000	15,000	21,000	38,000	64,000
Sub total		1,549,394	1,464,688	1,385,260	1,227,532	1,131,793
Grand total		4,880,484	4,018,466	3,573,597	1,292,838	1,829,779
% of total land area		24	20	17	11	9

Source: NFA data 2016

The Proceeding tables give an in depth analysis of table 4

Analysis of net loss so far recorded 1

	Overall	loss/year
Overall loss	3,050,705	122,028
1990-2000	862,017	86,202
2000-2005	444,875	88,975
2005-2010	1,280,753	256,151
2010-2015	463,060	92,612

Source: Adopted from NFA report 2016

Analysis of net loss so far recorded 2

	Percentage	1990-2000	2000-2005	2005-2010	2010-2015
Protected Areas		84,706	79,428	157,728	95,739
Private land		777,311	365,447	1,123,025	367,321
Total		862,017	444,875	1,280,753	463,060
Protected Areas	13.7%	2.8%	2.6%	5.2%	3.1%
Private land	86.3%	25.5%	12.0%	36.8%	12.0%
Analysis of net loss so far recorded 3	1990	2000	2005	2010	2015
Forests on Private land	68%	64%	61%	46%	38%
Forest s in PA	32%	36%	39%	54%	62%

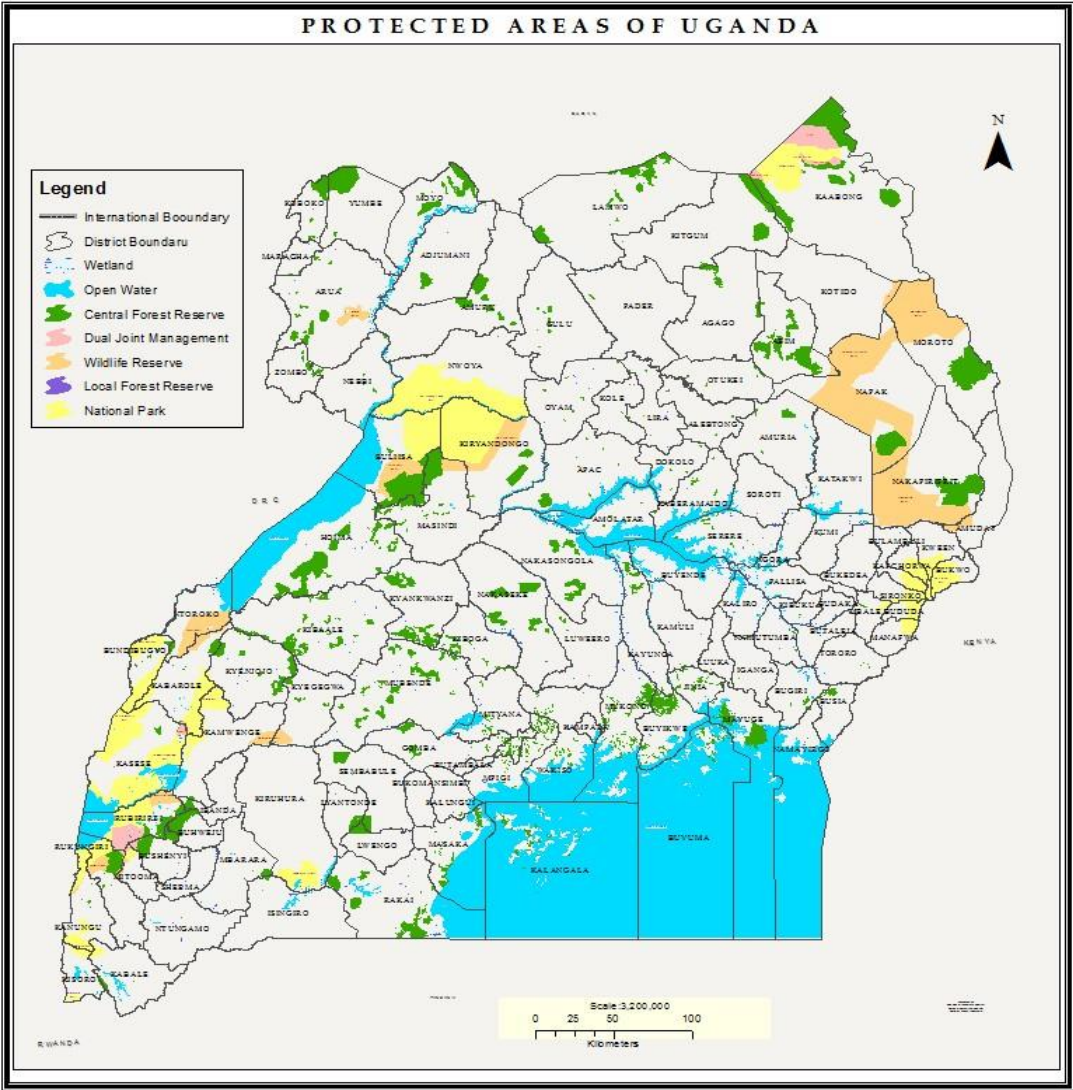
Source: Adopted from NFA report 2016

150. The above table presents a very worrying scenario where in a span of 25 years Uganda has lost forests on 37% of the total land area despite the encouraging tree planting efforts by the both NFA and the private sector between 2005 and 2015. The biggest loss of forest cover is from the privately owned category where 88% of well stacked Tropical High Forests (THFs), 80% of degraded THFs and 79% of woodlands were lost between 1990 and 2015. Although protected forests fared a bit better with only 2% of well stocked THFs lost over the same period and a growth of 20% in previously degraded THFs. However, over this period, 46% of protected woodlands- mostly those under NFA, were lost.

7.2 Changes in forest cover in acreage

151. These data also show that Uganda's forest cover reduced from 4.9 million hectares in 1990 to 1.8 million hectares in 2015 translating into a loss of 3.1 million hectares in 25 years or an average annual forest loss of about 122,000 hectares. The biggest average annual forest loss was about 256,000 hectares between 2005 and 2010 during which 1,286,753ha were lost in just 5 years. During the period 2010 to 2015 a total of about 463,000 hectares were lost. This translates into an average annual loss of about 92,600 hectares per year. In terms of acreage, 2.6 million hectares of unprotected forests were lost between 1990 and 2015 while during the same period over 418,000 hectares were also lost from protected areas. Figure 4 below shows the distribution of major protected areas (CFRs and NPs) as at 2015 (NFA, GIS Database 2016)

Figure 4: Protected Areas of Uganda



152. Table 5 below shows changes in stock under the different categories of forest types between 2005 and 2015 during which period much of the forest loss occurred. Although there were some increases in forest cover under plantation forest, there were large areas lost under the other forest categories especially under low stocked THFs and woodlands categories.

Table 5: Stock and changes in stock of forested land, 2005 – 2010

Summary	Total forested land	Conifer Plantation (Ha)	THF well stocked (Ha)	THF low stocked (Ha)	Woodland (Ha)
Opening stock (2005) (Ha)	3,573,597	33,000	499,761	185,544	2,856,286
Annual rate of change in forested area	-174,382	6,800	-6,887	-4,926	-169,468
Est. change in forested land area 2005-2015	-1,743,818	68,000	-68,873	-49,264	-1,694,676
Est. closing stock 2015 Ha	1,829,779	101,000	430,888	136,280	1,161,610

Source: NFA data 2016.

153. The National Biomass Technical Report of 2009 shows a correlation between biomass of the various land cover types and the associated tree cover. Big changes in forest cover occurred in districts where large areas of forests were converted into farmlands. For example the report notes that Mayuge district lost almost all its tropical high forests between 1990 and 2005 while Wakiso lost 87%, Kibaale lost 46%, Mukono lost 38%, and Hoima lost 22% of its THF cover over the same period. These are presented in Table 6 below and show districts where extreme losses in forest cover occurred and those where increases in forest cover were recorded.

Table 6: Changes in THF areas in selected districts between 1990 and 2005

Region	District	THF Area Ha. 1990	THF Area Ha. 2005.	Change in Area Ha.	% Change
Central	Mukono	100,626.65	63,977.12	-36,649.53	-38%
	Wakiso	28,461.12	3,781.68	-24,679.44	-87%
	Kayunga	494.02	710.27	216.25	44%
	Masaka	15,612	17,193	1,571	10%
Eastern	Mayuge	15,162.05	450.54	-14,711.51	-97%
	Kapchorwa	19,180.51	14,768	-4,413	-29%
	Manafwa	6,858	7,845	987	14%
	Sironko	8,192	9,578	1,386	17%
Northern	Nebbi	190	4	-188	-98%
	Adjumani	1,268	1,262	-6	0%
	Kitgum	0	5	5	0%
	Pader	0	210	210	0%
Western	Kibaale	114,103	61,090	-53,103	-46%
	Hoima	75,144	58,769	-16,375	-22%
	Kamwenge	25,412	26,089	677	3%
	Kyejojo	54,242	83,807	29,565	55%

Source: Biomass Technical Report 2009

154. The same report also shows that deforestation was high in a number of districts in all regions although there were some gains in forest cover in a number of districts as presented in Table 7 below. Most of the deforestation was attributed to conversion of woodlands into farms. The increase in forest cover in Kayunga district was due to former bushland in the northern part of the district which with time transformed into woodlands. The increase in forest land in Kiruhura district on the other hand was due to what used to be pasture land in the northern part of the district turning into woodlands as a result of improved pasture management that allowed growing of trees to provide shade to livestock.

Table 7: Deforestation rates in different districts between 1990 and 2005

Region	District	Forest 1990 Ha.	Area 2005 Ha.	Change in Area Ha.	% Change
Central	Kiboga	168,681	81,551	-87,131	-52%
	Nakasongola	128,760	65,633	-63,127	-49%
	Masaka	21,990	31,333	9,342	42%
	Kayunga	15,145	27,686	12,535	83%
Eastern	Bugiri	26,692	6,395	-20,297	-76%
	Kamuli	24,641	4,643	-19,998	-81%
	Mbale	4,036	3,408	-627	-16%
	Budaka	195	63	-133	-68%
Northern	Kitgum	475,313	178,166	-297,147	-63%
	Amuru	389,409	308,003	-81,406	-21%
	Nakapiripiti	45,855	85,480	39,625	86%
	Moroto	68,367	138,110	69,743	102%
Western	Kibaale	187,045	106,332	-80,714	-43%
	Hoima	160,513	98,143	-62,370	-39%
	Bushenyi	89,440	100,671	11,231	13%
	Kiruhura	10,590	45,440	34,850	329%

Source: Biomass Technical Report 2009

7.3 Causes of loss in forest cover

155. There are many factors that are causing the rapid loss of forest cover and well as degradation of forests. The main causes of deforestation have been mostly the conversion of forest land to other land use types such as agriculture and urbanization, and rampant felling of trees for firewood and charcoal burning. The other important ones are issues relating to governance in the forestry sector, issues associated with illegal and unregulated trade of forest products and the unsecured forest tenure rights. There is a remarkable difference in the degree of deforestation inside protected areas (PAs) as compared to forests on private land. Detailed information on causes of forest cover loss is presented in the chapter on challenges facing the forestry sector.

CHAPTER 8: Forestry's contribution to the economy

8.1 Forestry's contribution to the Gross Domestic Product (GDP)

156. Over the last two decades, there have been extensive debates in Uganda on what the actual contribution of the environment and natural resources, especially forests is to the national economy. In the last 10 years, 2003-2013, the National Statistical Abstract of Uganda indicated that the forest sub-sector contributed between 3.0 and 3.5% to the national economy (UBOS 2009). However, there have been strong arguments that the figure above grossly underestimates the actual contributions of Uganda's forests to GDP, household incomes and livelihoods, employment, provision of ecosystem services such as carbon sequestration and water catchment and protection of national biodiversity.
157. Other reports authored on the contribution of forestry in Uganda to GDP put it at 6% (MWE 2001, Bush et al 2004). Others yet argue that it could be higher when the non-monetary contributions from woody biomass as the main energy source for the country are considered, plus their contribution to ecosystem services (soil and water conservation, carbon sequestration, biodiversity conservation) as mentioned above. More recent findings from the Uganda Forestry Accounts Report (NEMA 2011) indicates that the contribution of forestry resources to national economy was as high as 8.7% based on conservative estimates compared to the Gross Domestic Product (GDP) for 2009 (NEMA 2011). Nevertheless, the report hastens to add that this value was based on conservative estimates since natural resource accounting was never conducted for other major natural resources. According to the same report, the economic contribution of Uganda's forestry resources was put at USD 1,277 million, but the contribution of other natural resources including wetlands, fisheries, soils and land, and other remain unknown.
158. During the period between 2002 and 2006, the forestry sector grew at an average of 5.7% in terms of livelihoods (Kaggwa et.al 2009(b)). Bush et al (2004) established that 11–27 % of household cash incomes of communities around forest reserves were derived from forestry. They estimated that the total economic value (marketable and non-marketable values) of Uganda's forests was around UGX 593.4 billion (USD 300 million). In addition, they estimated that the combined contribution of forests to soil and water management, carbon sequestration and future uses for Uganda's biodiversity is valued at UGX. 222.2 billion (USD130.7 million) annually. There are, however, still many challenges in the estimation of the contribution of forests to the national economy of Uganda due to the myriad of products and services that they provide. For example in terms of employment, the Forest Policy (2001) estimated that forestry employs one million people in the formal and informal sectors. This value has since changed given interventions under the Farm Income Enhancement Forest Conservation Project (FIEFOC), the Sawlog Production Grant Scheme (SPGS) and the Community Tree Planting Programme that have supported tree planting by the private sector and communities between 2005 and now. A separate study may be necessary to capture up to date data on

this aspect of forestry given the importance attached to the sector under the current National Development Programme. Table 8 summarises the various aspects of forestry's contribution to the economy.

Table 8: Summary of forestry contribution to the economy

Contribution to GDP	6%
Annual estimated demand for timber	300,000 cubic metres worth UGX 57 billion (\$22.8 million)
Energy needs	95% of Uganda's energy is from biomass 90% of Ugandans use fuelwood as main source of energy
Annual estimated demand for fuelwood (ref. 2007)	43 million cubic metres, valued at UGX 324 billion (\$129.6 million)
Employment – total No. (2001)	1 million people
Employment – formal (2001)	100,000 people
Annual contribution to household cash income for families residing close to forest reserves (2004)	11-27%
Contribution to ecosystem services (soil and water management, carbon sequestration, and future uses for Uganda's biodiversity) (2004)	UGX. 222 billion (\$ 88.8 million)

Source: Glenn Bush *et al* (2004)

8.2 Forestry's contribution to livelihoods

159. Most people use forest resources as inputs in their production activities or/and as consumption goods which satisfy their various needs. While the importance of the forestry sector to the public is not in doubt, the degree of its importance in the peoples' livelihood strategies varies among individuals and different communities.

160. Dependence on forest resources, especially NWFPs (water, fibres, vegetables, wild fruit, mushrooms, medicinal plants, etc.), is determined by many socio-economic factors. It depends on the availability of those products outside the forest, the level of commercialization of the products and the level of food self-sufficiency within the communities surrounding the forest. Dependency on medicinal plants depends on the availability of modern health facilities and also on the cultural beliefs of communities. Some communities believe that many medicinal plants are more efficacious than modern medicine. This is particularly so in curing diseases of women, children and the elderly. Another factor that determines dependence on forest resources is the levels of income. Low income individuals and households

depend more on NWFPs than the high income individuals and households as they cannot afford substitutes (Banana *et al*, 1996).

161. In general local communities depend upon forest resources and land for sustenance. Subsistence farming has progressively placed a lot of pressure on government forests from adjacent communities both for land for cultivation as their own lands become less productive due to overuse, and also for forest products. Bush *et al* (2004) valuation of Uganda's forests using a livelihood and ecosystem approach evaluated local use of forests in three ecological systems, namely Tropical High Forests (THF), Savannah Woodlands, and Afro-montane. The three forest systems were represented by Budongo THF (CFR), Bugoma for THF (private riverine and gulley forests), Kasagala for savannah and Rwenzori for Afro-montane. Based on household information derived from the Uganda Bureau of Statistics (UBOS) National Household Survey data, and data collected from a sample of households, the study determined per hectare livelihood value for each of the forest type as presented in Table 9 below.

Table 9: Value of forests to livelihoods

Forest	Area of Forest (Ha) ¹	Total Households (HH) ²	Mean HH income from forests	Total local livelihood value UGX million	Livelihood value per Ha. of forest UGX p.a.
Budongo	79,300	12,078	118,671	1,433.31	18,074.53
Bugoma	128,804	12,213	320,048	3,908.75	30,346.50
Kasagala	10,105	2,792	182,512	509.57	50,427.93
Rwenzori	97,380	32,468	727,104	23,601.61	242,427.71

Bush *et al* (2004)

162. Using the above information and the total forest area for the different forest types as determined by the National Biomass Study 1990, a national value for the contribution of forests to livelihoods was calculated and is presented in Table 10 below. The high timber value under the Savannah ecosystem includes figures for firewood and charcoal.

Table 10: National level livelihood values broken down into timber and NWFP

Forest Type	Livelihood values/ha. UGX	Total area of forest type in Uganda (Ha)	Total livelihood value of forest type mill./yr UGX	NWFP values mill./yr UGX	Timber Values UGX Mill./yr
Protected THF	18,074	427,210	7,722	4,092	3,630
Private THF	30,346	350,130	10,625	3,931	6,694
Savannah woodland/bushland	50,427	1,372,708	69,223	20,770	48,453
Afro-montane	242,427	264,200	64,050	40,351	23,699
Total		2,414,248	150,620	69,144	82,476

Bush *et.al* 2004

163. What should be noted however is that the calculated values above are estimates of the economic values of forests to livelihoods based on use at the time. They may not be sustainable given the high rate of population growth and deforestation. A number of interesting observations were made by the study and are presented in Figure 6 below.

Figure 5: Glenn Bush et al observations on forests' contribution to livelihoods

- People that dwell on the edge of natural forests are among some of the poorest in Uganda today;
- For the poor, the household's access to forests is considered a principle financial and economic safety net providing both food and financial security;
- In absolute terms there is no significant difference between rich and poor households in the amount of income derived from forests;
- As a proportion of total income, however, poor households derive a significantly higher level of income from forests than the wealthier households. This is a strong indicator of the economic reliance that poor people have on forests;
- Forest adjacent communities use forests frequently during the months of December through to March. This period corresponds to the long dry season in most parts of Uganda. This provides strong evidence regarding the role of forests in reducing vulnerability and providing a buffer against seasonal shocks; and
- The study found that poor households derived greater consumer surplus from the forests than the rich, providing another indicator of the importance of the forests to their livelihoods.

8.3 Contribution to the energy sector

8.3.1 Firewood energy

164. Forests supply well over 90% of Uganda's energy requirements in the form of fuelwood. This is expected to be the major source of energy in Uganda for the foreseeable future. Firewood and charcoal are important sources of energy not only to households (both rural and urban), but also for a majority of institutions (schools, prisons, military barracks, hospitals) and commercial establishments (bakeries, hotels, lime and cement factories, brick making, sugar and oil factories). UBOS (2008) estimated that the total annual consumption of firewood was about 20 million tonnes (32.8 million cubic meters) of woody biomass.
165. According to the Farm Income Enhancement and Forest Conservation Project Baseline Survey Report (2007) and NEMA (2011) on average, a household uses 150 kg (2–3 m³) of fuelwood per month: 58.9 % of the firewood used for cooking is obtained from natural forests and trees growing naturally on farm, and 34.6 % is collected from plantation/planted forests (NEMA 2011). However, fuelwood supplies have been rapidly decreasing due to population growth and agricultural expansion which has in turn led to increased deforestation. The National Biomass Study of 2005 indicates that 73 % of all the districts in Uganda are experiencing a deficit of accessible woody biomass for fuelwood. This trend has since not changed and may not be easily reversed in the near future, unless efforts are put in massive tree planting. On average, the distance travelled to collect firewood has increased from 0.73 kilometers (in 2000) to more than 1 km according to FIEFOC Project Baseline Survey Report (2007). In some districts such as Kitgum, Nebbi, Gulu/Amuru, Nakasongola, Lira, Sironko and Adjumani households travel more than four kilometers in search of firewood largely by women and children.
166. Although government and civil society organizations are promoting energy-efficient technologies, such interventions are still insignificant, and hence have not had much effect on reducing the trend of consumption of wood based energy. Recent government efforts to scale up rural electrification may take some time to redeem the situation given the high electricity tariffs. Currently even bigger sections of the urban population that have access to electricity also depend on wood fuel due to the high tariffs and unreliable supply.

8.3.2 Charcoal production

167. The charcoal industry has become a lucrative industry employing an estimated 20,000 people in charcoal production on full time basis, while thousands more are employed along the value chain in transportation, distribution and marketing (Yaron et al 2003). The increased rates of urbanisation and new markets in the neighbouring countries of South Sudan and Rwanda have led to an increase in demand for charcoal. Much of the charcoal is produced from private forests, many of which are being cleared for agricultural expansion to meet the increasing demand for food. Although, a good amount of the charcoal is also produced from Savannah woodlands and bush lands. Studies carried out in 1995 gave estimates of charcoal

production of 400,000 tonnes annually (MWLE, 1995), valued at UGX 186.7 billion (USD 93.3 million). The study estimated that this volume of charcoal required nearly 6 million cubic metres of round wood annually, and most of this was coming from private lands, where wood harvest is poorly regulated.

168. Approximately 70% of charcoal is consumed in urban centres, with only 30% being consumed in rural areas. In 1995, charcoal consumption in all urban centres was estimated at 270,000 tonnes annually (MWLE 1995), valued at USh31.4 billion (USD 15.6 million). In 2006, estimates based on population growth indicated that charcoal consumed in all urban centres was 463,437 tonnes, valued at Ush141.8 billion (USD 79 million) (UBOS 2006). This indicates growing production and trade in both volume and value of charcoal. More recent estimates (NFA, 2009) put the round wood used for charcoal production at nearly seven million tonnes (or 11 million cubic metres) annually.
169. According to the National Forest Plan (2002), the International Union for Conservation of Nature (IUCN) estimated that if kerosene was to be substituted for charcoal in urban households, there would be an annual increase in the national import bill for kerosene of about USD 180 million (UGX 648 billion at the current exchange rate).
170. Some studies carried out during the forestry sector review indicated that charcoal producers earn very little money for their labour and are amongst the poorest stakeholders in the forestry sector. They do not have direct access to markets, are generally illiterate, and are not organised to conduct their business more profitably. They are dominated by the traders, who keep forest gate prices low, take charcoal on credit, force low cost prices and sometimes default on payments. The lack of organization of producers also means they have little bargaining power with wholesalers, and many operate at low prices.
171. A study on charcoal production funded by FAO and carried out by the Sustainable Development Centre (SDC 2010) brought out new dimensions to the charcoal industry in Uganda. The notable ones are:
- Out of the key players in the charcoal value chain, producers earn the least while wholesalers-*cum*-retailers earn the most;
 - Charcoal producers use inefficient technologies, whose recovery rate ranges between 10-15%. Improved kilns have recovery rates of between 12-20% for the Mark V Steel, and 30-35% for the MAB-CASA type;
 - Access to free, cheap or illegal wood is a disincentive because the cost of wood is insignificant in charcoal production;
 - Most charcoal producers take advantage of woody biomass over which they have no tenure and control rights;

- The potential role of the charcoal enterprise in socio-economic transformation of the country is not recognised given the meagre allocation of only 0.4% to the biomass related energy in the Energy Policy for Uganda 2002-2012 (budget of USD 1,845million); and
- Production cost of charcoal accounts for only 13.5% of the price of charcoal in peak seasons and 9.3% in off peak seasons.

172. Though the charcoal industry has been traditionally regarded as a poor man's dirty enterprise, the SDC study thinks otherwise. Given its potential to contribute to rural economies if properly managed, the study provides reasons as to why government should invest in the charcoal enterprise (Figure 7).

Figure 6: Why government should invest in the charcoal enterprise (SDC 2010)

- 18% of the households depend on charcoal for cooking while another 78% depends on firewood, totaling 96%. Only 4% of the population access gas, kerosene and electricity;
- Residences and commercial institutions annually consume 568,000 and 273,000 tonnes respectively;
- There is a direct relationship between urbanization and increase in charcoal use in Uganda;
- The amount of wood used for charcoal increased from six million m3 in 1994 to 11 million m3 in 2007;
- The rate of adopting improved charcoal stoves is low, at only 9%. That leaves many women and children exposed to indoor air pollution and the resultant Acquired Respiratory Infections (ARIs);
- Substitution to more environmentally friendly energy sources for cooking is very low and slow because 31% of the population lives below the poverty line;
- The National Biomass Study (2005) indicated that 73% of all districts in Uganda are experiencing a deficit of accessible woody biomass for fuel wood;
- The high rate of deforestation is causing several negative ecological and environmental externalities; and
- Giving charcoal a positive image would transform it for socio-economic transformation

8.4 Contribution to soil and water protection

173. Soil and water protection services provided by forests include soil stabilization including reduction of soil erosion, maintenance of soil organic matter, increasing water infiltration and storage. Forests also contribute to water supply protection through filtering water pollutants and regulating water yield and flow, enhancing precipitation and moderating floods, reducing surface erosion hence soil nutrient protection, protection against sedimentation and trapping of aerial pollutants.

174. The soil protection services to soil nutrient were determined as the loss in stock of soil nutrients reduced or prevented as a result of maintaining forest cover compared to stock of soil nutrients retained elsewhere where the forest cover was removed, replaced or converted. To determine the annual soil nutrient loss from THF

and surrounding lands due to soil erosion, findings from soil nutrient losses due to erosion in Mabira forest reserve were used. Mabira was chosen because several studies were conducted in restored blocks of the forest under FOREAIM initiative (Kizza et al., 2005). On the other hand estimates of soil nutrient losses associated with soil erosion were based on studies conducted in Eastern and Central Uganda (Wortmann, Kaizzi, 1998; Nkonya *et al.*, 2005; Zake *et al.*, 2002; de Jager *et al.*, 2003; McArthur and Sachs, 2011).

175. For forests converted to agriculture, Wortmann and Kaizzi (1998) estimated average Nitrogen, Phosphorus, and Potassium (NPK) losses of more than 130 kg/ha/yr in maize, potato and soybean in central and eastern Uganda, although losses sometimes exceeded 200kg/ha/year. These losses of NPK were much higher than the 30 kg /ha/yr. estimated in Wakiso (Zake *et al.*, 2002), or the 54 kg/ha/yr estimated NPK loss in central Uganda (Magunda *et al.*, 2003). However, de Jager *et al.* (2003) also found soil nutrient losses on farm lands of 200 kg /ha/yr. of NPK in Kabarole in western Uganda, a district equally rich in THFs. Therefore, a modest estimate of 130 kg/ha/yr. NPK loss was adopted for THF (Table 11).
176. For the purpose of this study the aggregate soil nutrient losses due to erosion in the areas surrounding forests during the short and long rains were taken for the stable forest areas older than 10 years. Therefore, aggregate yearly nutrients losses were calculated as 7.94 kg/ha of Nitrogen; 0.43 kg/ ha of Phosphorus; and 17.44 kg/ha, which is equal to 25.81kg/ha NPK lost from the areas surrounding forests (Kizza et al 2005).
177. For woodlands, estimates were drawn from a study on changes in soil chemical and physical properties due to land use conversion in Nakasongola district. Nabalegwa et al. (2006) compared fallowed woodland areas where regeneration occurred over a 10 (and five) year period with areas left open for grazing. Results showed losses of 157 kg/ha/year (Table 11).

Table 11: Soil Nutrient losses from conversion of forests to agriculture

Causes of soil nutrient loss	Soil nutrients in CFR (NPK) tons/ha	Soil in neighboring areas (NPK) tons/ha	Difference (NPK) tons/ha	Land area 2010 Ha	Total loss (NPK) 2010 tons
Soil erosion losses THF and plantations	0.13	0.03	0.105	755.59	78,733
Reduction in stock woodlands	0.60	0.44	0.157	2,553.45	400,407
Total					479,130

Source: Adapted from Nabalegwa *et al.*(2006); de Jager *et al.* (2003); Wortman and Kaizzi (1998); Kizza *et al.* (2005)

178. The estimated monetary value of forest nutrient protection through avoided soil erosion in the area under forest cover was USD 291 million or UGX. 671 billion (Table 12). The largest proportion of the losses was from soil erosion in woodlands especially from keeping large numbers of livestock, which trample the soil and exacerbate soil erosion (Nabalegwa et al., 2006).

Table 12: Estimated value of forest soil nutrient protection from avoided soil erosion by forest categories

Vegetation Type	Area 2010	NPK losses (kg/ha)	Est. NPK losses (tonnes)	Price '000 Ushs/tonne	Monetary Value (million Ushs)	Monetary Value (mill USD)
THF	698.04	0.1042	72,736	1,400	101,830	44
Woodlands	2,553.45	0.15681	400,407	1,400	560,569	243
Plantations	57.55	0.1042	5,997	1,400	8,395	4
Total					670,794	291

Source: NEMA, 2011

179. Hydrological functions of watersheds, given the rainfall that the area receives and its underlying geology and land form include the capacity to transmit water, buffer peak rain events, release water gradually, maintain water quality, and reduce mass wasting (such as landslides). In a baseline survey conducted by FSSD (2007) in a number of project districts, 49% of the respondents indicated that the quantity of water in their area had reduced over the last 10 years. The people interviewed attributed the reduction in water quantity to deforestation along river valleys and water catchment areas. Poor water quality (with deposits of soil particles) was cited by 32.5% of households, mainly from the districts of Nakasongola, Mbarara, Ibanda, Isingiro, Kiruhura, Lira, Dokolo, Amolatar and Sembabule. This was an indication of soil erosion due to deforestation, poor agricultural practices, and extensive conversion of forests into farmlands. Similarly, stripping of forest cover on Mt. Elgon and similar areas has led to landslides with catastrophic consequences including silting of streams and rivers.

180. According to NEMA, there has neither been an independent quantification nor valuation of forestry hydrological or watershed services, nor an active watershed payments transaction in Uganda from which to draw precedent on the contribution and value of forest hydrological and watershed functions (NEMA 2011). However, at the basin level, it is acknowledged that forest conversion to other land uses can affect watershed functions, particularly maintenance of water quality, regulation of water quantity from storm flow and other high flows, and maintenance of the water sediment balance among others. Since the NEMA (2011) study was unable to establish the flows of watershed services and hydrological services of forests, this report recommends that this could be an area for further investigation to provide sufficient basis for inclusion in future National Forest Resource accounts.

8.5 Biodiversity conservation

181. Forestry Department in the late 1990s conducted a biological inventory of 65 major forest reserves in the country leading to the production of the Nature Conservation Master Plan (NCMP) 2002. The forests that were covered in the inventory had a total area of 1.2 million hectares (about 14% of the total land area) and constitute the Permanent Forest Estate (PFE) of the country. The inventory results indicated that **Uganda is one of the most biologically diverse countries in Africa**. The inventory identified 1,259 species of trees and shrubs, 1,011 species of birds, 75 species of rodents (small mammals), 1,245 species of butterflies, 115 species of hawk moths (large moths) and 96 species of silk moths (FD 1996).
182. Following the inventory, forests were categorised as prime, core or secondary according to their conservation importance. As a result, a policy was instituted in 1988 to designate 20% of the forest reserve land as strict nature reserves, 30% as low impact “buffer zones,” and the remaining 50% production zones i.e. areas managed primarily for the sustainable supply of forest products, particularly tropical hardwoods. This zonation was either management zones within a forest or the dedication of entire reserves to different uses (Howard et al 2000). The objectives of setting up of a national network of Forest Nature Reserves are presented in Figure 8 below:

Figure 7: Objectives of forest nature reserves

1. Protection of viable examples of all distinct ecological communities represented within the forest estate in an undisturbed condition, and maintenance of associated natural ecological processes and community succession;
2. Protection of viable populations of all species represented within the forest estate, particularly rare species and those that may be threatened by human interventions elsewhere;
3. Protection in as far as possible, wild genetic resources, particularly the range of genetic variability within economically important species and those of possible future economic importance;
4. Within each major forest, contribute to the sustainable management of adjacent production zones by serving as a permanent reservoir of seed material, dispersal agents, and ecological services that enhance regenerative capacity and productivity;
5. Provision of areas for pure and applied ecological research where natural processes and ecological change can be monitored, and which can serve as a baseline against which to evaluate the impact of human activities elsewhere;
6. Provision of areas for education and raising environmental awareness; and
7. Provision of opportunities for recreational use and tourism development, insofar as this is compatible with the preceding objectives.

Source: FD 2002-Nature Conservation Master Plan

183. Today, much of the country's biodiversity is represented in a system of 710 forest reserves, 10 national parks, and 10 wildlife reserves. Out of the forest reserves inventoried, 14 were classified as both prime and core sites in which large nature reserves with areas averaging 100 square kilometers were established. An additional 25 nature reserves each measuring an average of 32 square kilometers, were also established in forests of secondary conservation importance.
184. Forests of high biodiversity value are found in the Albertine Rift stretching from Masindi to Kisoro. Others are located in Karamoja, Kitgum, Moyo and Yumbe comprising forests in mountainous or hilly ecosystems. The Lake Victoria Crescent also constitutes another belt stretching from the wetland forests of Sango Bay, through the lakeshore forests of Masaka, Mpigi, Mukono and tapering off with the natural forests in Mayuge and Bugiri districts. The importance of biodiversity conservation is presented in Annex 7.

CHAPTER 9: Consumption and trade in forestry products and services

9.1 Consumption in forest products and services

9.1.1 Consumption of timber

185. In 2005, using the information available from NFA and from other sources, FAO estimated the size of the sawn wood market at 240,000 m³ per year equivalent to 800,000 m³ of sawlogs, assuming 30% sawlog conversion efficiency (Odokonyero, 2005). This is equivalent to a per capita consumption level in 2005 of 0.0089 m³ sawn timber, as the population then was 28.8 million. Making allowance for population increase to 34.5 million in 2011 and assuming static per capita consumption levels would bring consumption up to 308,955 m³ in 2011. However, per capita consumption is likely to be increasing and allowance should also be made for this. While population has been increasing by 3.3% per year, the economy in terms of GDP has been growing at 6-7% annually. The construction sector has been growing at an even higher rate, and this is the main market for Ugandan timber. Assuming a 3% per annum increase in per capita consumption from approximately 0.0089 m³ in 2005 to approximately 0.011 m³ in 2011, and taking into account the 2011 population size of 34.5 million, this brings total consumption of sawn wood up to approximately 369,000 m³ in 2011. This is an increase of almost 50% from the 2005/6 estimate and is accounted for by the increase in population of approximately 29% over the period and an increase in per capita consumption of approximately 19% over the period. Assuming a sawing conversion rate of about 25% at present (as most timber on the market in Uganda is now chainsaw milled), this is equivalent to approximately 1,475,000 m³ of roundwood sawlogs per year.
186. Large construction companies, most of whom are members of the Uganda National Association of Builders and Civil Engineering Contractors, represent the bulk of consumers of poles and processed timber entering into the market from formal and informal channels. Telecommunication companies (e.g. Uganda Telecommunications Limited), Parastatals (e.g. UMEME) and government agencies also source large quantities of poles from the market. Where the government is concerned, traceability of verified timber sources will remain a significant concern. Other consumers of timber in Uganda include hardware stores, individual buyers, and corporate companies, not to mention the legal exporters of processed timber and illegal exporters of unprocessed timber. The domestic demand for timber and wood products is increasing exponentially especially with respect to the growing real estate environment. With this in consideration, the need to maintain plantation establishment and expand processing and utilization will be of considerable importance in the coming years.
187. The most common species in the markets in Uganda are: Eucalyptus 43%; Kirundu (*Antiaris* spp) 33%; Pines and cypress (*Cupressus lusitanica*) 5%;

Mahogany (*Khaya* spp) 3% (WWF, 2012). There exists a temporary equilibrium in terms of supply and demand side with respect to recent pricing trends due to stability of supply in 2013. For example, price trend for 12x1x14 ft. pine within the Ugandan market has increased by 92% since 2008 to date. Similarly, prices of 4x3x14 ft. Eucalyptus and 12x2x14 ft. Mahogany have increased by 73% and 46% respectively (SPGS, 2013). These price trends prove that long-term investments in the wood value chain remain an attractive venture for investors as the demand increases exponentially.

188. The demand for hardwoods still remains high, especially considering the growing real estate sector requirements for fine finishing and demand for furniture. Mahogany, *Mvule* (*Melicia excelsa*), *Nkalati* (*Lovoa* spp.), and *Kirundu* remain the species in demand. Most of these hardwoods are imported from the DRC. A market price assessment conducted by SPGS during Q2 of 2013 showed that mahogany imported from the DRC cost 15% more than mahogany sourced from Uganda (SPGS, 2013). This price differential was a result of a rise in tax levies at the DRC border; but the short supply within Uganda continues to ensure a ready market for this source.
189. The SPGS market study conducted by Unique in 2010, forecasts harvesting from plantations forests in Uganda through 2023 at about 50,000 m³ per year (SPGS, 2010). Consumption of industrial wood was 1.3 million m³ in 2008 and this is expected to reach 1.7 million m³ in 2030, mostly from unsustainable harvesting operations in natural forests, domestic plantations or imports. According to FAOSTAT, consumption was one million m³ of hardwood and 350,000 m³ of softwood in 2008. With 3% annual market growth rates and 30% industrial recovery rates, market demand is forecast at 1.7 million m³ by 2030 (SPGS, 2014).
190. Plantation companies, informal and formal processors assessed their profit margins to be in the range of 10-20% depending on their efficiencies (SPGS, 2014). This trend seems to be a constant across the entire value chain, but with profit margins on the lower scale for large companies due to unfair competition from illegal timber and entry of substitutes. Information on the commercial wood value chain markets is scant, as market information systems do not exist in the sector. Furthermore, the illegal timber supply chain makes it more difficult to provide market information that can be backed up by traceability.

9.1.2 Consumption of firewood

191. As pointed out in earlier sections of this report, firewood is the major source of energy for the majority of Ugandans especially in the rural areas but to some extent in some urban centres. The Uganda Household Survey 2005/6 indicated that 78% of households depended on firewood as their source of energy for cooking, heating and lighting. It is also the main energy used for small-scale industries and services such as baking, brick manufacture, lime manufacture, brewing, hotels, schools, hospitals and barracks.
192. As noted earlier, the FD 2003 indicated that 73% of all the districts in Uganda are experiencing a deficit of accessible woody biomass for fuelwood. On average, from

2000 to 2007, the distance travelled to collect firewood increased from 0.73 kilometers to more than one kilometer per day, and in some districts to more than four kilometers per day. The MWE (2007) further revealed that 3.4% of the people used plant residues for cooking, mainly in eastern Uganda, particularly in the districts of Iganga and Kamuli. This has far-reaching effects on soil fertility, because nutrient recycling through these residues is hampered.

193. With these residues now used for cooking, soil nutrient status will quickly drop, with the expected agricultural yield reduction, and the need for the application of expensive artificial fertilizers will unfortunately increase. This constitutes a threat to both food security and income generation opportunities of households. If adequate fuelwood supplies were made available, such risks would be reduced. The survey further indicates that on average, a household uses 150 kg (2–3 m³) of firewood per month: 58.9% of the firewood used for cooking is obtained from natural forests and trees growing naturally on farm, and 34.6% is collected from plantation/planted forests. Approximately 20% of the households use fuel-saving technologies, including energy-saving stoves for firewood and charcoal. This reduces fuelwood consumption by up to 50%, thus saving about UGX 3,375,000 per household per year.

9.1.3 Consumption of charcoal

194. Most of the charcoal is consumed in urban centres. In 1995, charcoal consumption in all urban centres was estimated at 270,000 tonnes annually (FD. 1995), valued at UGX 31.4 billion (US\$31.4 million). By 2006, estimates based on population growth indicated that charcoal consumed in all urban centres was 463,437 tonnes, valued at UGX 141.8 billion (US\$79 million). This indicates a growth in production and trade in both volume and value of charcoal.

9.1.4 Water supply

195. As noted earlier, a FSSD (2007) baseline survey indicated that 49% of the respondents believed that the quantity of water in their area had reduced over the last 10 years due to deforestation along river valleys and water catchment areas. The most affected districts are Masaka, Kumi, Bukedea, Nakasongola, Kabale, Sembabule and Luwero/Nakaseke. districts where households travel the longest distances to access water (2–4 km) were Nakasongola, Rakai, Kumi and Kasese. The long distances result in increased time taken to collect water, especially by women and children. This in turn reduces time for other economic and welfare activities, or for children in attending school. Meanwhile, poor water quality (with deposits of soil particles) was cited by 32.5% of households, due to deforestation (conversion of forests to farmland) combined with poor agricultural practices.

9.1.5 Recreational services

196. The recreational services assumed to be from the country's forest resources and wildlife reserves (and national parks) include: forest walks, chimpanzee tracking,

community walks, bird watching, butterfly watching, and long distance walking (4-5 days). Recreational and aesthetic services from Uganda's forest resources are generally bundled and disparate data are collected on revenues received for the different activities (UWA, 2012; UEPB 2004; NFA, 2011).

9.2 Trade in forestry products and services

9.2.1 Domestic trade in timber

197. Timber harvesting and trade is regulated by the NFTP (2003) and by regulations issued under the Act. The Act contains several specific provisions relating to timber harvest and trade but also makes provision for development of regulations and guidelines by the forest authorities. The delay in gazetting forest regulations has been cited as one of the main constraints in the operationalization of the NFTP 2003 and processes of elimination of illegalities in timber trade.
198. Currently, there are three regulatory instruments describing the official procedures for timber harvesting and trade in Uganda. They are the NFTP (2003) which contains general provisions aimed at sustainable harvesting of timber; the Ministerial Notice issued in 2004 which describes the updated procedure to be followed in harvesting and trading in sawlogs, timber and the chain of custody procedures to be followed (see details in Annex 8); and the Statutory Instrument No 16 issued in 2000 which describes timber values and fees to be paid along with the pitsawing and sawmilling license fees. Timber harvest and trade can be regarded as legal if it complies with the provisions of these instruments.
199. Statistics on the timber trade in Uganda are regularly provided in official reports and plans, but they are unreliable as there is no functioning system in place to capture data on the trade. As a result, the size of the timber market in Uganda is difficult to estimate as the trade is poorly regulated and much of it is undocumented. The WWF (2012) national timber study estimated the sawnwood market in Uganda to be 369,000m³ with a value of UGX 101 billion which includes 9,000m³ of high value mahogany and other sawnwood. This volume of sawnwood is equivalent to 1,444,000m³ of roundwood sawlogs at the current estimated sawing efficiency of 25%. This is equivalent to sawlog production from clear felling of around 7,000 hectares of plantations or selective felling in 72,000 hectares of natural forest. This estimate is based on assessment carried out in 2005 following the formation of NFA when the forestry sector was better regulated and reasonably good quality information on the trade was available. Most of the timber produced is consumed in the domestic market by the construction industry and in furniture manufacturing and other wood products. An estimated 80% is used for roofing with around 10% for furniture and 10% for other uses. WWF 2012 study indicated that about 8,500 m³ sawn timber is imported from eastern DRC annually and much smaller quantities of wood are imported from Kenya, Tanzania and South Africa.
200. NFA records indicate that production from CFRs has reduced from a high of approximately 180,000 m³ of round wood sawlogs in 2008 to approximately 40,000

m³ in 2011 and will reduce further as the remaining mature plantations are cleared. Assuming sawing conversion efficiency of 25%, NFA's roundwood production in 2011 is equivalent to 10,000 m³ sawn wood which is about 3.5% of the estimated market supply in that year. As domestic production from the forest reserves declines, the market is increasingly relying on production from public land and private forests supplemented with imports of mahogany and other species from eastern DRC.

201. Prices of timber on the market have been rising in response to growing scarcity of traditional timbers (pines, cypress, mahogany and *Mvule*). These are being replaced by substitutes. As noted in previous sections, the most common species now found in the markets in Uganda are: eucalyptus 43%; *Kirundu* (*Antiaris spp*) 33%; pines and cypress (*Cupressus lusitanica*) 5%; mahogany (*Khaya spp*) 3% mainly from DRC but also from South Sudan and small amounts from local sources in Uganda; and 16% consisting of other species including *Nkalati* (*Lovoa spp.*), *Aningeria* and *Chrysophyllum spp*. *Mvule* (*Milicia excelsa*), teak (*Tectona grandis*), *Namukago* (*Funtumia spp*), *Nkunjanyana* (*Blighia unijugata*) *Mugavu* (*Albizzia coriaria*) and *Musambya* (*Markhamia lutea*, *Mpewere* (*Piptadeniastrum africana*), *Lufugo* (*Celtis spp*) and *Musizi* (*Maesopsis emini*).
202. Timber trade in Uganda is characterized by poor coordination within the commercial forestry sector leading to a fragmentation of the value chain in terms of stakeholder roles and responsibilities as well as in service provision. Due to the unregulated business environment, illegal timber suppliers remain powerful actors within the supply chains, controlling approximately 80% of the value chain business (WWF, 2012). These suppliers determine and control prices due to the high demand and low supply dynamics. The presence of illegal timber suppliers and importers of cheap and low quality timber products has led to the lowering of prices and profit margins, making it difficult for large established companies to compete fairly in the market. As a result of these supply and demand disparities, buyers are generally left with no alternatives but to buy whatever timber comes into the market, in most cases at exorbitant prices.
203. Construction companies and government are the large buyers of timber on the market who, even with tendering processes in force cannot find single suppliers for their entire current demands and most often have to source from multiple suppliers. In such situations chain of custody is not a priority due to the scarcity of timber on the market. On the downstream side, unregulated informal timber traders control more than 50% of the market share. The domestic demand for timber has remained higher than supply which has ensured availability of a ready market and the ability of suppliers to influence prices. While the domestic demand for timber cannot be satisfied by current supplies, the demand for timber and other wood products from South Sudan has further exacerbated the scarcity of timber on the domestic market.
204. The informal supply chain is dominated by private individuals and small businesses that operate under an unregulated business environment. Their roles have been largely distributed across illegal felling, transportation, illegal and legal

trading as well as processing and value addition. The informal market supplies timber to private individuals for construction of residential housing and other purposes. The market now also receives timber imports from South Sudan, and substitute products by Chinese companies.

205. The trade in harvested timber is by large established companies who supply poles, as well as numerous small associations of timber dealers within Kampala and other urban areas. The legal timber is estimated as comprising only 20% of the supply chain. Most of the timber traded through the individual suppliers and small associations is from unverified sources and is estimated to comprise 80% of the value chain. This variance poses numerous setbacks on competitiveness by tax paying companies, as well as loss of revenue to the government through the illegal timber trade.
206. Primary processing of timber is conducted by large companies and small and medium enterprises with respect to treatment and supply of poles (for use inside Uganda and exported) and sawn wood. Processing of charcoal and firewood is also conducted by companies, individuals and communities with larger companies currently developing markets for sustainably sourced charcoal. The sustainable processing of bio-fuels from commercial sources remains important in ensuring that pressure on natural forest resources is reduced and that climate change mitigation efforts are supported. Secondary processing and utilisation is by small and medium enterprises and large companies as well as the informal sector for joinery, roof trusses, furniture and other wood products such as plywood. The expansion into development of more wood products (including particleboard) for the local and export markets that would further support utilization needs more targeted research and development.

9.2.2 Domestic trade in non-wood forest products (NWFPs)

207. **Honey and bee products.** Apiculture involves keeping of bees to get honey and wax. Uganda is endowed with a rich variety of bees e.g. *Apis mellifera scutellata*, *A. mellifera adansonii*, *A. mellifera monticola*, and several species of stingless bees (Ogaba, 2002). Honey production in Uganda ranges between 4,000 and 9,000 metric tonnes. Uganda's honey production potential is estimated at 100,000 to 200,000 metric tonnes of honey per year (Maku, 2004). In 2009, it was reported that apiculture contributed about USD 17 million to the national economy. Whereas the market for honey is considered to be available in Uganda, information is not readily available. Arua Park is the main honey-trading place in Kampala where traders travelling with honey from different parts of the country converge (Maku, 2004). Some of the buyers come from neighbouring countries, mostly from Rwanda and Kenya.
208. **Aloe Vera.** There are about 130,000 Aloe Vera farmers in 26 districts in Uganda. The majority of the country's Aloe Vera production comes from central and western Uganda (Sessanga, 2007). At an average yield of 20 tonnes/ha production is

equivalent to 7,200 tonnes per year for 380 ha under production. Aloe Vera and its by-products are used for the manufacture of toothpaste, medicinal liquids, cosmetics (soaps and skin creams), and as animal feed. Aloe Vera is one of the leading raw materials for Uganda's cosmetics industry (UEPB, 2004).

209. **Tonic root.** This is the economic part of *Mondei whytei* and it is largely perceived as a sexual stimulant, and is used as appetizer to flavour food and drinks, and as stimulant for milk production in lactating mothers. Chewing the roots is also believed to help clear hangovers from excess alcohol intake as well as for controlling stomachache. The roots are also reportedly used for treating gonorrhoea and for contracting the uterus in women following delivery. The study (Agea, *et al.*, 2008) estimated that over one tonne of *M. whytei* roots are consumed every month in Kampala. Men and adolescent boys are the main consumers, although there is much 'hidden' consumption by women and adolescent girls. A survey undertaken in Kampala showed that *Mondei whytei* consumed in Uganda generally is sourced from Luwero, Mityana and Mubende districts in central Uganda. Wholesale traders estimated that the Kampala market consumes about 5-6 bags per month, approximately 360 kg/month at a price of UGX 30,000/kg. The highest season of production and consumption are the rainy season months of March to June. At the national scale the market was estimated to be on average 1.2 metric tonnes per month (although this may fluctuate in the dry season when the production is lower) (NEMA, 2011).
210. ***Prunus Africana*.** This is classified by IUCN as vulnerable species which led to its listing in Appendix II of CITES. This listing had an impact on its production in the range countries including Uganda (NEMA 2011). Commercial production is in the districts of Kasese, Bundibugyo, Kabarole, Mukono, Jinja and Mbale. The bark is traded internationally with major importers in Europe, Asia and USA. The bark powder is used to treat prostate cancer, as well as beer fermentation troughs (beer boats), in traditional medicines, fuelwood, building poles, and as timber (NEMA 2011). The bio-trade programme report on the country indicated that Uganda has a potential for producing 50 kg, *Prunus Africana* per annum and more if policies are put in place to ensure sustainable management of forests with *Prunus africana* stands (UEPB, 2004).
211. ***Mutuba* (*Ficus natalensis*).** Bark cloth made of this plant is widely used in Uganda. In Uganda, specifically central Buganda, bark cloth production started in the 13th century and played significant cultural, financial, social roles. Locally known as *mutuba* (*Ficus natalensis*) is a tropical fig tree species that is indigenous, widely grown and has long been a part of the traditional agro-forestry system (Katebalirwe, 2010). Bark cloth is also exported to Germany (Bark Cloth Oliver Heinz Germany), and to designers in the UK and the Netherlands (Mugula *et al.*, 2010). The high quality bark cloth (*kimooto*) is used regularly for clothing and fashion designs both for men and women's wear for official functions in Uganda, especially in central Uganda. Because of its softness the *kimooto* is regularly used in designs for wrapping and to add style and texture in other industries. The quality bark clothing is used for traditional functions including wrapping of corpses before burial. Bark

cloth is produced throughout central Uganda although production is centred in Masaka and Rakai districts. The customary leaders within central Uganda are encouraging the growth of the art of bark cloth making. The wholesale market for bark cloth in Uganda is difficult to estimate because the traders are in many places and monitoring of production is poor. Generally, traders believe that the total production of the good quality *kimooote* is about 5,000 pieces of cloth in three months (as received in Kampala). The price for the *kimooote* ranges between UGX 50,000 and 80,000 (USD 14.5-22.7 per piece). However, the price reduces as the quality fades to about UGX 25,000 (USD 7.1). For the average quality bark cloth production is estimated at about 20,000 pieces every three months and the price ranges between UGX 15,000 and 25,000 (USD 4.2-7.1) (NEMA 2011).

212. **Bamboo.** This is of great importance to most village populations in Uganda. Rural people collect bamboo for use as building material and its shoots for consumption (Forestry Research Institute, 2000). Houses in some rural areas are constructed using bamboo, with roofs, wall partitions, panelling, mats, ladders, blinds and furniture. Bamboo is also used in the production of certain fishing tools, paper, and is sometimes used to make musical instruments such as flute and the guitar. In Uganda, most bamboo resources are located in a few major sites, namely the north western district of Arua, the western and south western districts of Hoima and Kabale, in addition to significant portion of the resource in the eastern district of Mbale. Most of the bamboo is located in protected areas falling under government control. *Arundinaria alpina* is one of the species that generally offers high utilization potential and is abundant in most sites (Mukadasi, 2009). Bamboo harvesting and processing in Uganda is concentrated in the Mt. Elgon forest in Mbale district, Rwenzori in the west and Echuya, and Bwindi and Mgahinga in Kabale district in the south western corner of the country. Bamboo shoots are a major source of income to communities adjacent to forests such as the Gishu in Mbale where they are regarded as a traditional delicacy (Mukadasi, 2009). So far, a total of 52 species have been documented. The mountainous northern part of Mt. Elgon is one of the richest areas for bamboo. Surveys show it holds at least 50 species, 30 of which differ from those in central and southern Uganda.

213. **Shea butter.** Shea nut trees grow extensively in the northern and north eastern part of Uganda, largely in the wild. The tree is also found along the borders of Congo (north of Lake Albert) and Sudan, with small and isolated populations in Nakasongola. Shea nut products were used locally until 1994 when USAID started financing a community-based programme for processing shea nut oil in northern Uganda and developed a conservation programme for the shea nut trees. Shea butter and its products are also exported and sold in Europe and Japan where it is used in the production of chocolates and in the cosmetics industry (soaps, creams, moisturizers, hair conditioners, and shampoos). The variety of Shea nut, which grows in Uganda, is *Vitellaria nilotica* which is preferred by the cosmetics industry due to its higher oil fraction (Ferris *et al.*, 2001). This variety is primarily grown in northern Uganda. The commercial development of shea products in Uganda remains at an embryonic stage, with little documentation on the market dynamics of the crop within Uganda and the surrounding countries. Potential shea nut production in Uganda is

estimated to be between 70,000–385,000 metric tonnes, this would yield between 15–80 million liters of oil using traditional methods, at a value of US\$ 30 million. However, current estimates show that the total quantity of shea nuts traded through the northern Ugandan markets per year is approximately 6,000 tonnes equivalent to USD 0.66 million (Ferris et al., 2001; NEMA 2008).

214. **Tamarind (*Tamarindus indica*)**. This is a valuable tree species in Uganda for its fruits, timber, leaves and shade. It is mainly found in the eastern part of the country. Household surveys carried out in eastern Uganda from July 2004 to February 2005 estimated mean production of *T. indica* at 127kg/ha/year and 84 kg/ha/year from open woodland and cropland areas, respectively, a statistically significant difference (Mukadasi, 2010). The net present value from *T. indica* products was US\$ 893/ha in woodland and US\$ 684/ha in cropland annually. In terms of foreign export earnings, *T. indica* juice from woodland and cropland was estimated to generate US\$ 0.03/ha and US\$ 0.02/ha, respectively (Mukadasi 2010).
215. **African Tulip (*Spathodea campinulata*)**. Like the *Mondei whytei*, *Spathodea campinulata*, this is an aphrodisiac for women. It is called “Kifabakazi” in the Luganda language and it is believed that when it is consumed or added to food it enhances women’s sexual desire. According to traders in Kampala, *Spathodea* is sourced from Masaka, Wakiso, and the Busoga regions of eastern Uganda. Based on the units used in the market, about 10 bags (60kg) of the product come to the Owino market in Kampala each month. Traders estimate that elsewhere in Kampala about 10 additional bags could be sold per month. Throughout the country, and largely based on information from central Uganda, overall market supply would be about 40 bags each month. The price is quite low at UGX 20,000 (USD 5.7) per bag (NEMA 2011).
216. **Gum Arabica**. This is a product used in confectioneries, soft drinks, alcohol, pharmaceuticals, printing, ceramics and textile industries, and as an ingredient in local medicine. In Uganda it is mainly produced in Karamoja. The main tree species that are used to produce Gum Arabica are *Balanites aegyptica*, *Acacia senegal*, *A. seyal*, *A. sieberiana*, *A. gerrardii* and *Lanea humilis* but the dominant species producing gum arabic are *A. senegal*, *A. seyal* and *A. sieberiana*. Local uses of Gum Arabica are food, gumming spears and pots, gluing arrows, gluing broken stools, calabashes and joining leather (Egadu et al., 2007). Karamoja has the potential to produce 20,000 tonnes of Gum Arabica. However, current production is only likely to reach 7,700 tonnes in the short-term. The Uganda Gum Arabica Co-operative Society (TUGACS) brings together over 2000 farmers in Moroto district with the capacity to produce 4,700 tonnes under *Acacia senegal* and 3,000 tonnes of *Acacia seyal* trees (NEMA, 2011).
217. **Mushrooms**. Another important NWFP is the mushroom. Various types of mushrooms, both wild and domesticated, are consumed locally. Whereas estimates of commercial mushroom production can be made, the greater contribution of mushrooms is to the subsistence diet at household level. Subsistence consumption of mushrooms in Uganda is generally unknown. However, estimates for mushrooms

can be made based on discussions held in the markets in Kampala and the related supply chain simulations based on discussions with traders. Wild (and farmed) mushrooms sold in Kampala are generally sourced from Mityana, Mubende, Luwero and parts of Mukono, Buikwe, and Kayunga districts in central Uganda. However, production is prevalent throughout the country, especially in moist forest areas. Supply of mushrooms in Kampala markets was estimated at four metric tonnes/month. It is sold in 15–20 kg tin containers known as the “*Debbe*.” Estimates of sales are equivalent to about 15-20 bags/month for the 20 main markets in Kampala. A 15–20 kg tin debbe of mushrooms is sold at UGX 60,000 (USD 17) (NEMA, 2011).

9.2.3 Illegal logging and timber Trade

218. Starting in the 1970s when there was a general breakdown of law and order in the country, illegal harvesting of timber became a major challenge in Uganda. By the end of the 1980s and into the mid-1990s, illegal forest harvesting and encroachment were the major forest protection issues. They challenged the very existence of the FD, so that during the latter half of the 1990s, it became clear that the FD, as a line government department was unable to carry out its mandate in general and handle these issues in particular. As a result, the FD itself initiated discussions aimed at reforming the forestry sector (Kamugisha-Ruhombe 2007).

219. **Illegal logging is a key contributor to forest degradation and deforestation in Uganda.** Most of the illegal logging is carried out using pitsawing to mill the timber. Very little pitsawing was done until the 1970s when the sawmilling industry collapsed following the general economic collapse in the country. Pitsawing increased tremendously between 1985 and 1995 due to increased demand for timber from various sectors, including the construction industry, so much so that by 1990, almost all the timber consumed in the country came from this source. Those **engaging in illegal logging include:**

- Local communities in search of basic income;
- Local communities working as agents of distant traders;
- Local and national political leaders;
- Some individuals in security agencies;
- Some employees in the forestry sector;
- Uncontrolled licensed pitsawyers;
- Refugees and Internally Displaced Persons.

220. Currently illegal pitsawing poses one of the greatest administrative challenges to forest managers in Uganda. The unsustainable harvest of forest products has led to removal of all valuable tree species, especially the mahoganies, *mvule* (*Melicia excelsa*) and *musizi* (*Maesopsis eminii*). **The illegalities manifest in the form of:**

- Outright stealing of trees in the forest with or without the connivance of government and other powerful officials;
- Falsification of documents with respect to volumes of timber, species (high value species being declared as low value), and timber sizes;

- Forging of hammer marks;
- Bribing of officials to allow them move illicit timber;
- Under-declaration of taxes; and
- Milling timber by chainsaws (both licensed and unlicensed pitsawyers)

221. It should be noted that there is no clear law outlawing use of chainsaws in milling logs into timber. However, because of its wastefulness, technical guidelines allow use of chainsaws only in felling, snedding, and bucking. Consequently, the minister, in his Public Notice of 12 November 2004 declared chainsawn timber as contraband and “... *will be confiscated at site, together with the power-saw and any other vehicles used for transportation. This is in addition to heavy fines and prosecution*” (WWF 2012). This ban applies to timber sawing whether the activity is licensed, on private land or in PAs (Kamugisha-Ruhombe, 2007).

9.2.4 Illegal harvesting of other forest products

222. Apart from timber, there are many other forest products that are often removed from forests illegally for both commercial and subsistence purposes. They include charcoal, firewood, rattan, sand, clay, poles and others. Illegal charcoal burning in CFRs is widespread especially in reserves within 50 kilometers of the main urban areas where there is high demand. Charcoal burning is more destructive than timber harvesting as it entails collection of saplings and juveniles of plants irrespective of the species. The exorbitant cost of modern cooking appliances, and high electricity tariffs and gas are the major cause of the high demand for charcoal.

223. **Sand mining** and brick-making around major urban areas cause serious damage to the land when it is done illegally because it does not provide for restoration work after extraction. Some of these activities, especially around Kampala, Entebbe and Jinja are backed by influential people in society.

224. **Firewood** for commercial purposes is more destructive than that collected for subsistence use by people living near the forests. Firewood is often sold to small-scale industries, service industries (such as bakeries, brick-making, breweries, hotels, schools, sauna clubs, tea factories, and hospitals) and for subsistence use by urban dwellers. In CFRs within 80 kilometers of Kampala, illegal firewood harvesting is one of the most destructive activities. In an attempt to meet their insatiable need, illegal loggers transport small logs (billets) disguised as firewood. The logs are eventually converted into rough construction timber at site (Kamugisha-Ruhombe, 2007).

9.2.5 Trade in endangered species

225. Timber species that are threatened in the Ugandan home range include *Diospyros mespiliformis*, *Drypetes gerradii*, *Entandrophragma cylindricum*, *Funtumia africana*, *Guarea cedrata*, *Khaya anothotheca*, *Khaya grandifolia*, *Khaya senegalensis*, *Ocotea usambarensis*, *Olea hochstetteri*, *Premna angolensis* and

Vitex keniensis (Kamugisha-Ruhombe, 2007). There is thriving illegal local and regional trade in the Khaya and Entandrophragma species to the extent that, in an attempt to keep the remaining trees to re-seed the forests, these species are now not included in any list of harvest trees after stock mapping. In the 1960s, the minimum diameter at breast height for cutting these high value species was more than 100cm, but with the dwindling stock this was reduced to 70cm in the 1970s, and has now stabilised at 80cm. In the 1990s, there was extensive trade in the bark of *Prunus africana* (a CITES listed species), which was illegally harvested especially from the Kalinzu and Maramagambo CFRs. This reduced considerably after the FD staff, who were abetting the illegal activity were punished. It should also be noted that in Uganda, some tree species such as the *Cordia spp.* and *Aningeria spp.*, have been cut in the recent past to a level where they are considered threatened locally (Kamugisha-Ruhombe, 2007).

9.2.6. Export trade and value

226. The key forest products exported include wood in the rough, particleboard and similar board of wood or other ligneous materials, plywood, veneered panels and similar laminated wood, builders' joinery and carpentry of wood, fibre board of wood or other ligneous materials, fuelwood; wood in chips or particles; sawdust, wood waste, and scrap tableware and kitchenware of wood, articles of wood, densified wood, in blocks, plates, strips or profile shapes, tools, tool and broom bodies and handles, shoe lasts of wood, veneer sheets and sheets for plywood and other wood sawn lengthwise, wooden frames for paintings, photographs, mirrors or similar objects, and railway or tramway sleepers (cross-ties) (Uganda Forestry Association 2013).
227. Countries where the products are exported to include the United States of America, Kenya, Somalia, Sudan, Tanzania, Burundi, United Arab Emirates, Austria, Belgium, Taipei-China, Hong Kong-China, DRC, Netherlands, Australia, South Africa, Canada, Qatar, Mauritius, Iraq and Ethiopia. The total export value over a five-year period (2008-2012) was estimated at USD 35,643,000. This value excludes the export value of *Prunus africana* bark exported by a private company, Cudwell Ltd that had a concession to export up to 176 tonnes of bark annually for the period 2011-12. This volume has been increasing over time from the mid-2000s (Uganda Forestry Association, 2013).
228. An analysis of the value of wood products exported by Uganda during the years 2010, 2011, and 2012 indicates that wooden table and kitchenware dominated the exported products. It is also shows that wood in the rough provided a significant contribution to the export volume. However, it must be noted that export of wood in the rough is prohibited (unless its value has been added and it is graded). It is, therefore, suspected that the wood in the rough recorded represents re-exported products. It is common practice for timber in transit from neighbouring countries to be improved through value addition and then re-exported.

9.2.7. Forest products imports and value

229. Wood and NWFPs imported include natural honey, matches, fuelwood in logs/billets and twigs, bamboo products, wood in the rough treated with paint, other coniferous wood in the rough, doors and frames, veneer sheets and sheets for plywood, particleboards and similar boards of thickness between 54mm-9mm, Oriented Strand Board (OSB), statuettes and other ornaments of wood, wooden frames for paintings and photographs, windows and French windows and tools, tool bodies, tool handles, broom and brush handles, wooden furniture.
230. The countries where these products are imported from include Kenya, China, Great Britain, Hong Kong, India, Malaysia, Rwanda, Thailand, United Arab Emirates, Congo, Italy, United States of America, Australia, Japan, Ghana and Nigeria. Over the five-year period, 2008-2012, and specifically in terms of the value of the imports, the total import value in local currency was UGX 222 Billion (USD 101.328 million). Of the products imported, wooden furniture contributed about 50% of this value with UGX 101 billion (Uganda Forestry Association, 2013).

9.2.8. Future outlook in external trade

231. The current trend indicates that the total balance of trade was negative; this does not depict a healthy picture for the economy. However, the potential for export is immense in the near future. The big investments in industrial plantations and forestry industry's main investments in pines and eucalyptus processing are likely to result in increases in the export of transmission poles, chips, particle boards, block boards, sawdust and many other wood products. This is likely to sufficiently improve the trade balance. Currently, the volume of timber available with the afforestation efforts will not satisfy the market by 2025. A more robust plantation and forestry investment industry is needed for the country to realize its full potential in forestry's positive contribution to the economy.

CHAPTER 10: Carbon balance sheet based on forest cover

232. During the estimation of Uganda's carbon balance, several assumptions were used. The most important is one for determining the carbon balance as a form of baseline scenario. This is directly borrowed from one of baseline scenarios likely to be used during the national REDD+ process of estimating forest reference levels. It is based on a number of assumptions.
233. These estimates of emissions or removals from a selection of forest activities, all of which are fully compatible with REDD+ activities for Uganda, are considered, largely through first or second-order analysis of publicly available data and help to evaluate which activities contribute most significantly to emissions and removals. There are several possibilities that could be included in the preparation of an ideal carbon balance. These include but are not limited to:
- a. Activities that result in carbon loss through **deforestation**; such as
 - i. Deforestation itself;
 - b. Activities that result in carbon loss through forest **degradation**; such as
 - i. Timber harvesting
 - ii. Fuelwood collection (for firewood and charcoal burning)
 - iii. Forest fires
 - c. Activities that result in carbon maintenance through **conservation of carbon stocks**; such as
 - i. Maintenance of and protection of forest conservation areas such as national parks, nature reserves in CFRs, and similar conservation actions on private and communal areas
 - ii. Long lasting use of forest products
 - d. Activities that result in **carbon stabilization** through sustainable management of forests; such as
 - i. Protection of forested areas from illegal harvesting, settlement, and other activities;
 - ii. Preparation and application of guidelines, procedures, and codes for sustainable harvesting methods and practices;
 - iii. Preparation and application of other silvicultural and socio-silvicultural guidelines, procedures and codes, methods and practices.
 - e. Activities that result in **carbon gain** through or resulting in enhancement of forest carbon stocks; such as
 - i. Restoration through (either direct protection or assisted and affirmative silviculture)
 - ii. Agro-silvo-pastoral activities with strong links to smart agricultural practices
 - iii. Soil conservation in its own right
 - iv. Direct afforestation and reforestation

- f. There are also several possibilities of the pools and **greenhouse gases (GHGs)** that could also be included in the preparation of an ideal carbon balance. These include but are not limited to:
 - i. Above ground live tree biomass (required)
 - ii. Belowground live biomass (required)
 - iii. Dead biomass
 - iv. Litter
 - v. Soil carbon
 - vi. Carbon dioxide (CO₂) (required)
 - vii. Methane (CH₄)
 - g. Information and data limitations may not allow the consideration of all the above named potential sources of emissions (carbon loss) or sinks/removals (carbon gain), partly, because of the following reasons:
 - i. Mapping of Uganda's forests, under the FRA of the FAO and for REDD+ baseline reference scenario setting, are in the process of preparation and will not be complete until sometime in 2016/2017 (Figure 1);
 - ii. Considerable technological, technical, and financial capacities needed to be enhanced from their current levels to those
 - iii. commensurate with such an undertaking; and
 - iv. Estimates made in this carbon balance will need to be adjusted as new information is obtained, but on a scale that covers the whole country.
234. Choosing the definition of the forest for use in estimating the carbon balance was not possible. This is because the country is still considering options for a forest definition that takes into consideration:
- a. Existing national definitions that the country has been using including some of the following:
 - i. Under the NFTP (2003)
 - ii. Under the National Biomass Study – Technical Reports
 - iii. Under the FAO assisted Forest Resources Assessments
 - iv. Under the convention on climate change (UNFCCC's) CDM arrangements
 - v. Based on vegetation description, e.g. that of Langdale-Brown et al 1964.
 - b. Definitions that allow for policy approaches and positive incentives at the farm and household level, landscape level, jurisdictional level, and national level;
 - c. Thus, the summary contains a mix of the of the above, but also the three possibilities based on whether the definition of the forest is:
 - i. 10% forest (canopy) cover
 - ii. 20% forest (canopy) cover
 - iii. 30% forest (canopy) cover

235. The actions (or activities) that are used as the basis for estimating the carbon balance are, in this case equivalent to the REDD+ activities. These activities were agreed upon by all countries under the UNFCCC in 2010 as being the following:

- i. Reducing emissions from deforestation
- ii. Reducing emissions from forest degradation
- iii. Conservation of forest carbon stocks
- iv. Sustainable management of forests
- v. Enhancement of forest carbon stocks

236. Thus, while it is most ideal to include all activities in the analysis of the carbon balance, it may make sense to start first with the areas for which information is available, adding additional activities as time, data, and resources allow. Table 13 below provides a summary of carbon balance sheet for Uganda. The detailed tables from which this summary is derived are presented in Annex 9.

Table 13: Summary of carbon balance sheet for Uganda

		Summary of carbon balance sheet in Uganda since 1992 to 2015						
			Forest Land[1]	Other Wooded Land[2]	Other Land[3]	Total All Lands	Source of Information	Remarks
	Area(ha) (1990)	Ha	4,933,746.00	1,422,193.00	14,109,006.00	20,464,945.00	The difference between Report 2009 (a) and Report 2009 (b) is that Report 2009 (a) uses the area of 1990 which was calculated in 2009 while Report 2009 (b) uses the areas derived for 2005 which were themselves calculated in 2009.	
1992	Average (aggregated) Carbon Standing Stock (tC/Ha)	tC/Ha	105.55	55.34	45.39	68.76	Obtained by summing up all the pools	
	Total Carbon Standing Stock (tonnes) per LAND COVER/USE/ST RATUM	Tonnes	520,756,890.30	78,704,160.62	640,407,782.34	1,239,902,231.89	Estimated by multiplying Average Carbon Standing Stock per land cover class (tC/Ha) with corresponding area for that cover class	
2002/3	Average (aggregated) Carbon Standing Stock (tC/Ha)	tC/Ha	124.9	49.19	41.59	71.89	Obtained by summing up all the pools	Restoration programmes in place(FACE),Transfer of forests such as Kibale, Bwindi, Semliki &Elgon to UWA
	Total Carbon Standing Stock (tonnes) per LAND COVER/USE/ST RATUM	Tonnes	616,191,199.77	69,970,465.00	586,760,114.19	1,272,921,778.96	Estimated by multiplying Average Carbon Standing Stock per land cover class (tC/Ha) with corresponding area for that cover class	
2009(a)	Average (aggregated) Carbon Standing Stock (tC/Ha)	tC/Ha	101.61	51.12	39.07	63.93	Obtained by summing up all the pools	Transition from FD to NFA, high destruction occurred with

	Total Carbon Standing Stock (tonnes) per LAND COVER/USE/ST RATURE	Tonnes	501,320,608.86	72,700,967.24	551,276,596.72	1,125,298,172.82	Estimated by multiplying Average Carbon Standing Stock per land cover class (tC/Ha) with corresponding area for that cover class	districts only wanting to raise revenue
2009(b)	Average (aggregated) Carbon Standing Stock (tC/Ha)	tC/Ha	124.65	48.63	38.25	70.51	Obtained by summing up all the pools	Plantation harvesting in UWA forests, encroachment in most CFRs, forest degradation
	Total Carbon Standing Stock (tonnes) per LAND COVER/USE/ST RATURE	Tonnes	448,061,994.25	144,434,610.17	531,025,546.77	1,123,522,151.19	Estimated by multiplying Average Carbon Standing Stock per land cover class (tC/Ha) with corresponding area for that cover class	
2015 Estimates for 2000	Area representing the 2000 for this land cover/use type	Ha	3,869,480.00	2,376,650.00	13,463,870.00	19,710,000.00	Total area represents the sum of all lands in 2000, calculated in 2015 BUT it does not include the area covered by Water bodies. It is derived from National Forestry Authority (NFA): Unpublished (2015) : John Diisi & Edward	Massive restoration by NFA,SPGS, private farmers
	Average (aggregated) Carbon Standing Stock (tC/Ha)	tC/Ha	124.9	49.19	41.59	71.89	The Average (aggregated) Carbon Standing Stock (tC/Ha) was derived from 2002/3 National Biomass Report (see above).	

Sources of information: The information used to compile this table was obtained from existing and publically available data. For example, information on:

- Total Standing Stock of Biomass (Air Dry) in Tonnes/Ha for each Land Use/Cover Class and Project Area (1992) was obtained from the “FD. 1992. National Biomass Study: Technical Report, Phase I – November 1989 – December 1991 (Page 117)”;
- Total Standing Stock of Biomass (Air Dry) in Tonnes/Ha for each Land Use/Cover Class and Project Area (2002) was obtained from “National Biomass Study Technical Report September 21, 2002 FD, MWE, National Biomass Study Technical Report of 1996-2002 Paul Dichi (Table 5-4 Gross national biomass standing stock: page 61)”;
- Total Standing Stock of Biomass (Air Dry) in Tonnes/Ha for each Land Use/Cover Class and Project Area (2009) was obtained from “National Forestry Authority (2009) National Biomass Study. Technical Report (Table 3-12 National woody Biomass by Class: page 57)”;
- Other information was obtained from the NFA’s GIS/RS unit through personal communication;
- Other information was obtained from the IPCC and World Bank’s Forest Carbon Partnership Facility’s Resources for REDD+

CHAPTER 11: Forest restoration

11.1 Forest Landscape Restoration Project-IUCN/FSSD/NFA

237. The forest cover of Uganda is currently estimated at less than 10% of the total land area. This current situation is exacerbated by land degradation which is associated with soil erosion. In order to mitigate this, Uganda has prioritized forest restoration in targets that are provided in Government of Uganda's Vision 2040, National Development Plans (I & II), and the National Forestry Plan (2011/12-2021/22). The main target is to restore forest cover from the current less than the 10% to the 1990 level of 24% of the land area. This national aspiration was translated in the pledge that Uganda made in the Bonn Challenge to restore 2.5 million hectares of land to forests using the Forest Landscape Restoration (FLR) approach. FLR is a long term process of regaining ecological functionality and enhancing human well-being across deforested or degraded landscapes (MWE 2015b).

238. Against this backdrop the government through the MWE in partnership with the IUCN and other government agencies conducted a study to comprehensively assess the potential for FLR in Uganda (MWE 2015b). The study was to help the country to determine deforestation and land degradation trends, available area for FLR, hot spots for FLR interventions, and site specific restoration options for various ecological landscapes among other parameters. The country was stratified into seven ecological zones namely:

- Afro-montane
- Karamoja
- Lake Victoria Crescent
- Northern moist
- Southeast L. Kyoga floodplains
- Southwest rangelands
- Western mid-altitude

239. The purpose of the classification was to generate relatively homogeneous landscapes in terms of restoration-relevant characteristics to enable restoration interventions to be implemented.

240. The study found that the Northern moist, South-west rangeland, and Western mid-altitude zones were the most deforested and degraded landscapes between 2005 and 2015, both in terms of coverage and magnitude. These were followed by the South East Lake Kyoga flood plain, and Afro-montane and Karamoja respectively (Table 14).

Table 14: Deforestation and land degradation at landscape level between 2005 and 2015 in Ha

	Landscape zonation	Deforested land	Degraded land
1	Afro-montane	133,613	8,997
2	Karamoja	684,161	0
3	Lake Victoria crescent	706,376	205,640
4	Northern moist	4,553,045	932
5	South East Lake Kyoga flood plain	193,094	9,002
6	Southwest rangeland	1,506,253	347,428
7	Western mid-altitude	1,890,117	554,055

Source: MWE (2015)

241. Based on analysis of satellite imagery, the study identified 10 restoration hotspots using set criteria (see Annex 10). These were largely areas that had experienced high rates of deforestation and degradation between 1990 and 2015 (MWE 2015). The majority of them were protected areas. These were easier to work with because they were less contentious given their legal status. They included Kasaato CFR, Muinaina CFR, Kagombe to Kijuna CFRs, Mt Kadam and Mt. Moroto, Lwamunda CFR, Mt. Elgon area, Amuria district, Buvuma Islands and South Busoga CFR, Igwe and West Bugwe CFRs. The total potential area for FLR in the different landscape zones is presented in Table 15 below:

Table 15: Potential acreage for restoration in each landscape

No	Landscape zonation	Acreage of restoration (Ha)
1	Afro-montane	691,161.1
2	Karamoja	1,775,156.2
3	Lake Victoria crescent	394,491.0
4	Northern moist	2,631,314.7
5	South East Lake Kyoga flood plain	393,639.5
6	Southwest rangeland	1,154,340.1
7	Western mid-altitude	1,039,519.5

Source: MWE (2015)

242. Restoration options which were selected included agroforestry, afforestation, reforestation, natural regeneration, and riparian vegetation restoration in riverine buffer zones. Details of the different options, zones where they were applied, and tree species that were recommended are provided in Annex 11.

11.2 Agroforestry

243. Growing trees with crops has been practiced in many farming systems in Uganda. For example, in the central region where much of the Robusta coffee and bananas are grown, tree species such as *Ficus*, *Albizia coriaria*, *Spathodia nilotica*, *Markhamia lutea*, and *Maesopsis eminii* have for ages been grown as shade trees for those crops. In the Mt. Elgon, the Rwenzori, and other highland areas where Arabica coffee is grown, other tree species such as the *Cordia africana*, *Croton* and

Gravellea robusta are grown as shade trees for coffee. In areas where tea is grown such as the Kabarole, Bushenyi, Mityana, and parts of Mukono/Buikwe, trees such as the *Albizia coriaria*, and *Gravellea robusta* are grown as shade trees for the tea plants. Researchers have introduced new agroforestry species for improvement of livestock meat and milk production. These include the *Calliandra calothyrsus*, *Morus alba*, *Vernonia amygdalina*, *Sesbania sesban* and *Leuceana leucocephala*. Other forms of agroforestry that have potential for restoring tree cover include trees planted along boundaries, in homesteads, as windbreaks, hedgerows, and in woodlots.

11.3 Community tree planting programme

244. Government has since 2009 supported a community tree planting programme through an annual budgetary allocation of UGX 1 billion to the NFA to raise seedlings for distribution to communities. The NFA works with the DFOs who identify communities to whom seedlings are to be distributed during the rainy season. The NFA has on its part decentralized production of the seedlings to its regional tree nurseries to ease the distribution process. To date UGX 5.156 billion has been availed for this programme and a total of 35.5 million seedlings have been raised and given out communities. DFOs are responsible to assist those allocated seedlings to plant them according to required specifications. Demand for seedlings is higher than allocations. During the field validation exercise in the districts of Masindi, Bushenyi, Mbale, Manafwa and Pader, the DFOs reported that they were overwhelmed by the demand for seedlings for woodlot establishment as well as for fruit trees.

11.4 Corporate tree planting in forest reserves

245. As a means of involving the corporate bodies in tree planting under their corporate social responsibility (CSR), NFA engaged a number of corporate bodies in rehabilitating some of the degraded CFRs. The corporate bodies provided funds for seedlings, and their staff participated in planting of trees in areas allocated to them. Table 16 below shows the areas planted under this partnership and contributions made by the corporate bodies.

Table 16: Partnership planting by corporate organizations

No	Organization	CFR and area planted	Funds Used UGX
1	Posta Uganda	Kitubulu CFR 1ha	700,000 (USD 198)
2	MTN	Kyewaga CFR 11ha; Kimaka CFR 3ha; Namatale CFR (Mbale) 6.5ha	20,000,000 (USD 5,665)
3	British Council	Kajjansi CFR 11.5 ha	15,000,000 (USD 4,249)
4	Uganda Revenue Authority (URA)	Kwoba CFR, Kyambizi and Nakabiso beats 20ha	12,000,000 (USD 3,399)
5	Federation of Uganda Employers (FUE)	Nonve CFR 2 ha	975,000 (USD 276)
6	Barclays Bank (U) Ltd	Nonve CFR 32 ha	51,983,000 (USD 14,726.1)

Source: NFA (2015) (1 USD= UGX 3,530) Funds used between 2010 and 2015

11.6 Tree Talk Foundation

246. Tree Talk Foundation has since 2004 been engaged in the northern region of the country and in Karamoja working mainly with schools and community groups. Its main focus has been to work with the adolescents and the youth through production and dissemination of information, communication and education materials including those on tree planting, forestry and environmental protection. It has worked with school children to establish tree nurseries and planting school woodlots to alleviate the problem of firewood. It is reported that some of the first schools to engage in this initiative have started using trees planted by them to construct teacher's houses and for making school furniture.

247. Other interventions implemented by Tree Talk include a programme to enhance nutrition in schools that it promoted in partnership with FAO in selected schools in Gulu and Kaberamaido to plant fruit orchards and fruit trees in school compounds. In another intervention, Tree Talk worked in partnership with USAID and World Conservation Society implemented the Wildlife, Landscapes and Development for Conservation (WILD) project. This involved designing and disseminating a Communication and Education model to contribute to a reduction in biodiversity loss in key landscapes in northern Uganda, particularly in and around wildlife protected areas of that region.

248. Working with partners such as DFID, WFP, FAO, USAID, World Conservation Society, Royal Dutch Embassy, GIZ, IUCN, BAT and UNDP/GEF, Tree Talk has over the 2004-2015 period implemented a number of projects in northern Uganda with an investment portfolio of about USD 3.43 million and planted woodlots in 327

schools and communities on an area of about 7,861 hectares. A total of over 7.5 million seedlings have also been raised, mainly by school children and a few community members (Tree Talk Foundation, 2015).

11.7 Green charcoal project

11.7.1 Addressing barriers to adoption of improved charcoal production technologies and sustainable land management practices through an integrated approach in Uganda

249. This is a USD 3.48 million GEF funded project being implemented by the Ministry of Energy and Mineral Development (MEMD) in partnership with the NFA, FSSD, district level LGs of Kiboga, Kiryandongo, Mubende and Nakaseke. It is a four-year project that will run from May 2014 to May 2018. The goal of the project is to improve charcoal production technologies and sustainable land management practices through an integrated approach (technology transfer, enhancement of national policy Frame work, promotion of sustainable land management, and sustainable forest management practices).

250. Thus, the expected outputs of the project are that selected national and local government institutions have the capacity to develop key policies and systems for environment and natural resources management, and climate change adaptation and mitigation. Project components will include:

- Data collection and improved coordination and enforcement of regulations governing the biomass energy sector in particular those related to sustainable charcoal production;
- Dissemination of appropriate technologies for sustainable charcoal production; and
- Strengthening the capacity of key stakeholders in sustainable land and forest management best practices, and establishment of dedicated charcoal production woodlots and plantations.

11.8 SPGS/UTGA plantation development

251. SPGS is a public private partnership, achieving objectives for both conservation and investment. Conservation of Uganda's rich natural forests was the primary long term objective in the design of SPGS. Additionally, it was a response to the looming scarcity of timber due to: i) the 'locking' out of 50% of the country's natural forests when a national system of Strict Nature Reserves and Conservation Management Zones (famously called buffer zones) was established (FD, 2002); and ii) the less than 1,500 ha of over-mature and poor quality planted trees remaining in country (Kazoor, 2007). Without investment in dedicated timber plantations, the country was headed for a timber crisis within 10 to 15 years. Fast growing and high yielding timber plantations were recommended to bridge the supply gap. This reinforced the idea of planting compensatory timber plantations through medium to large scale private investors who (it was thought) could help quickly achieve this goal. Due to long payback periods, investment in timber plantations was not conceivable by the private sector in Uganda. Incentives were needed to trigger investments; this led to

the SPGS planting subsidy. SPGS is, therefore, not only about rural development and climate change mitigation, but it is a long term strategy for natural forest conservation, since it provides compensatory wood products outside the natural forests (SPGS 2015). SPGS therefore contributes to the forest restoration efforts through replanting of degraded woodland reserves and other degraded private lands.

252. During SPGS I, nearly 10,000 hectares of industrial plantations of agreed standards had been established. The overall target of SPGS II was to support the establishment of 30,000ha of timber plantations (24,000ha under European Union and 6,000ha under Government of Norway). The project performed over and above the set target by supporting the establishment of 32,177ha (107%) by 389 clients categorised into small to medium scale and large-scale planters. The additional area of 2,177ha was funded by the Government of Uganda. In total SPGS I and II established 42,177 ha of industrial plantations in different parts of the country.

11.9 SPGS bioenergy project

253. Currently, the EU through FAO is supporting the establishment of commercial bio-energy plantations. The project under the “Global Climate Change Alliance” (GCCA) Uganda Agriculture Climate Change Adaptation programme is aimed at supporting the establishment of fast growing commercial bio-energy plantations dedicated to fuelwood and charcoal production. The purpose of the project is to strengthen the resilience of communities in the cattle corridor to cope with impacts of climate change through promoting bio-energy plantations and improved charcoal production technologies. The project is implemented through SPGS, and has been piloted in the districts of Nakaseke, Luwero, Nakasongola, Kiboga, Mubende, and Ssembabule.

254. The SPGS bioenergy pilot programme, scheduled to run from November 2013 till December 2016, will support the delivery of the following key outputs

- Establishment of 100ha of bioenergy demonstration plots and 600 ha of subsidized commercial bioenergy plantations by the private sector;
- Construction and operationalization of a 6 m³ improved charcoal kiln;
- Promotion and dissemination of best practices for establishment of bioenergy plantations and charcoal production; and
- Conducting research studies on bioenergy plantation management and charcoal production and disseminating results to stakeholders.

CHAPTER 12: Financing the forestry

sector 12.1 Forestry in national planning

255. The theme of the National Development Plan (NDP1) is “Growth, Employment and Prosperity for Socio-Economic Transformation.” The development scenario focuses spending on sectors with the greatest potential to contribute to economic growth. It curtails spending in non-priority sectors and supports development in priority sectors through increased aid. Forestry is among the primary growth sectors (those that directly produce goods and services), but forest-related objectives are also included in complementary sectors such as energy, land, water and environment (Kamugisha-Ruhombe, 2010).
256. The National Development Plan 1 provides for, among others:
- Increasing state investment in reforestation, afforestation, and forest restoration. This includes the UGX 5.156 billion Community Tree Planting Programme noted earlier;
 - Increasing private investment in forestry and promotion of agroforestry; and
 - Instituting a policy, legal, and institutional framework for governing privately owned forests.
257. The Sector Investment Plan for Environment and Natural Resources (ENR-SIP) covers 10 years; 2008/09 to 2017/18 (MWE 2006). Within this plan, strategic objectives for forestry include:
- Improving the ability of forests and trees to yield increased benefits (economic, social and environmental) for all;
 - Conserving and managing wildlife and protected areas;
 - Establishing laws, policies, regulations, standards, and guidelines;
 - Strengthening the capacity of lead agencies and other institutions to implement programmes on environmental management; and
 - Restoring degraded forest ecosystems and promoting research.
258. The budget for forestry constitutes 46% of the Sector Investment Plan budget.
- This makes forestry a very high priority. However, the key determinants regarding financing actually allocated to a given sector are budget ceilings under the Medium Term Expenditure Framework (MTEF) which are set by the Ministry of Finance, Planning and Economic Development (MFPED) on the basis of resource envelopes available for any particular financial year for fiscal control to ensure macroeconomic stability for the country to qualify for debt relief. Thus, while the forestry subsector has the lion's share of the budgetary allocation in the Sector Investment Plan and could actually mobilize the recommended funding from willing donors, MTEF ceilings hinder it from accessing funding beyond the set ceilings. So despite strong positive statements about the importance of the environment and natural resources sector in

general and forestry in particular, they are not given a corresponding priority in national and subnational budget allocations (Kamugisha-Ruhombe, 2010).

12.2 Investment financing in forestry

259. Investment in forest management for timber is a long-term venture, often paying back over a period of 15–30 years for timber plantations and even longer periods for natural forests. Nonetheless, people are willing to invest, but financial support and other incentives, such as security of land tenure and tax breaks, are often necessary to catalyse this investment. A number of incentives can be designed to promote investment, employment, product mix and other aspects of forest industry. The SPGS has shown that public-private partnerships are very important for the success of timber plantation enterprises. It is even more important to attract such partnerships into management of natural forests, since most of the forest services are of public interest e.g. climate amelioration, protection of water catchments and soil stabilization, which provide crucial support for agriculture, domestic and industrial water supplies, and hydropower (UNEP/UNDP 2009).

12.3 Private sector forest financing

260. Private-sector funds have an important role in financing forestry nationally but these sources are largely un-documented, and therefore their importance often goes unnoticed. Investment from private sources has been increasing while public sector funding has been decreasing. A stimulus to private investment is the SPGS, a 16.2 million euro grant from the EU and Government of Norway and UGX 4 billion GoU allocation to support community tree planting. The SPGS grant was used to reimburse 50% of the costs that were incurred by commercial private tree planters who in two years achieved set standards of establishment of commercial forest plantations. The funds were part of ODA although the activities funded are carried out by private tree farmers. These grants were also outside the MTEF ceilings. Another factor that has contributed to the growth of private investment in the forestry sector is the government's decision to lease forest reserve land to tree farmers.

261. The Global Mechanism's survey in 2009 estimated that from 2002-2008 the private sector sources contributed over US\$41 million to the development of forest plantations in Uganda. Small to medium-scale tree growers (with up to 500ha) accounted for 99.8% of investors in commercial forest plantations and 69% of the planted area. This was an indication that tree growing had become an attractive venture for small to medium-scale enterprises even if the payback is long term (Kamugisha-Ruhombe, 2010).

262. Almost half of the investors (48%) had used personal savings, 27% had used funds from trading or business, 12% had used personal loans from financial institutions and 8% had used grants from donors. None of the respondents had received a loan earmarked for forestry by a financial institution. Projections for public financing for environment in general and forestry in particular under MTEF for financial years 2009/10 to 2011/2012 indicated a decline from about UGX 32 billion

to about UGX 10 billion. Given the interest in commercial tree growing generated since 2002, it is likely that funding from domestic private-sector sources will continue to increase (Kamugisha-Ruhombe, 2010).

12.4 Potential financing mechanisms

263. **Grant (provided by development partner/government) for community group support (adopted from FIEFOC model)**

- a. This approach is good for supporting low-income individuals with a CBO or local cooperatives;
- b. A simple investment/business plan is produced;
- c. Grants are disbursed in the form of planting materials or inputs spread over a 2-3 year period;
- d. Provision of planting materials and inputs are private sector-led, with all tree nursery operators selected through competitive bidding. Preferences are given to certified nurseries that meet minimum requirements for quality, quantity and capacity to deliver seedlings to farmers at the required time;
- e. Individuals provide land and labor;
- f. Group participation is essential for mobilization, raising awareness, planning and training;
- g. Planting and management of crops/animals is done at the individual level so as to eliminate “free riders” and also to guarantee tenure rights; and
- h. Providing on-farm technical backstopping through issue-based/tailored mentoring program for 1-2 years.

264. **Grant (provided by development partner/government) to supplement use of individual/company resources/savings (adopted from SPGS model)**

- a. This approach is good for middle to high income individuals or companies;
- b. The grant support could be 40-60% of total establishment costs depending on the type of enterprise. Establishment period may range from 1-3 years;
- c. An investment/business plan is produced with clear discounted cash flow;
- d. Strict guidelines and standards to be met during implementation are produced. This is to help with monitoring, evaluation, and quality assurance;
- e. The individual/company invests up front within the first six months using own resources to show commitment;
- f. Inputs and planting materials are to be procured from certified private sector led sources only. This is to help with following the chain of custody;
- g. Provide technical backstopping through issue based/tailored mentoring program as part of the grant provision. The investor could co-finance some of the training costs;
- h. Reimbursement can be given three times (50%:30%:20%) over the established cost period, with the first one being done after 6-8 months;
- i. Quality assurance and close monitoring is to be undertaken before reimbursement is made.

265. Bank loan (from commercial and development banks) and cash guarantee from development partner to supplement individual/company savings

- a. This approach is good for high income individuals and companies;
- b. The bank provides the loan, while a development partner provides the security in the form of cash guarantee to the bank (to take care of risks in primary production in an event the debtor fails to settle the loan due to circumstance beyond his/her control).The borrower provides additional funding;
- c. The borrower (investor) prepares an investment/business plan with clear discounted cash flow;
- d. Strict guidelines and standards to be followed during implementation are produced. This will help during monitoring, evaluation, and quality assurance;
- e. Total amount of loan to be given is agreed (different repayment options should be provided);
- f. Interest rate to be agreed. It is important to use low interest rates (2-3% above inflation rates) than commercial rate (currently at 10-14% above inflation rate) because investing in climate change supported interventions is long term, and it provides environmental services to the wider communities though the work is being done by an individual entrepreneur;
- g. Grace period before repayment is agreed (2-10 years) depending on the type of crops or enterprise to be funded. For example, two years for agroforestry with coffee mix, 6-10 years for pole and timber trees. Note that the low interest rate and the long grace period are to help with “paying for” the environmental goods and services being provided by the investment;
- h. Loan disbursement period is agreed - within the different year(s) to handle critical operations such as procurement of quality planting materials, fire management, and weed control, to mention but a few. This is because of the long term nature of investing in environmental business;
- i. Currency used for calculations should be fairly stable (e.g. US\$). However, payment is made in UGX equivalent using Bank of Uganda dollar rate of the day (at the time of loan disbursement or loan repay).This approach is commonly used with UN agencies and development banks like AfDB;
- j. Provide technical backstopping (through on farm/forest issue based/tailored mentoring program) to be provided by the bank. The investor can co-finance training costs; and
- k. Inputs and planting materials are to be procured from certified sources only. This is to help with following the chain of custody.

266. Equity fund (provided by mutual trust fund or through on or offshore venture capital fund) to supplement individual/company resources/savings

- a. Investment principles and value chain should promote **GREEN Enterprise Development** (Environmentally friendly, socially acceptable, economically profitable and legally binding/acceptable);
- b. The following could be the investment options (agroforestry; agriculture/agribusiness; forestry/tree planting; animal industry; fisheries; wildlife/tourism; renewable/alternative energy) etc.;

- c. The source of equity fund is either through mutual trust fund or venture capital
 - The use of mutual trust fund locally generated through Savings And Credit Cooperative Organizations (SACCOs) is good for low to middle income earners (small scale)
 - The use of bigger venture capital funds (nationally or internationally generated through capital markets or security exchange) is good for high income earners/big companies.
- d. Mobilizing of the venture capital could be through:
 - Savings for Green enterprise from members of CBOs/groups/cooperatives (designated for investment and could be a % of total savings within the SACCO)
 - Group saving for investment (with SACCO) passed to a **GREEN FUND** (registered within Uganda)
 - On and offshore capital venture fund
 - Grant and or long term loan from development partners, development banks or government
- e. Targeted audiences for mobilization and use of venture capital fund
 - Smallholder farmers/family members (organized in green farmers/family association). Number per farmers/family association can be determined; 10-30 could be tried out
 - Salary earners (organized in green investment clubs). Number per club can be determined; 4-30 could be tried out
 - Business persons/organizations (organized as green entrepreneur club – 4-20 members).
- f. Contribution can be done on weekly, bi-weekly or monthly basis. The amount to be contributed per sitting has to be agreed upon. The smallest unit to be contributed is determined and is guided by income bracket. It is important to agree on the smallest unit of contribution (e.g. 5,000/=) and whatever amount is contributed by individual/groups/businesses will be converted into the number of smallest unit (translated into shares). Return on investment per person/group/organization is determined by the number of shares provided.
- g. Accessing the equity fund could be through microfinance bank at an agreed interest rate. Lower rates for primary production are proposed than for value addition and marketing, as primary production helps with climate change mitigation and adaptation.
- h. Possible interest rate should range between 1-4% above inflation rates (to take care of profits & management costs) and payment period could range between 3-10 years depending on the rotation period of the crops/trees planted. The percentage for risks could be borne by contributions from development partners or the government so as to lower the general interest rate. At the moment commercial interest rates in Uganda stand between 18-24%, with the inflation rate standing at 9.5%. Therefore the risk rate is too high, currently standing between 8.5-14.5%.
- i. There is a need to put in place a team of experts and organizations to run such venture capital funds to help with project assessment, improvement, training and guidance to ensure linkages to the green entrepreneur value

- chain (e.g. primary production, processing and service provision like transport and marketing).
- j. This approach will require working very closely with the following organizations;
 - Bank of Uganda (to regulate custodian banks)
 - Custodian banks to provide the loan through microfinance scheme
 - Investment management/administration companies (for quality assurance, M&E and reporting)
 - Investment manager (to invest parts of the income/savings in capital markets-security exchange as a way of earning additional funds. This can be done in less risky areas such as government bonds or companies listed in the Uganda/East African security exchange markets which are regulated by capital market authorities)
 - Investment trustees locally registered in Uganda (initiator, representing the interests of Ugandan investors - members of the Green Enterprise Development groups and provider of part of the green investment fund).
 - k. Value addition and chain of custody within the equity fund arrangement with all of them working together:
 - Farmers/family members are the primary producers (trees/crops/animals)
 - Salary earners/working class are part of the processing sector
 - Business owners are part of the processing, transporting and marketing sector of the value chain.
 - l. It is very important that investment and finance education is brought into the picture at the earliest stage (inception and design stage). There will also be a strong need for the green investment clubs, green farmer/family association and green entrepreneur clubs to meet regularly to review performance of investment on the ground, any opportunities available and the meeting is to be conducted in a transparent way.
267. Note that there are other options such as the **endowment fund** (similar to the Bwindi and Mgahinga “Gorilla” trust fund) that can be explored. However, for the four proposed above, detailed studies are needed to find the best alternatives. Also of importance is the study of the use of different platforms (electronic data management and transmission and banking) to help with running and managing these innovative approaches to financing climate change, mitigation and adaptation.

268. **The Tree Fund.** The NFTP (2003) provides for the establishment of a Tree Fund that will be managed by a body appointed by the minister. The monies of the tree fund would comprise of: money appropriated by parliament; loans obtained by government; grants, gifts and donations; and money from any other sources approved by the minister in writing, in consultation with the Finance minister.

The Fund shall be used for the following purposes:

- To promote tree planting and growing at national and local level.
- To support tree planting and growing efforts of a non-commercial nature which are of benefit to the public.

CHAPTER 13: Future outlook and recommendations for policy

13.1 Future outlook

269. The Uganda forestry sector has gone through challenging times since the sector review of 1998-2003 which had aimed at transforming it into a vibrant sector that contributed sufficiently to the economy and improved the livelihoods of citizens. The euphoria that welcomed the birth of ostensibly better institutional frameworks that were buttressed by a new Forest Policy (2001) (one of best on the continent), the first ever all inclusive National Forest Plan 2002, and an enabling new law, NFTP (2003) did not take long to wane.
270. Based on the analysis of information and data provided in this document, the future of the sector can be considered not very bright, unless affirmative action is initiated. Although some efforts are being made to promote tree planting and plantation development both on private lands and on forest reserve lands, the recent and current rate of forest cover loss and forest degradation does not give a good picture or a balanced score card.
271. On a positive note, the private sector has shown a lot of interest in establishment of industrial softwood plantations both in CFRs and on private land. In a span of about 10 years, the private sector and NFA have planted over 70,000 hectares surpassing by far the area its predecessor, the FD, planted in many decades. The SPGS type of incentive has shown that with the right incentives backed with timely technical support, the private sector, and especially the small and medium enterprises, is capable of playing a leading role in plantation forestry establishment and management. The fact that a number of tree growers used their own resources to establish sizable areas of plantation is an indication that the momentum that the SPGS set acted as a catalyst to attract internal resources into the forestry sector, a thing that was unheard of in Uganda.
272. Likewise, the government has also advanced efforts to strengthen community and private forestry (CBF systems). However, failure to secure community and private forests has left them open to uncontrolled harvesting and conversion to farmlands, since the owners do not appreciate the potential of these forests to generate long term financial returns from the emerging new sources of funding such as REDD+ and carbon schemes. As noted in Chapter 5, further work is needed to support community and private forestry, including providing tenure security. As a first step, recognition and declaration of community forests, and recognition and registration of individual/household private forests will provide a critical incentive for investment in these forests. Following the VGGT principles, the government should make efforts to strengthen the policy/legal framework to provide adequate protection to these rights, as well as remove barriers and support enjoyment of these rights. This will facilitate their participation in various wood and NWFP forest resource enterprises.

273. This development is in line with government's strategic actions for the Environment and Natural Resources Sector in the Uganda Vision 2040 whereby government plans to undertake re-forestation and afforestation by promoting public participation in tree planting on both private and public land, and enhancing private investments in forestry through promotion of commercial tree planting and adoption of green agricultural practices (GoU, 2010b).
274. In support of the EU and NORAD funding for the private sector tree growing under SPGS, the government has since 2013 been providing UGX 1 billion to support SPGS's community tree planting initiative which has seen about 3,960ha planted by 7,215 community members from 180 community groups (SPGS, 2015). Similarly, the government has also since 2013 provided another UGX 1 billion to the NFA to produce seedlings in support of other community tree planting initiatives through the DFS. This is in recognition of the role played by fuelwood energy in the rural economy and the importance attached to forestry as one of the primary growth sectors of Uganda's economy in the National Development Programme (NDP I & II). This support is likely to continue for some time within the framework of the NDP II.
275. The proposed financing window under the REDD+ and other carbon financing mechanisms are already attracting interest in tree planting. The REDD+ is being perceived as a window that could help in the replanting of degraded natural forests, both in community and private forests. However, information on REDD+ and other carbon financing mechanisms is scanty. There is, therefore, a need for correct information to be disseminated widely, especially targeting private forest owners of natural forests which have not yet been turned into farms in order to save them from undergoing that change. Companies such as Busoga Forest Company and New Forest Company, as well as the NFA have already started benefiting from carbon financing. Kamusiime Memorial is the first community tree planting group to earn carbon credits through Eco Trust. Since then a number of individuals in Masindi, Mbale, Manafwa districts have benefited from Payment for Ecosystem Services (PES) under the initiative known as Trees for Global Benefits (TGB) being implemented by (Environment Conservation Trust of Uganda (Eco Trust) project. (Eco Trust, 2015).
276. There are also many NGOs/CBOs around the country that are supporting different sections of the society in tree planting and other forest based enterprises to create alternative sources of livelihoods that could in the long run relieve the pressure that is being exerted on protected forests.
277. On the negative side, despite all these interventions the rate of tree cutting is still much higher than the rate of planting. The high rate of deforestation currently estimated to be around 200,000 hectares per year (NBS estimates for 2010-2015), paints a bleak future for the forestry sector, given the low planting rate that has been recorded in the last 10 years. Also, population growth with its attendant demands for more food, fuelwood and construction timber is one of the drivers for deforestation and forest degradation that needs to be addressed urgently.

278. In the chapter on trade in forest products it was stated that over 80% of timber in the local markets is illegal because of the difficulty in ascertaining its chain of custody. This not only distorts market prices, but it also deprives government revenue from taxes on such products. A study on National Timber Trade and FLEGT Solutions for Uganda which was carried out by WWF, (2012) identified government and big construction companies as being the major consumers of the timber. It is, therefore, necessary to introduce a requirement for proof of legality of the timber in all procurement procedures. Another issue that compounds illegal trade in timber is the use of wasteful equipment, especially the chainsaw for timber production. Currently there is no legal provision outlawing the use of chainsaws in timber production, other than the Ministerial Public Notice of 2004. There is hence a need to have a provision in the NFTP (2003) or the forestry regulations outlawing the use of chainsaws in timber production and imposition of heavy penalties for offenders.

279. The over reliance on woody biomass as the major source of energy for cooking, heating and lighting by the majority of households (over 78% according to Uganda National Household Survey Report of 2005-2006 by UBOS) is likely to continue into the foreseeable future. This is mainly due to unaffordable alternative sources of energy such as electricity, gas, kerosene and solar energy appliances. The situation is made worse by use of wasteful cook stoves and the reluctance of many households to adapt to the energy saving cook stoves. As mentioned in other sections of this report, the NBS Report of 2003 indicated that 73% of districts in the country were experiencing a deficit of accessible woody biomass for firewood. The situation is likely worse now given the rate of deforestation that has taken place since then. Much as government has embarked on an ambitious rural electrification scheme, the current high electricity tariffs may be a disincentive to many rural households given the prevailing poverty levels.

280. The issue of governance in the forestry sector is of concern to many stakeholders. Institutions that are mandated to manage the sector have not performed to the expectations of the sector reform of 1999-2003. The NFA is still struggling to become self-financing 10 years since its formation and has in the past been dogged with issues of corruption and high staff turnover that has undermined its effectiveness. Both the FSSD and the DFS are ill resourced for effective implementation of their respective mandates. Political interference in the management of the forestry resource has been cited as one of the drivers of forest degradation.

13.2 Policy recommendations

281. Encroachment in forest reserves started in the mid-1970s due to the breakdown in law and order and has since been on the increase as mentioned in earlier sections of this report. The majority of encroachments are for cultivation due to the perceived fertility of forest soils. Such encroachment is cited as one of the major contributors of deforestation and forest degradation. It has been exacerbated by unclear forest boundaries and the Executive Order which was issued in the run up to

the 2006 general elections halting eviction of encroachers. National and local politicians have made capital of the Executive Order to politicize the encroachment problem and at times incited encroachers to resist (in some cases using violence) any attempt by managing authorities to evict them. This report recommends that actions be taken to prevent further settlements inside forests. Meanwhile, the NFA should identify legitimate settlements in forest reserves, and provide appropriate incentives to engage them in forest governance. Appropriate guidelines should be developed for the implementation of benefit sharing schemes provided for in the law. Where resettlement is necessary, the NFA should formulate a fair and responsible system of resettling those already residing within boundaries of the forest reserves.

282. Illegal forest harvesting and trade in illegal timber is a key contributor to forest degradation and deforestation in Uganda. The requirement under the NFTP (2003) that harvesting in CFRs and LFRs be based on approved FMPs has not been strictly followed. This is likely to result in unsustainable harvesting of forests. Further, the procedure for licensing timber harvesting outside of forest reserves by the FSSD, based on Annual Allowable Cut (AAC) as calculated by NBS was abandoned in 2007; this is contributing to the haphazard licensing by LGs and hence decimation of unprotected forests. Documentation of harvested timber that allowed verification of chain of custody of any consignment of timber, as provided for under the Ministerial Public Notice of 2004, has also been abandoned. This has further contributed to the proliferation of illegal timber currently estimated at 80% of all the timber on the Uganda market (WWF 2012). This report recommends reinstatement of proper procedures for licensing of timber harvesting as provided for under the NFTP (2003) and the Ministerial Public Notice 2004. The Notice should be legalized through a Statutory Instrument. Since the government and major construction companies are the major buyers of timber on the market, a provision should be made under public procurement to make it mandatory for any timber that is used for government projects to be from legal sources. The government should regulate trade in forestry products by setting up a Forest Produce Marketing Board to enforce standards and tax compliance. The same board should have the responsibility of ensuring that modern production technologies are employed to reduce waste.

283. The government's effort to return the forest cover to the 1990 level is already being supported by a number of tree planting programmes such as the NFA's Plantation Development Strategy, FSSD's Greening Uganda's Economy (MWE, 2015a), the Forest Landscape Restoration Programme (MWE, 2015b) among others. Effective coordination among these efforts is lacking. This can lead to duplication of efforts and failure to focus on priority areas in critical need of reforestation. A first step would be to support appropriate staffing of the FSSD (currently operating at 25% level), and allocate sufficient resources to increase efficiency and facilitate coordination. Likewise, the FSSD and other relevant institutions should help harvesters of timber, firewood and charcoal producers which are linked to the high deforestation rate organize through associations. This will help improve governance and facilitate extension of support towards improving their efficiency and access to markets.

284. Deforestation and forest degradation as a result of urbanization and industrial expansion is mainly due to non-compliance with the National Land Use Policy and Urban Planning Regulations. Lately, many urban authorities have requested the MWE for degazettement of some forests for urban expansion. These urban forests were gazetted to form green belts to contain storm flows, to provide fuelwood for the peri-urban populations, and to provide for recreation areas. Although most of these urban authorities have provided alternative land in exchange as required under the NFTP A (2003), the exchange lands are far away and therefore not able to fulfil the original purposes for gazette ment of the urban forests. Degazette ment of forests for urban expansion is an unsustainable strategy, as the urban population will continue to increase and the problem will resurface every few years.
285. Many of the mushrooming trading centres are not planned in accordance with the urban and town planning regulations leading to a proliferation of overcrowded slums. These put a lot of pressure on forests to supply timber, charcoal and firewood. The majority of dwellers in these trading centres are low income earners who cannot afford alternative sources of energy, and hence rely heavy on woody biomass for fuel. Where land in forest reserves is required for other uses such as expansion of urban centres the process for acquiring such land is clearly laid out in the NFTP A (2003). This report recommends that this process should be adhered to. This will confirm government commitment to ensuring that the PFEs are protected in the long run.
286. As a policy recommendation this report underscores the need for adherence to policies and regulations that govern the use of land and forests. Areas for urban development should clearly be mapped out by government in accordance with laws and regulations. Oil palm and sugar industries should be encouraged to adopt efficient technologies to increase production per unit area as is being done in other countries. In this way it will not be necessary to look at forest reserve lands as a solution to increasing productivity. Strategies to control population growth should be put in place, using effective approaches such as those that have contained the spread of HIV/AIDS. The MWE should work with other stakeholders in the forestry sector to popularize use of energy saving cook stoves in both rural and urban areas in order to reduce biomass consumption which in the long run will save forests from over harvesting.
287. To improve transparency in decision making and to improve governance, efforts should be made to ensure that FMPs are developed and approved for all forest reserves. Lack of FMPs opens up opportunities for forest managers to engage in illegal activities. Disposal of forest products should be in accordance with the Public Procurement and Disposal of Assets (PPDA) Act 2002 following comprehensive inventories to ascertain available quantities which should be made public. To improve the effectiveness and efficiency of public institutions which are mandated to manage national forestry resources, the government should hire the right calibre staff, invest in skill development, and ensure that they are provided adequate resources to implement plans. The government should support the NFA's efforts of

sensitizing the judiciary on the NFTP (2003) to enable them use its provisions instead of the penal code to dispense appropriate penalties for forestry offences.

288. Meaningful public participatory processes should be developed at the national and local levels to obtain buy-in for addressing forest governance issues. At the national level, the current structures for stakeholder participation and coordination (the Joint Sector Review, the Sector Working Group, and the occasional National Forest Forum organized for specific purposes) are good, but they do not provide for holistic coordination in the sector. Revival of the Annual Consultative Forum on Forests which was active during the time of the Forestry Sector Review between 1999 and 2003 would provide the needed participation and coordination among stakeholders.
289. The question of contribution of forests to water supply in Uganda has long remained unaddressed. This is one of the areas that could lead to a re-thinking of forestry's contribution to the national economy. At the basin level, it is acknowledged that forest conversion to other land uses can affect watershed functions, particularly maintenance of water quality, regulation of water quantity from storm flow and other high flows, and maintenance of the water sediment balance among others (NEMA, 2006). However, according to NEMA there has neither been an independent quantification nor valuation of forestry hydrological or watershed services, nor an active watershed payment transaction in Uganda from which to draw a precedent on the contribution and value of forest hydrological and watershed functions (NEMA 2011). This report recommends that further investigation be conducted on the contribution of forests to provide sufficient basis for its inclusion in future National Forest Resource Accounts.

ANNEXES:

ANNEX 1: Summary of steps for registration and management of community and private forests in Uganda

Community Forests

Step 1: Initiating the community forest registration/declaration process. Review the options and scope for registration of a CF through forming a forest user group association; conduct a preliminary Situational Analysis (SA) of forest user communities and potential forest site; initiate the process of forming an association for the management of a registered CF; form an Interim Management Team.

Step 2: Raising awareness about the relevant policies and laws on community forests. Raise awareness among community members on relevant policies, laws, regulations through workshops and meetings.

Step 3: Situation analysis. Identify members of the planning team in a manner acceptable to the communities ensuring that key resource persons e.g. district extension staffs, service providers and LCs are represented on the team; formulate a plan for SA and the remaining process of CF registration; train the planning team in resource mapping and assessment (including value and threats related to forestry); conduct a stakeholder analysis (identify all those who might be affected by the CF); conduct an institutional analysis (identify people who will play a role and have responsibilities in CF); and conduct a conflict analysis to analyze conflicts over resource use and management.

Step 4: Institution formation/formalization. Sensitize prospective applicants of CF on options of Responsible Bodies (RBs); form Communal Land Association (CLA); form other association for governance and management of CF as appropriate (e.g. cooperative, NGO, CBO); agree on institutional structure, functions, procedures, techniques for CF governance and management.

Step 5: Demarcation of CF boundary. Raise awareness regarding CF boundary; determine CF area on village map; conduct preliminary negotiation with relevant land owners; conduct field assessment of proposed CF boundary and agree on the actual external boundary line; announce and allow for a period of appeal in case of disagreement; sign agreement on boundary with all land owners; demarcate boundary with physical markers.

Step 6: Develop a Forest Management Plan (FMP) for CF. Compile information from stakeholder analysis for CLA (and for each forest management unit if sub-divided) in CF management matrix; agree on rules for harvesting and utilization of forest resources; agree on a responsibility matrix for CF (or for each forest management unit if sub-divided); agree on an activity plan for the FMP; agree on a monitoring plan; compile and obtain final agreement from CF members on the FMP.

Step 7: Registration of CF. Agree on final decision to register CF with VFC/CFA officials in meetings held at village level; apply to DFO designating CLA/CSO as the responsible body for the CF; DFO notifies District Council of application by CLA / CSO and of intended area for declaration; consult with DLB, finalize FMP in accordance with and to supplement the Community Forest Management Arrangement Agreement (CFMAA); submit FMP to District

Council; District Council considers application and FMP, issues CFMAA and registers CF; District Council integrates FMP into District Forest Development Plan and District Development Plan/District Environment Action Plan.

Step 8: Declaration of CF. The minister declares forest as CF specifying the RB. For this, a written request is made to the DLC through the Local Councils; DLC refers the application to District Land Board (DLB) for verification; DLB holds meeting to approve the request; DLC holds meeting to approve the request; DLC writes to the minister requesting declaration of the CF; Minister issues a Statutory Instrument and publishes it in Government Gazette.

Step 9: Implementation of FMP, participatory monitoring and evaluation, Revenue/benefit generation and sharing from CF. The CLA/CSO carries out activities as per the FMP; it undertakes participatory monitoring and evaluation to measure progress against planned activities and targets; it identifies and categorizes revenue sources, works out mechanisms for revenue/benefit sharing, works out mechanisms for revenue collection and banking.

Private Forests

Step 1: Initiating the private forest registration process. Identify the forest site; consult relevant authorities, and inform them of the intention of managing a private forest.

Step 2: Policy and legal requirement awareness. Hold meetings with adjacent communities, and local authorities to create awareness of relevant policies and laws that support private forest management.

Step 3: Situational analysis. Understand existing forest resources and values; identify forest user groups and other stakeholders; identify threats to the forest; identify social, economic, physical and institutional set up and identify and manage conflicts.

Step 4: Institution formation/formalization. Define the responsible body for the management of the forest. This may be a family, a company or a CBO. Develop a constitution or Memorandum and Article of Association defining the roles and responsibilities of the responsible body and associated members.

Step 5: Demarcation of the private forest boundary. Negotiate and agree with the adjacent land owners the exact boundary of the forest; ascertain the actual size of the forest area, and prepare a map of the area.

Step 6: Development of a FMP. Synthesize forest resource assessment and stakeholder information in a FMP; agree and clarify the responsibilities of members; discuss and agree on the activity work plan/duration of the FMP; lay out financial projections for the implementation of the FMP.

Step 7: Registration of the private forest. Apply for the registration of the private forest using the standard application form through the DFO to the land board; Seek approval of the application from the District Land Board and then by resolution of the District Council; Secure tenure and access right from MWE through the issuance of a forest registration certificate.

Step 8: Implementation of the FMP. As part of the FMP, develop monitoring systems for sustainable management of the forest; develop systems for periodic review of the FMP; clarify

revenues and other benefits; and establish mechanisms for revenue/benefit sharing from the private forest.

ANNEX 2: Institutional arrangements governing various forest tenure Types

1. Central Forest Reserves

Institution	Rights and Responsibilities
Minister responsible for the forestry (through FSSD)	<ul style="list-style-type: none"> • Formulate national policies relating to forestry • Issue regulations and guidelines on management and use • Declare reserved species and trees • Declare an area to be a CFR • Transfer the responsibility for the protection, control and management of the LFR to NFA in case the LG fails • Reclassify a LFR as a CFR and vice versa • Approves FMPs • Facilitates the preparation of National Forest Plan and monitors its implementation • Monitors the operations of NFA using a performance contract
Uganda Land Commission (ULC)	<ul style="list-style-type: none"> • The custodian of all state land
National Forestry Authority	<ul style="list-style-type: none"> • Manages the CFRs on behalf of Ugandan citizens • Generate revenue and use for forest management/governance • Gives and revokes user licenses in accordance with the law
Licensed operators	<ul style="list-style-type: none"> • Access and use the land and/or resources thereon in accordance with license provisions • Invest in commercial & income-generating enterprises • Are compensated when their lawful developments are due to be taken from them
Local communities	<ul style="list-style-type: none"> • Partner with NFA in CFM arrangements • Access and use specified forest products free of charge • Compensation when their lawful developments are due to be taken from them • In some areas local communities claim customary rights to use forest resources despite designation as PA (e.g. Karamoja and the Mt. Elgon PAs)
Indigenous people (Batwa)	<ul style="list-style-type: none"> • Reside in the forest reserve in accordance with custom, and the National Forestry and Tree Planting Act (NFPTA)

Source: Khaukha and Nsita (2013)

2. Local Forest Reserves

Institution	Rights and Responsibilities
LGs	<ul style="list-style-type: none"> • Manage LFRs on behalf of Ugandan citizens • Generate revenue and use for forest management/governance • Grant user licenses in accordance with the law

Institution	Rights and Responsibilities
ULC	<ul style="list-style-type: none"> • Custodian of all state land
Local communities	<ul style="list-style-type: none"> • Partner with LGs in Collaborative Forest Management arrangements • Access and use specified forest products free of charge • Compensation when their lawful developments are due to be taken from them • Customary subsistence rights to all forest products and services
Licensed operators	<ul style="list-style-type: none"> • Access & use the land and/or resources in accordance with the license • Compensation when their lawful developments are due to be taken from them • Grow forests for purposes of providing ecosystem services and thus enjoy the Payment for ecosystem services (PES)
Minister responsible for forestry (through FSSD)	<ul style="list-style-type: none"> • Formulate national policies relating to forestry • Issue regulations & guidelines on management and use • Declare reserved species and trees • Declare an area to be a CFR • Transfer responsibility for protection, control and management of the LFR to NFA in case the LG fails • Reclassify a LFR as a CFR and vice versa • Approve FMPs • Oversee, Inspect and monitor the operations of LGs and offer technical backstopping as per the LG Act

Source: Khaukha and Nsita (2013)

3. Wildlife Conservation Areas

Institution	Rights and Responsibilities
UWA	<ul style="list-style-type: none"> • Manage the national parks and wildlife reserves on behalf of Ugandan citizens • Generate revenue & use for forest management/governance • Grant user licenses in accordance with the law
Licensed operators	<ul style="list-style-type: none"> • Access & use the land and/or resources in accordance with the license provisions • Rights to compensation if rights rescinded
ULC	<ul style="list-style-type: none"> • Custodian of all government land
Local communities	<ul style="list-style-type: none"> • Partner with UWA in community resource management arrangements • Exercise rights to subsistence use of specified forest products and services free of charge • In some areas local communities claim customary rights to use forest resources despite designation as PA (e.g the Lipan Hunting Area & East Madi Game Reserve).
Minister responsible for forestry (through FSSD)	<ul style="list-style-type: none"> • Formulate national policies relating to forestry • Issue regulations & guidelines on management and use • Declare reserved species and trees • Declare an area to be a national park or wildlife reserve
Minister Responsible for	<ul style="list-style-type: none"> • Prescribe measures for the registration and management of specimens used for cultural purposes by any community • Declare an area of land or water as wildlife conservation area

Institution	Rights and Responsibilities
wildlife	<ul style="list-style-type: none"> • Declare any species of wild plant or wild animal as protected species • Modify, revoke, or create additional wildlife use rights • Impose additional restrictions on imports, exports, re-exports or transport of specimen • Prescribe payment of fees or charges as prescribed by the minister

Source: Khaukha and Nsita (2013)

4. Land owned by non-forestry government institutions

Institution	Responsibilities
ULC	<ul style="list-style-type: none"> • Issue land titles (or sub-leasing) with the agreement of the holding institutions
Holding institutions	<ul style="list-style-type: none"> • Use land in line with their mandate but in a sustainable manner • Eligible for compensation in case of taking of rights
Minister responsible for forestry (through FSSD)	<ul style="list-style-type: none"> • Formulate national policies relating to forestry • Issue regulations & guidelines on management and use • Declare reserved species & trees • Declare an area to be a CFR or LFR • Approve FMPs • Facilitate preparation of NFP and monitor its implementation
Local communities	<ul style="list-style-type: none"> • Compensation when their lawful developments are due to be taken from them • Exercise customary rights on forest land and resources (including for residence)

Source: Khaukha and Nsita (2013)

5. Bundle of rights in the cultural institutions lands tenure type

Institution	Responsibilities
Responsible institution	<ul style="list-style-type: none"> • Use the land as they see fit but in a sustainable way; some have deferred their rights to other who have settled on their land • Eligible for compensation in case of land taking by the State
Minister responsible for forestry (through FSSD)	<ul style="list-style-type: none"> • Formulate national policies relating to forestry • Issue regulations & guidelines on management and use • Declare reserved species & trees • Facilitate preparation of NFP but not and monitor its implementation
UWA	<ul style="list-style-type: none"> • Provide guidance in management of Community Wildlife Areas and Wildlife Sanctuaries • Manage wildlife
Local communities	<ul style="list-style-type: none"> • Compensation when their land and/or lawful developments are due to be taken from them • Exercise customary rights on forest land and resources (including for residence)

6. Clan and family lands tenure type

Institution	Responsibilities
Clan/family head	<ul style="list-style-type: none"> • The Land Act recognises customary land tenure. Clan heads derive their rights from the traditional or cultural leader who is recognized by the constitution • Family heads must get agreement of spouses & children before they can dispose of the land • Distribute land according to clan norms • Resolve land conflicts among clan/family members
Clan/family members	<ul style="list-style-type: none"> • Own land in accordance with customary tenure provisions • Eligible for compensation in case of land taking by State
Minister responsible for forestry (through FSSD)	<ul style="list-style-type: none"> • Formulate national policies relating to forestry • Issue regulations & guidelines on management and use • Declare reserved species & trees taking into account views and representations of local communities • Declare an area to be a CF in accordance with the NFTP 2003
UWA	<ul style="list-style-type: none"> • Provide guidance in management of Community Wildlife Areas and Wildlife Sanctuaries • Manage wildlife outside PAs in consultation with the land owners

Source: Khaukha and Nsita (2013)

7. Private lands tenure type

Institution	Responsibilities
Land owners	<ul style="list-style-type: none"> • Can use land in any way but in line with the Land and Environment Act • Can transfer ownership at will (selling or sub-leasing), provided the land is not the main source of the family livelihood • Eligible for compensation in case of land taking by State
Squatters	<ul style="list-style-type: none"> • Become bona fide occupants in accordance with the Land Act after 12 years • Use the land according to the Land Act • Compensation when their developments are due to be taken from them • Claim ownership rights to land based on customary use for extended periods (e.g. in Kibale mailo lands)
Minister responsible for forestry (through FSSD)	<ul style="list-style-type: none"> • Formulate national policies relating to forestry • Issue regulations, guidelines & directives on management and use • Declare reserved species & protected trees • Declare an area to be a CFR, LFR, or community forest
UWA	<ul style="list-style-type: none"> • Provide guidance in management of Community Wildlife Areas and Wildlife Sanctuaries. • Manage wildlife outside PAs

Source: Khaukha and Nsita (2013)

8. Lands Held by DLBs

Institution	Responsibilities
District Land Boards (DLBs)	<ul style="list-style-type: none"> • Hold and allocate land in the district which is not owned by any person or authority; • Facilitate registration and transfer of interests in land
Lessees	<ul style="list-style-type: none"> • Use land in accordance with the provisions of the lease <p>Are eligible for compensation in case of land taking by the State</p>
Local communities	<ul style="list-style-type: none"> • Compensation when their land and/or developments are due to be taken from them • Claim customary rights of ownership following long time use
Minister responsible for forestry (through FSSD)	<ul style="list-style-type: none"> • Formulate national policies relating to forestry • Issue regulations & guidelines on management and use • Declare reserved species & trees • Declare an area to be a CFR, LFR, or community forest in line with the law established • Facilitate preparation of NFP not and monitor implementation
UWA	<ul style="list-style-type: none"> • Provide guidance in management of Community Wildlife Areas and Wildlife Sanctuaries. • Manage wildlife outside PAs

Source: Khaukha and Nsita (2013)

ANNEX 3: Summary of bundle of rights associated with various forest tenure types

	Nature of Rights	Tenure Type		
		Wildlife Conservation Areas	CFRs/LFRs	Private Forests (individual/community)
1.	Right to timber and NWFPs, rights to subsistence use versus sale	Subject to the signing of a Resource Use Agreement with the UWA, a local community may be allowed access to selected resources mainly for subsistence free of charge, excess may be sold in markets	Subject to the management plan, mainly subsistence use of resources; excess may be sold in markets	Full rights to wood and NWFPs for subsistence or commercial use
2.	Management rights	Work with UWA to develop CRM arrangements	Work with NFA/LGs to develop CFM arrangements	Private forest owner may allow right of way through the forest and access to water points.
3.	Exclusion rights	Exclusion rights are retained by the UWA	Exclusion rights are only reflected in the agreements and not in any policy/legal framework. Very limited control over external users that may obtain permits/licenses from the NFA or DFS in adjoining areas	A Private Forest Owner has exclusive rights to exclude others if the Private Forest is on Private land. Otherwise, these are shared with the RB which has the final word for private forests in CFRs and Community Forests.
4.	Taxes, fees, benefit/profit sharing with government, permits required for use of resources	No taxation or fee for subsistence use. In case of excess of resources, resources may be sold in market with associated fee paid to government	No taxation or fee for subsistence use, but fees applicable for sale of products and transport permits are required	Stamp fees required to show origin when products are collected. Buyers pay royalties and require transport permit. Section 88 of the FTP regulations requires all RBs to pay Value Added Tax

	Nature of Rights	Tenure Type		
		Wildlife Conservation Areas	CFRs/LFRs	Private Forests (individual/community)
5.	Expropriation/compensation related provisions	There are no provisions regarding compensation to communities if rights are rescinded	There are no provisions regarding compensation to communities if rights are rescinded	There are no provisions regarding compensation to communities if rights are rescinded

Source: Khaukha and Nsita (2013)

ANNEX 4: Key donors in the forestry sector since 2005

Name	Area of support/ Project	Period of support	Budget/level of support
EU	Sawlog Production Grant Scheme (SPGS Phase 1) as part of the FRMCP	2004-2009	Euro 1.9 million
EU and Government of Norway	SPGS Phase II (MWE 2015c)	2009-2013	GoN Euro 4.3m EU Euro 10m
FAO	GCP/INT/808/UK- Strengthening Participatory Approaches in Forest Management in Uganda	2003- 2005	USD389,397
	FAO Netherlands Partnership Programme-FNPP Uganda (FNPP/GLO/003//NET)-Supported capacity building of FID	2007	USD 125,000
	FAO/TCP support for the Rehabilitation, Development and Sustainable Management of Forest Resources in Northern Uganda	2012-2012	USD 437,676
	GCP/GLO/347/UK Forest Tenure Project to help understanding of the principles, key issues and processes to strengthen forest tenure systems	2012	USD 308,300
African Development Bank (AfDB) and Nordic Development Fund (NDF)	Farm Income Enhancement and Forest Conservation Project (FIEFOC) Community watershed management and tree planting	2007-2012*	UA 19.42 UA 8.48
WWF	Forest certification and responsible forest management Responsible trade in forest products Forest landscape restoration Forest based enterprises for forest adjacent communities Sustainable forest financing Capacity building for forestry institutions		USD 120,000 USD 100,000 USD 70,000 USDS100,000 USD 400,000
WWF/UNDP	Renewable energy (SELCAM) Manafwa district		USD 90,000
IUCN	Resilience Framework adaptation to the effects of climate change (Manafwa district)		
Eco Trust	Payment for ecosystem services Kamusiime Memorial Budwale community (Mbale)		
World Bank	EMCPB support to NFA for Carbon Planting and charcoal project		USD 3,711,437
NORAD	FK Project- a regional project implemented in Uganda, Tanzania and Burundi	2008-2015	USD 1,214,931
JICA	Manafwa district- Demarcation of wetlands		
UNDP/ DANIDA/DFID/ GEF/SGP.	Territorial Approach to Climate Change (TACC), led to the preparation of an Integrated Territorial Climate Plan for the Mt. Elgon Region's districts of Mbale, Manafwa and Bududa.	2010-2013	USD 1,475,271.65
Other partners			

are: MWE, District Government of Manafwa & Bududa and Walsh Assembly Government			
Lutheran World Federation (LWF)	Pader district Tree planting for institutions and communities, Capacity building for environment committees, promotion of renewable energy.		
Straight Talk Foundation in partnership with DFID, WFP, FAO, USAID, World Conservation Society, Royal Dutch Embassy, GIZ, IUCN, BAT, UNDP/GEF	Northern districts and Karamoja mainly working with children in selected schools and some communities. Production and dissemination of information, communication and education materials for adolescents and youth, establishment of school tree nurseries, planting of school woodlots	2004-2015	USD 3.430million
WFP VEDCO CARITAS ADRA AWF	Operated in different sub counties in Pader district- provided tree seedlings, trained farmers and private tree nursery operators	Over 5 years	

Source: Various Project Documents. *Figures for FIEFOC exclude those for the other components

ANNEX 5: Some key highlights of research at NaFORRI in the last few years

1. Breakthrough in cloning *Warburgia ugandensis* a medicinal tree to enhance its conservation

Scientists at NaFORRI made significant breakthroughs in clonal propagation of *Warburgia ugandensis* to enhance its conservation. *Warburgia ugandensis* also known as Uganda greenheart is a high value medicinal tree used to treat various diseases including malaria, measles, African *trypanosomiasis*, *leishmaniasis* and *candidiasis* among others. It usually grows in colonizing forests, forest edges and thickets. Due to its high medicinal value, it has for long been over exploited using destructive means like debarking and felling of the whole tree. In spite of declining stocks, deliberate propagation of this tree has remained a challenge due to scarcity of its seeds that are often eaten by monkeys and other wild animals.



Cuttings of *W. ugandensis* under rooting experiments

As part of preventive strategies against its overexploitation, techniques for enhanced biomass production of *Warburgia ugandensis* through cloning have been developed. The enhanced biomass production serves as alternatives to the debarking harvesting method ultimately contributing to the conservation of this important medicinal tree species. Additionally, a propagation protocol to help nursery operators and tree growers grow *W. ugandensis* on farm through cuttings has been developed. As a result, over 50 farmers in Mukono and Buikwe districts are now effectively growing *W. ugandensis* on their farms.



Cuttings of *W. ugandensis* showing rooting



Clonal *Warbugia* growing on a farm

2. Improving feed security of smallholder dairy farmers using tree/shrubs

Farmers' use of tree fodder is often spontaneous and constrained by inadequate planting material. Candidate forage trees/shrubs (including *Albizia lebbek*, *Calliandra calothyrsus*, *Leuceana leucocephala*, *Vernonia amygdalina*, *Sesbania sesban* and *Morus alba*) were prioritized for further research on their potential for enhancing milk production.



Techniques for increased biomass production of *Morus alba*, a high potential tree fodder

Biomass productivity of three of these species (i.e. *Calliandra calothyrsus*, *Morus alba* and *Vernonia amygdalina*) was determined under various management regimes on-station. About 30,000, assorted seedlings of *C. calothyrsus*, *S. sesban* and *L. leucocephala* were distributed to smallholder dairy farmers in the Lake Victoria Crescent. Twelve sites for fodder seed stand establishment were identified and geo-referenced in Lake Victoria Crescent to address future needs. Research is currently focussing on diversifying forage species and developing management options for increased fodder biomass production.

3. Reducing the fruiting time for shea tree (*Vitellaria paradoxa*)

The shea nut tree (*Vitellaria paradoxa*) takes long to grow to maturity to provide the much needed nuts for the various products. In view of the threat to its conservation and minimal

planting on farms, research concentrated on developing tools and options to reduce its fruiting age. Of the five grafting methods tested, side cleft grafting was found to be the most promising. This endeavor also sought to enhance availability of shea tree planting material to farmers. Farmers, traders and transporters constitute the shea nut production, distribution and dissemination system. There is a gap though, in extension and advisory service provision. A total of 12,398 shea tree seedlings (capable of planting about 86 hectares or 212 acres) were raised in the NaFORRI greenhouses and distributed to farmers.

4. Enhancing cashew nut production for income among smallholders in Soroti

Work on cashew tree (*Anacardium occidentale*) sought to enhance its production to reduce income insecurity in northern and eastern Uganda. In pursuit of this, three demonstration sites were established at Omodoi (Soroti), Ongom (Alebtong) and Abongomola (Apac), as well as seven cashew nurseries maintained, which produced a total of 41,146 elite cashew seedlings, 16,057 of which were distributed to farmers for planting.



Improved cashew nursery: a tree crop for increasing farm incomes, Ngora district

These new cashew varieties have several attributes that render them superior to previously existing ones in the region. For instance, the new varieties are early yielding bearing fruit within 18 months of planting, and yield 40-80 kg/tree per year. They are also relatively short which makes it easier for farmers to harvest the fruits.



Locally packaged cashew nuts provide an opportunity for rural households to generate income

5. Managing eucalyptus and pine tree diseases through biological means

Blue gum chalcid (*Leptocybe invasa*) is an important pest hampering eucalyptus plantations in Uganda. Research in this regard sought to develop biological means for controlling it. To this end, an exotic parasitoid wasp (*Selictroides neseri*) was identified as suitable for controlling blue gum chalcid and an import permit for introducing it in Uganda from South Africa processed. Additionally, an indigenous natural enemy complex to control the pine woolly aphid (*Cinara cronortii*) a pest attacking pines in Uganda were identified in Kiirima and Mafuga as being *Chelomenes propingua*, *C. aurora* and *Exochomus* spp.

6. Tree seed multiplication: Ensuring quality and quantity

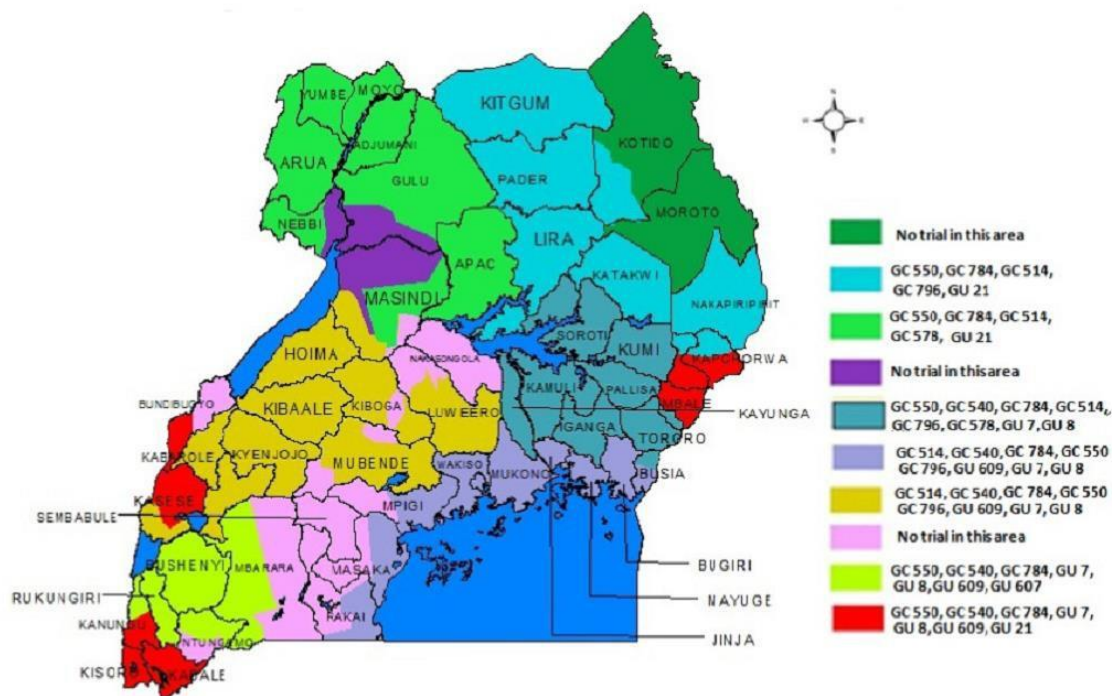
Lack of appropriate tree germplasm is often cited as a key impediment to uptake of forestry technologies. Research in this regard aimed at developing options for increased production and use of quality tree-germplasm for on-farm tree planting. In this domain, 36 mother trees were geo-referenced and seed collection calendars developed for 4 priority agroforestry tree species i.e. *Markhamia lutea*, *Maesopsis eminii*, *Cordia Africana* and *Albizia coriaria*. Future collections of seed from the geo-referenced trees will be a continuous activity to ensure seed quality. Key actors in the tree seed production-to-consumption system in Masaka district include tree seed collectors, farmers, tree nursery operators, District Forestry Services (DFS) and Vi Agroforestry Project. Quality tree germplasm from nurseries is key for successful on farm tree planting.



Quality tree germplasm at a NaFORRI nursery (All photos courtesy of NaFORRI)

7. Increased adoption of clonal eucalypts planting

NaFORRI championed the introduction of eucalypts clones to Uganda from South Africa in the year 2002 and has since evaluated their adaptability to different AEZs of Uganda. Suitability and adaptability of the various clones in various region of Uganda (see map). The demand for these fast growing clones has plummeted in recent years given their preference to land races. This is attributed to their faster growth, straight stem and relative resistance to pests and diseases.



Map showing adaptability of eucalyptus clones to different regions of Uganda



Clonal eucalyptus production at NaFORRI station, Kifu

With the confidence gained from research findings, targeted investment by tree growers is on the increase especially for GC 514, GC 540, GC 550, GC 784, GC 796, GU 7 and GU 8 eucalyptus clones. As pioneers of the technology in Uganda, NaFORRI remains the major and most reliable source of Eucalypt clones. In 2014, 38,309 plantlets of clonal Eucalyptus were produced at the NaFORRI nursery and planted out (34.5 ha of plantations) by farmers in the year 2014. Supplies of wood from these eucalypts plantations are anticipated to go a long way in offsetting demand for construction, flooring, joinery, paneling, posts, poles, furniture and fuelwood.

ANNEX 6: International forest governance initiatives relevant to Uganda

Forest Law Enforcement and Governance Program of the World Bank: three regionally based ministerial conferences in Asia, Africa and Europe, and North Asia were organized between 2001 and 2004 to harness high-level political engagement, achieve public recognition of the fundamental governance challenges facing forestry in those regions, and obtain commitments to improve the rule of law. Similar processes have been initiated in Central America and the Amazon region.

The Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan sets out the EU contribution to addressing illegal logging, with particular emphasis on trade. The FLEGT Action Plan specifies the creation of voluntary partnership agreements between the EU and timber-producing country governments which commit both parties to developing a timber licensing scheme under which only legally produced, licensed timber will be allowed into EU markets.

The FAO/ITTO Initiative on Forest Law Compliance and Governance developed best-practice guidelines to address law compliance in the forestry sector and organized five regional workshops to encourage the exchange of views between forest stakeholders on forest law compliance and governance issues, challenges and solutions.

The Non-legally Binding Instrument under the United Nations Forum on Forests. Uganda actively participated in the United Nations Forum on Forests and its predecessor Intergovernmental Panel/Forum on Forests dialogue on the international forest policy since the United Nations Conference on Environment and Development in 1992. A landmark outcome of the Forum on Forests dialogue is an International Instrument on sustainable management of all types of forests by member states of the United Nations. Section D of the instrument addresses issues of governance and forest law enforcement where subscribing member states undertake to:

- To develop and implement strategies to strengthen forest law enforcement and governance in order to combat and eradicate illegal practices and corruption in the forestry sector;
- To strengthen the capacity of countries, in particular developing countries, to address illegal harvesting of forest products according to national legislation and associated trade through the promotion of forest law enforcement and governance at the national and sub-national and regional and sub-region levels; and
- To strengthen governance, within their respective legal frameworks, in particular to support land tenure policies that recognize and respect legitimate access and use, and property rights, in order to support sustainable forest management and investment, recognizing that institutionalizing tenure is a long-term and complex process which requires interim measures to address urgent needs, in particular of local and/or indigenous communities.

There is concern on the serious threats to African forests and the multiple obstacles to forest law enforcement, which inevitably lead to the degradation of forests and the unsustainable exploitation of wildlife. This concern was echoed at the Ministerial Conference on FLEG held in Yaoundé, Cameroon in 2003. The Yaoundé Statement emphasized the fundamental role of governments to provide effective governance, including laws, policies and institutional capacity to enforce those laws in order to eliminate illegal logging, and the associated trade and

corruption in the forestry sector. Uganda has continued to respond to international concerns for SFM for which it was known as early as 1930's. However, like many other African countries, Uganda has faced many challenges related to FLEGT. Illegal logging and trade in timber particularly increased between 1970's and 1980's, and it has since remained a challenge to forest managers. The increasing degradation of the forest resources especially outside PAs due to illegal activities and the impact of poverty and population pressure remain real challenges to contend with.

Within East Africa, there is significant progress being made in policy and legal reform with greater attention being paid to both community forest management and the role of the private sector and their roles in forest governance. Increasingly forestry authorities are assuming more of policy and enabling environment supporting roles than one of direct forest management. The role of FLEGT in East Africa is not solely for governments, as forest and timber issues affect and are affected by many different actors, in particular local people and communities, and the private sector. Uganda has embraced the call to integrate FLEGT into national forest programmes. The Uganda Forestry Policy (2001) recognizes the role of the central and local governments, the private sector, non-governmental and community based organizations (NGOs/CBOs).

ANNEX 7: The importance of conserving Uganda's biodiversity

Uganda's biodiversity is an exceptional 'global resource'.

Whereas most other countries in the world are able to grow timber, few are in a position to sustain such a wealth of biodiversity. In this respect, Uganda has a strong comparative advantage;

Uganda has an international obligation to conserve its biodiversity under the Convention on Biological Diversity.

By ratifying this important convention in September 1993, Uganda undertook to protect all of its biodiversity. The provisions of Article 8, on *in-situ* conservation are of particular importance and it is through that that Uganda undertook *inter alia*, to:

- establish a system of protected areas in order to conserve biological diversity (para (a));
- develop guidelines for the selection, establishment and management of protected areas (para (b)); and
- Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings (para (d)).

Uganda can benefit financially from its biodiversity conservation activities.

Because most of the world's biodiversity is concentrated in the tropical countries, and many of its benefits realized in 'developed' countries, mechanisms are rapidly being developed for North-South financial support of biodiversity conservation activities. Uganda is already receiving international aid to support biodiversity conservation. There are some interesting examples elsewhere in the world of protected areas and biodiversity conservation activities being sustained by commercial interests, such as payments by international drug companies for 'bio-prospecting rights'. Uganda is in a strong position to 'sell' its biodiversity in these ways;

Suitable land is already protected and available.

Because Uganda has already established an extensive network of national parks, forest and wildlife reserves, biodiversity conservation objectives can be achieved relatively easily here - at least compared with other countries where new land must be acquired for the purpose;

Biodiversity conservation can be achieved at relatively low cost, as part of an optimal land-use strategy

This is because a considerable amount of biodiversity occurs in 'marginal' lands such as steep mountains, inaccessible regions and tsetse-infested areas where development opportunities are very limited. Often it is important to protect the vegetation and prevent soil erosion in such areas to safeguard water supplies, downstream fisheries, irrigation opportunities or hydro-electric installations. Biodiversity conservation objectives can be satisfied simultaneously, and at very little incremental cost;

Biodiversity conservation sustains other sectors of the economy.

Many overseas visitors come to Uganda on account of its national parks and other protected areas, and a large part of the tourism sector is clearly dependent upon biodiversity conservation.

Biodiversity conservation can only be achieved by dedicating large areas for protection, because of the need to sustain minimum viable populations.

Genetics and population viability studies suggest that about 500 breeding individuals are normally required to sustain populations of most species in the long term. This means that many rainforest trees, and large animals such as chimpanzees, which occur naturally at densities of 2-4 individual per km², require an area of 125-250 km² of suitable habitat to remain viable in the long term. It is often these larger species which play a 'keystone' role in the ecology of an area, and it is therefore vital that they are conserved. The forest nature reserves established in Uganda during the 1950s and 60s were clearly inadequate in this respect. However, they acted as baselines for forest management practices.

Source: Adapted from Nature Conservation Master Plan, 2002.

ANNEX 8: The system and procedure for marketing logs and timber described in the Ministerial Public Notice issued in 2004

- 1) The main instruments of the monitoring system are documentation accompanied by corresponding stamp marks on the forest produce. The documents and stamps shall enable the Forest Produce Monitoring Unit (of NFA) to objectively certify chain of custody and legality of the source. The instruments shall be managed through a short chain procedure that has systemic drivers aiming to minimize the transaction costs.
- 2) One key feature of the system is that all harvesting of forest produce is to be carried out under license, issued by a respective responsible body, and volume, weight and length shall be the standard units of measure.
- 3) Three types of hammer stamps will be used namely: i) the log hammer (numbered 0-9); ii) the timber hammer (0-9 but smaller); the district “seal” (with district code number).
- 4) The basic principle is that no forest produce should be moved from any area to any destination without having been marked with an appropriate stamp and issued with corresponding documents by an “authorized person”
- 5) The following is required in the case of logs and timber:
 - i. All logs must be stamped with the same number appearing on the stump before leaving the stump and individual logs from one tree should in addition bear serial numbers which should all be recorded on the LOG VOLUME MEASUREMENT SHEET before being removed. This does not apply to CFR plantations except if logs are being transported.
 - ii. All timber shall be stamped with the relevant code area of origin before being transported. The stamp marks must face outward when loading for fast/easy checking. Any piece seen unmarked will be confiscated. Upon marking a forest produce declaration form (FPDF) shall be issued.
 - iii. All timber leaving a district shall have the district “seal” stamped on before leaving that district. A “forest produce movement Permit” shall be issued after stamping with the seal.
 - iv. Operators in CFRs do not need a Forest Produce Movement Permit except that they will pay a UGX 10,000 “administration fee” for each load of produce to the Chief Finance Officer of the respective district
 - v. Any individual or organization engaged in forest harvesting should have a license issued by the responsible body, payment receipts of all statutory and other dues, and should acquire a FPDF before transporting the produce from area of conversion.
 - vi. All pitsawyers in LFRs, former public lands, and private forests, shall pay annual license fee of UGX 350,000 to the Chief Finance Officer of the District of operations. A 15% “equalization” levy of the value of the finished produce shall also be paid in addition, unless the operator is a registered VAT collector
 - vii. Before timber is marked by the field staff all the relevant documents must be made available in their entirety
 - viii. Chain-sawn timber is contraband and will be confiscated at site, together with the power saw, and any vehicles used for transportation. This is in addition to heavy fines and prosecution.
 - ix. DFOs at the nearest point of entry will clear all imported timber provided all the normal payments and documentary evidence relating thereto from the country of origin, URA and imported licenses are presented and copies deposited with the DFO. A Forest Products Movement permit will be purchased for the timber.
- 6) All unmarked and undocumented forest produce shall be confiscated and forfeited by the “owner”. It is a primary responsibility of the “owner” to ensure that the produce is marked appropriately before it is moved.
- 7) Copies of the relevant documents should accompany any timber transiting through any part of Uganda. Other pertinent issues: All those intending to undertake forest harvesting in LFRs should approach the respective CAO, FID (now FSSD) or NFA for guidance on how to acquire licenses.

Source: WWF (2012)

ANNEX 9: Detailed calculation of carbon stocks for Uganda 1990-2005 (Adapted from NFS/NBS Reports)

Report Used			Forest Land[1]	Other Wooded Land[2]	Other Land[3]	Total All Lands	Source of Information/Remarks	
(1992 Report)	Area (Ha) for each LAND COVER/USE/STRATUM Class (1992) Report)	Ha	4,933,746.00	1,422,193	14,109,006.00	20,464,945.00	Uganda's National Biomass Study Cover classes (12) Water bodies is assumed to have no woody biomass	
	Total Above Ground Biomass Standing Stock (tonnes) per Class (LAND COVER/USE/STRATUM)	Tonnes		26,310,570.50	251,986,847.16	718,486,235.78	Estimated by multiplying Average 440,188,818.12Biomass Standing Stock (tonnes of biomass/Ha) with corresponding area for that cover class	264054085.9
	Average Biomass Standing Stock per LAND COVER/USE/STRATUM (tonnes per Ha)	Tonnes/Ha	89.22	18.5	17.86	41.86	Derived from Forest Department. 1992. National Biomass Study: Technical Report – National Biomass Study, Phase I – November 1989 – December 1991 (Page 117)	
	Above Ground Carbon Stock (tC/Ha)	tC/Ha	41.93	8.7	8.39	19.67	Derived from "Forest Department. 1992. National Biomass Study: Technical Report – National Biomass Study, Phase I – November 1989 – December 1991 (Page 117) X default (Table 4.3) Carbon Fraction of above ground biomass (Chapter 4 Forest Land : Volume 4 AFOLU 2006 IPCC)	
	Below Ground carbon Stock (tC/Ha)	tC/Ha	21.41	4.44	-	12.93	Derived by multiplying the aboveground biomass carbon stock with value (0.24 tonne root	
							d.m. (tonne shoot d.m.) corresponding with tropical moist deciduous forest recorded on Table 4.4 (Chapter 4 Forest Land : Volume 4 AFOLU 2006 IPCC)	
	Litter biomass carbon stock (tC/Ha)	tC/Ha	5.2	5.2	-	5.2	Derived by multiplying the aboveground biomass carbon stock with default value of (5.2 (tonnes C ha-1) corresponding with tropical climate for broad leaf deciduous forest type - recorded on Table 2.2: Tier 1 default values for litter and deadwood carbon stocks (Chapter 2 Generic AFOLU 2006 IPCC)	

	Dead biomass stock (tC/Ha)	tC/Ha	0	-	-	-	Dead Wood: No national or regional estimates of dead wood pools are currently available	
	Soil organic carbon (tC/Ha)	tC/Ha	37	37	37	37	Lowest Average of derived from the averaging of the lowest values from Table 2.3: DEFAULT REFERENCE (UNDER NATIVE VEGETATION) SOIL ORGANIC C STOCKS (SOCREF) FOR MINERAL SOILS	
							(TONNES C HA-1 IN 0-30 CM DEPTH) (Chapter 2 Generic AFOLU 2006 IPCC) that correspond with tropical soils excluding spodic and volcanic soils)	
	Average (aggregated) Carbon Standing Stock (tC/Ha)	tC/Ha	105.55	55.34	45.39	68.76	Obtained by summing up all the pools	
	Total Carbon Standing Stock (tonnes) per LAND COVER/USE/STRATUM	Tonnes	520,738,142.07	78,697,049.66	640,467,040.17	1,239,902,231.89	Estimated by multiplying Average Carbon Standing Stock per land cover class (tC/Ha) with corresponding area for that cover class	
(2002/3 Report)	Area (Ha) for each LAND COVER/USE/STRATUM Class (Uses 1990 Areas)	Ha	4,933,376.00	1,422,395.00	14,109,032.00	20,464,803.00		
	Total Above Ground Biomass Standing Stock (tonnes) per Class (LAND COVER/USE/STRATUM)	Tonnes	574,651,736.02	14,007,600.00	137,714,745.08	726,374,081.11	Estimated by multiplying Average Biomass Standing Stock (tonnes of biomass/Ha) with corresponding area for that cover class	
	Average Biomass Standing Stock per LAND COVER/USE/STRATUM (tonnes per Ha)	Tonnes/Ha	116.48	9.85	9.76	45.36	Derived from "Forest Department (2002): National Biomass Study - Technical Report (September 21, 2002) as an average of the top five cover classes in terms for biomass stock)	
	Above Ground Carbon Stock (tC/Ha)	tC/Ha	54.75	4.63	4.59	21.32	Derived from "Forest Department (2002): National Biomass Study - Technical Report (September 21, 2002) as an average of the top five cover classes in terms for biomass stock) X default (Table 4.3) Carbon Fraction of above ground biomass (Chapter 4 Forest Land : Volume 4 AFOLU 2006 IPCC)	

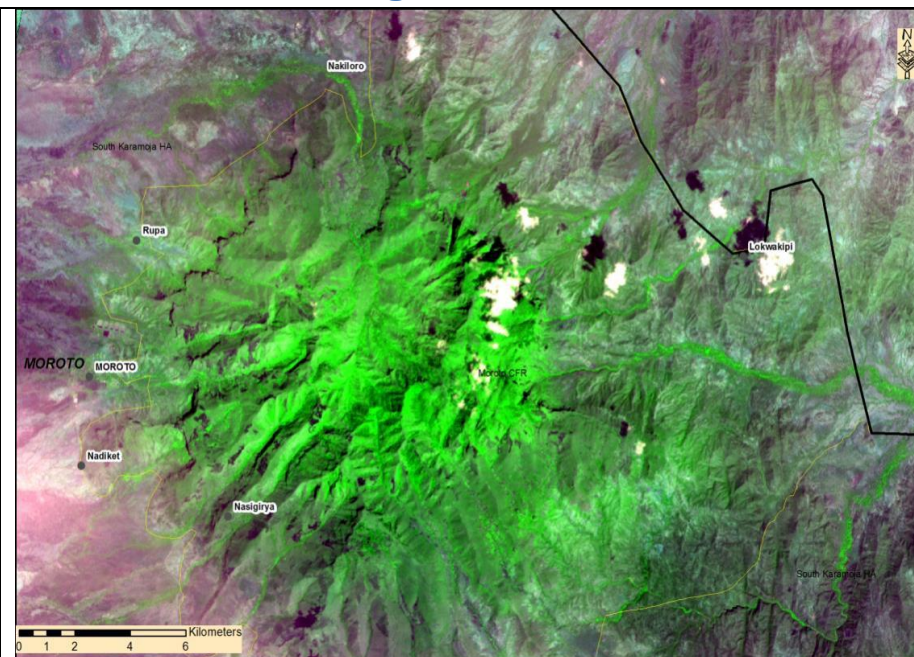
	Below Ground carbon Stock (tC/Ha)	tC/Ha	27.96	2.36	-	15.16	Derived by multiplying the aboveground biomass carbon stock with value (0.24 [tonne root d.m. (tonne shoot d.m.) corresponding with tropical moist deciduous forest recorded on Table 4.4 (Chapter 4 Forest Land : Volume 4 AFOLU 2006 IPCC)	
	Litter biomass carbon stock (tC/Ha)	tC/Ha	5.2	5.2	-	5.2	Derived by multiplying the aboveground biomass carbon stock with default value of (5.2 (tonnes C ha-1) corresponding with tropical climate for broad leaf deciduous forest type - recorded on Table 2.2: Tier 1 default values for litter and deadwood carbon stocks (Chapter 2 Generic AFOLU 2006 IPCC)	
	Dead biomass stock (tC/Ha)	tC/Ha	-	-	-	-	Dead Wood: No national or regional estimates of dead wood pools are currently available	
	Soil organic carbon (tC/Ha)	tC/Ha	37	37	37	37	Lowest Average of derived from the averaging of the lowest values from Table 2.3: DEFAULT REFERENCE (UNDER NATIVE VEGETATION) SOIL ORGANIC C STOCKS (SOCREF) FOR MINERAL SOILS	
							(TONNES C HA-1 IN 0-30 CM DEPTH) (Chapter 2 Generic AFOLU 2006 IPCC) that correspond with tropical soils excluding spodic and volcanic soils)	
	Average (aggregated) Carbon Standing Stock (tC/Ha)	tC/Ha	124.9	49.19	41.59	71.89	Obtained by summing up all the pools	
	Total Carbon Standing Stock (tonnes) per LAND COVER/USE/STRATUM	Tonnes	616,191,199.77	69,970,465.00	586,760,114.19	1,272,921,778.96	Estimated by multiplying Average Carbon Standing Stock per land cover class (tC/Ha) with corresponding area for that cover class	
2009 Report (a)	Area(ha) (1990)	Ha	4,933,746.00	1,422,193.00	14,109,006.00	20,464,945.00	The difference between Report 2009 (a) and Report 2009 (b) is that Report 2009 (a) uses the area of 1990 which was calculated in 2009 while Report 2009 (b) uses the areas derived for 2005 which were themselves calculated in 2009.	

	Total Above Ground Biomass Standing Stock (tonnes) per Class (LAND COVER/USE/STRATUM)	Tonnes	516,050,224.76	17,865,384.00	62,219,946.21	596,135,554.97	Estimated by multiplying Average Biomass Standing Stock (tonnes of biomass/Ha) with corresponding area for that cover class	
	Average Biomass Standing Stock per LAND COVER/USE/STRATUM (tonnes per Ha)	Tonnes/Ha	104.6	12.56	4.41	40.52	The value was calculated from dividing the total biomass number (tonnes) by the area of the respective cover classes as estimated for 1990 in the "National Forestry Authority. John Diisi. December 2009. National Biomass Study. Technical Report 2009 (Table 3-12 National woody Biomass by Class: page 57)" as an average of the top five cover classes in terms for biomass stock)	
	Above Ground Carbon Stock (tC/Ha)	tC/Ha	49.16	5.9	2.07	19.05	Derived from "National Forestry Authority. John Diisi. December 2009. National Biomass Study. Technical Report 2009 (Table 3-12 National woody Biomass by Class: page 57) as an average of the top five cover classes in terms for biomass stock X default (Table 4.3) Carbon Fraction of above ground biomass (Chapter 4 Forest Land : Volume 4 AFOLU 2006 IPCC)	
	Below Ground carbon Stock (tC/Ha)	tC/Ha	25.1	3.01	-	14.06	Derived by multiplying the aboveground biomass carbon stock with value (0.24 tonne root d.m. (tonne shoot d.m.) corresponding with tropical moist deciduous forest recorded on Table 4.4 (Chapter 4 Forest Land : Volume 4 AFOLU 2006 IPCC)	
	Litter biomass carbon stock (tC/Ha)	tC/Ha	5.2	5.2	-	5.2	Derived by multiplying the aboveground biomass carbon stock with default value of (5.2 (tonnes C ha-1) corresponding with tropical climate for broad leaf deciduous forest type - recorded on Table 2.2: Tier 1 default values for litter and deadwood carbon stocks (Chapter 2 Generic AFOLU 2006 IPCC)	
	Dead biomass stock (tC/Ha)	tC/Ha	-	-	-	-	Dead Wood: No national or regional estimates of dead wood pools are currently available	

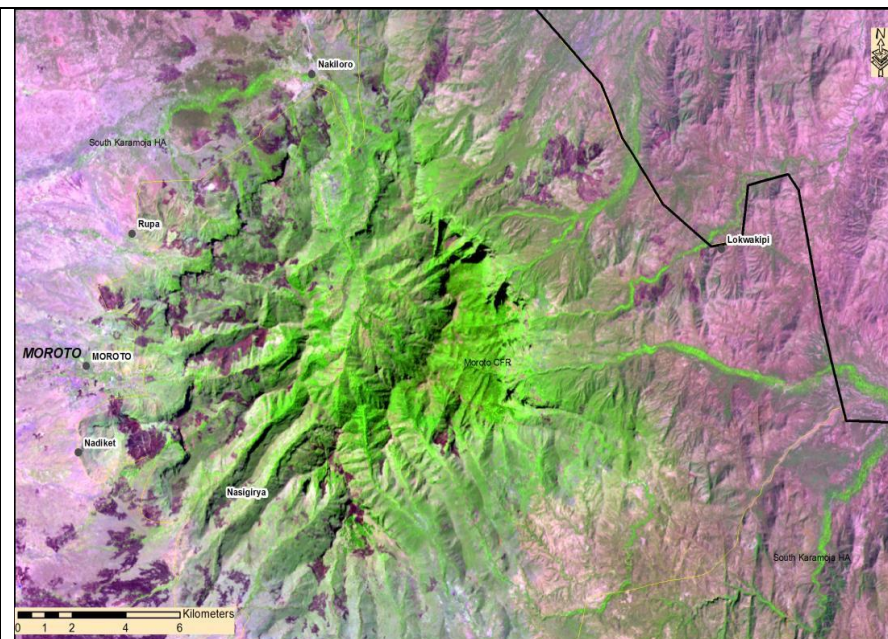
	Soil organic carbon (tC/Ha)	tC/Ha	37	37	37	37	Lowest Average of derived from the averaging of the lowest values from Table 2.3: DEFAULT REFERENCE (UNDER NATIVE VEGETATION) SOIL ORGANIC C STOCKS (SOCREF) FOR MINERAL SOILS	
							(TONNES C HA-1 IN 0-30 CM DEPTH) (Chapter 2 Generic AFOLU 2006 IPCC) that correspond with tropical soils excluding spodic and volcanic soils)	
	Average (aggregated) Carbon Standing Stock (tC/Ha)	tC/Ha	101.61	51.12	39.07	63.93	Obtained by summing up all the pools	
	Total Carbon Standing Stock (tonnes) per LAND COVER/USE/STRATUM	Tonnes	501,320,608.86	72,700,967.24	551,276,596.72	1,125,298,172.82	Estimated by multiplying Average Carbon Standing Stock per land cover class (tC/Ha) with corresponding area for that cover class	
2009 Report (b)	Area(ha) (2005)	Ha	3,594,463.00	2,970,318.00	13,883,748	20,448,529.00	The difference between Report 2009 (a) and Report 2009 (b) is that Report 2009 (a) uses the area of 1990 which was calculated in 2009 while Report 2009 (b) uses the areas derived for 2005 which were themselves calculated in 2009.	
	Total Above Ground Biomass Standing Stock (tonnes) per Class (LAND COVER/USE/STRATUM)	Tonnes	521,788,126.14	26,883,367.00	36,865,682.50	585,537,175.63	Estimated by multiplying Average Biomass Standing Stock (tonnes of biomass/Ha) with corresponding area for that cover class	
	Average Biomass Standing Stock per LAND COVER/USE/STRATUM (tonnes per Ha)	Tonnes/Ha	145.16	9.05	2.66	52.29	The value was calculated from dividing the total biomass number (tonnes) by the area of the respective cover classes as estimated for 2005 in the "National Forestry Authority. John Diisi. December 2009. National Biomass Study. Technical Report 2009 (Table 3-12 National woody Biomass by Class: page 57) as an average of the top five cover classes in terms for biomass stock).	

	Above Ground Carbon Stock (tC/Ha)	tC/Ha	68.23	4.25	1.25	24.58	Derived from "Forest Department (2002): National Biomass Study - Technical Report (September 21, 2002) as an average of the top five cover classes in terms for biomass stock) X default (Table 4.3) Carbon Fraction of above ground biomass (Chapter 4 Forest Land : Volume 4 AFOLU 2006 IPCC)	
	Below Ground carbon Stock (tC/Ha)	tC/Ha	34.84	2.17	-	18.51	Derived by multiplying the aboveground biomass carbon stock with value (0.24 tonne root d.m. (tonne shoot d.m.) corresponding with tropical moist deciduous forest recorded on Table 4.4 (Chapter 4 Forest Land : Volume 4 AFOLU 2006 IPCC)	
	Litter biomass carbon stock (tC/Ha)	tC/Ha	5.2	5.2	-	5.2	Derived by multiplying the aboveground biomass carbon stock with default value of (5.2 (tonnes C ha-1) corresponding with tropical climate for broad leaf deciduous forest type - recorded on Table 2.2: Tier 1 default values for litter and deadwood carbon stocks (Chapter 2 Generic AFOLU 2006 IPCC)	
	Dead biomass stock (tC/Ha)	tC/Ha	-	-	-	-	Dead Wood: No national or regional estimates of dead wood pools are currently available	
	Soil organic carbon (tC/Ha)	tC/Ha	37	37	37	37	Lowest Average of derived from the averaging of the lowest values from Table 2.3: DEFAULT REFERENCE (UNDER NATIVE VEGETATION) SOIL ORGANIC C STOCKS (SOCREF) FOR MINERAL SOILS (TONNES C HA-1 IN 0-30 CM DEPTH) (Chapter 2 Generic AFOLU 2006 IPCC) that correspond with tropical soils excluding spodic and volcanic soils)	
	Average (aggregated) Carbon Standing Stock (tC/Ha)	tC/Ha	124.65	48.63	38.25	70.51	Obtained by summing up all the pools	
	Total Carbon Standing Stock (tonnes) per LAND COVER/USE/STRATUM	Tonnes	448,061,994.25	144,434,610.17	531,025,546.77	1,123,522,151.19	Estimated by multiplying Average Carbon Standing Stock per land cover class (tC/Ha) with corresponding area for that cover class	

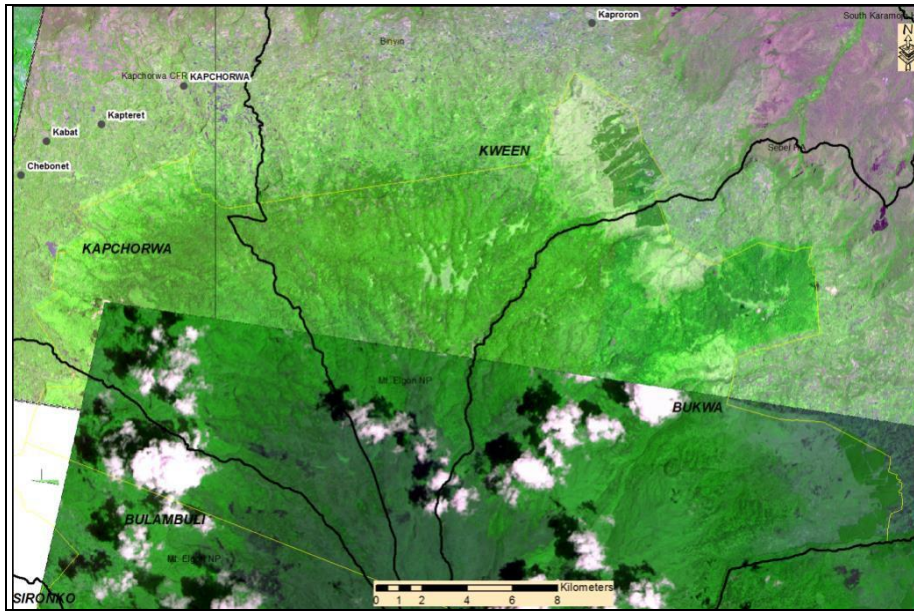
ANNEX 10: Satellite images for some of the selected restoration sites



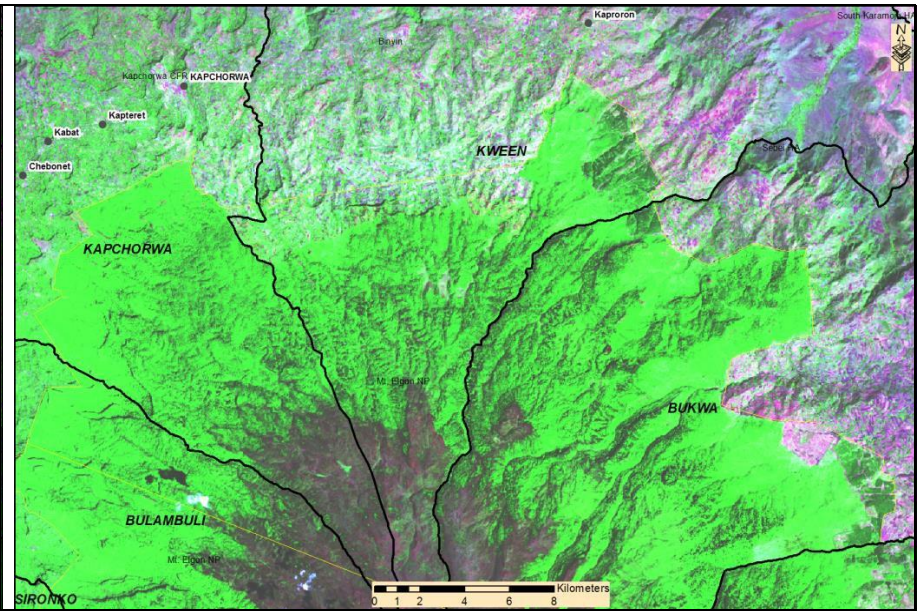
Mt Moroto 1990



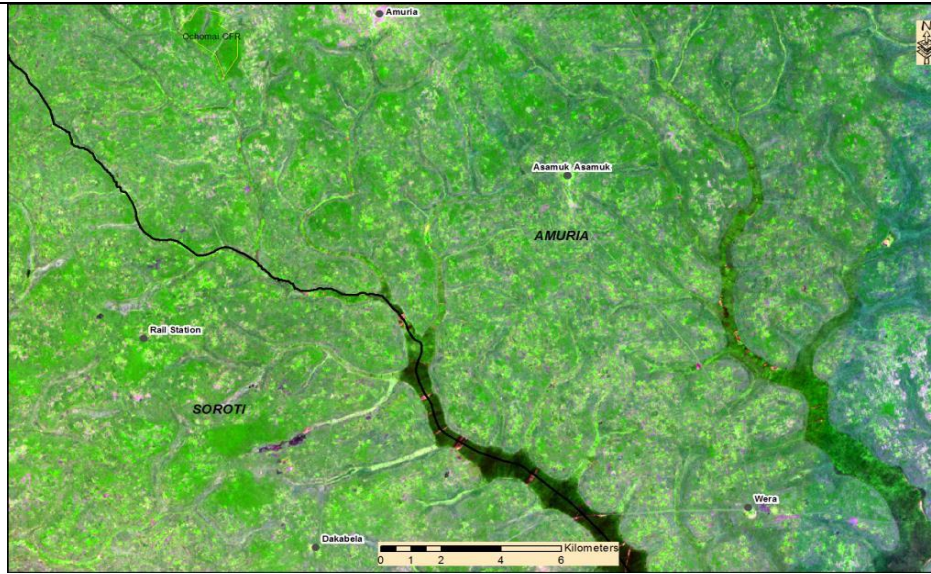
Mt. Moroto 2015



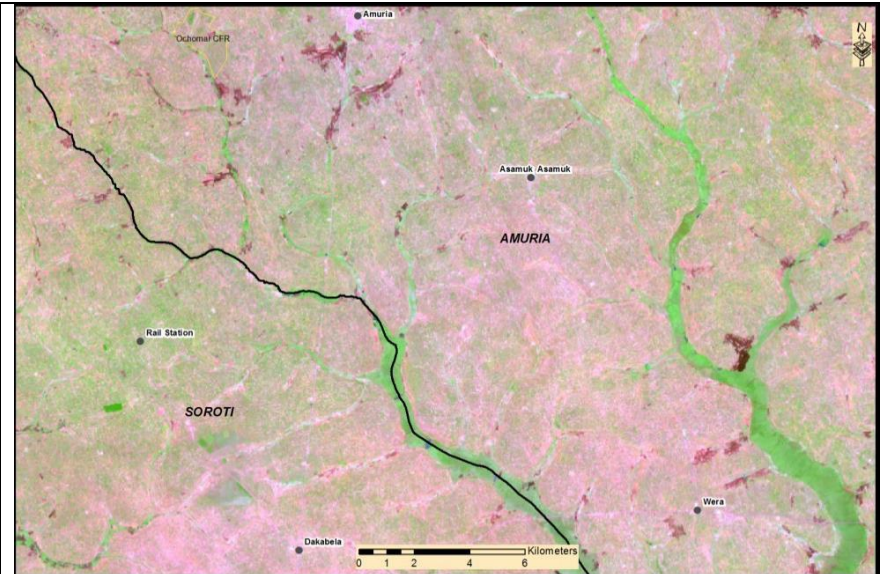
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Mt. Elgon 2015



Amuria 1990



Amuria 2005

ANNEX 11: Restoration options, intervention and species

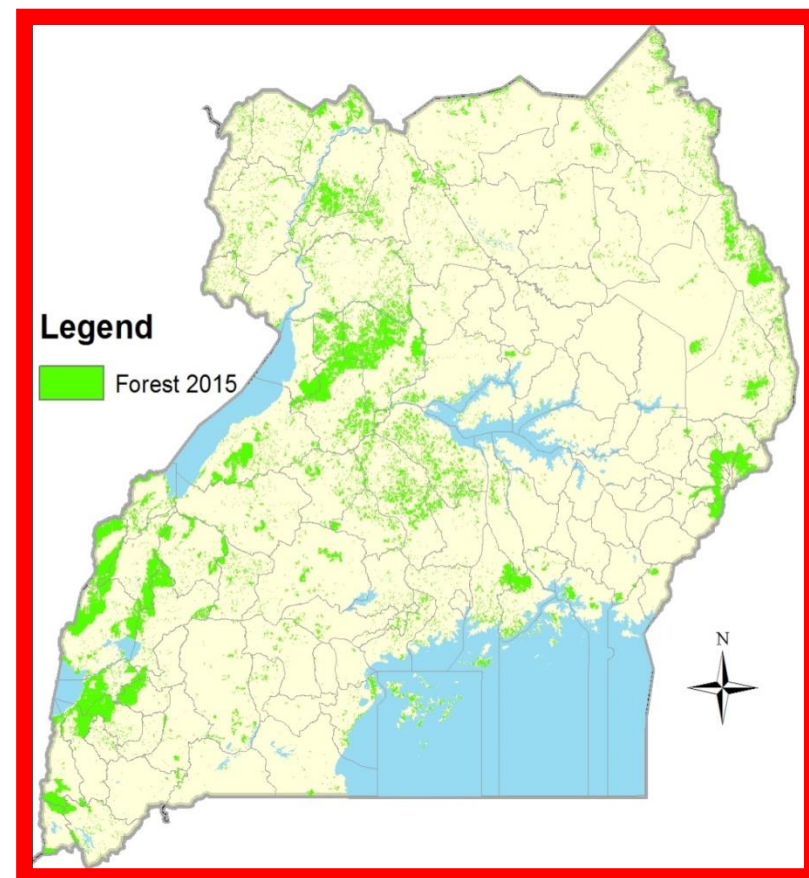
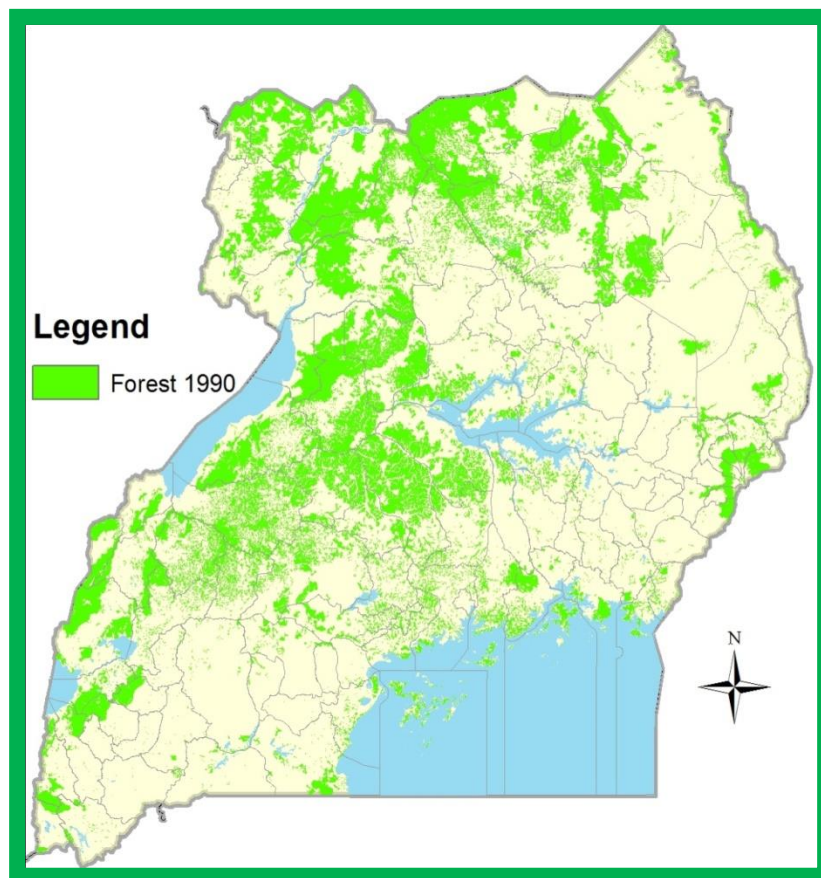
No.	Landscape	Restoration option	Specific intervention	Species
1	Northern Moist landscape	Agroforestry	Fruit tree-crop system (Annual crop fruit trees)	Citrus, <i>Tamarindus indica</i> , <i>Vitellaria paradoxa</i>
			Other tree-crop system	<i>Markhamia lutea</i> , <i>Azadirachta indica</i>
		Afforestation	Pure stands (single species plantations/woodlots)	<i>Pinus caribaea</i> , <i>Tectona grandis</i> , <i>Eucalyptus grandis</i>
			Mixed stands	<i>Gmelina arborea</i> , <i>Tectona grandis</i> , <i>Maesopsis eminii</i>
		Reforestation	Enrichment planting	<i>Khaya senegalensis</i> , <i>Albizia zygia</i> , <i>Milicia excelsa</i>
			Establishment of new stands	<i>Eucalyptus grandis</i> , <i>Pinus caribaea</i> , <i>Melia azedarach</i> , <i>Tectona grandis</i> , <i>Maesopsis eminii</i>
2	Afro-montane	Agroforestry	Shade trees – coffee/banana system	<i>Ficus spp</i> , <i>Maesopsis eminii</i> , <i>Gliricidia spp</i> , <i>Prunus Africana</i> , <i>Albizia coriaria</i> , <i>Cupressus lusitanica</i> , <i>Cordia africana</i> , <i>Croton macrostachyus</i> , <i>Pinus patula</i> , <i>Eucalyptus grandis</i>
			Grass bands	
		Afforestation	Pure stands (single species plantations/woodlots)	
			Mixed stands	
		Reforestation	Enrichment planting	
			Establishment of new stands	
3	South East Lake Kyoga Flood Plains	Agroforestry	Fruit tree-crop system (annual crops fruit trees)	<i>Cordia spp</i> , <i>Grevillia robusta</i> , <i>Leuceana</i> , <i>Calliandra calothyrsus</i> , Fruit trees, <i>Sesbania sesban</i>
			Other tree-crop system	<i>Calliandra calothyrsus</i> , <i>Markhamia lutea</i> , <i>Albizia coriaria</i> , <i>Ficus mucoso</i> , <i>Ficus natalensis</i> , <i>Croton macrostachyus</i> , <i>Cordia spp</i>
			Fodder banks	<i>Sesbania sesban</i> , <i>Calliandra calothyrsus</i> , <i>Ficus spp</i> , <i>Leucaena spp</i>
			Silvo-pastoral	
			Grass bands	<i>Napier grass</i>
		Afforestation	pure stands (single species plantations/woodlots)	<i>Eucalyptus spp</i> , <i>Pinus caribaea</i> , <i>Markhamia lutea</i>
			Mixed stands	<i>Milicia excelsa</i> , <i>Tectona grandis</i> , <i>Albizia coriaria</i> , <i>syzigium spp</i>
		Reforestation	Enrichment planting	<i>Albizia spp</i> , <i>Ficus spp</i> , <i>Croton macrostachyus</i> , <i>Sapium ellipticum</i> , <i>Maesopsis eminii</i> , <i>Milicia excelsa</i>
			Establishment of new stands	<i>Pinus caribaea</i> , <i>Eucalyptus grandis</i> , <i>Tectona grandis</i> , <i>Melia spp</i>
4	South-western rangelands	Agroforestry	Boundary planting	<i>Erythrina abyssinica</i> , <i>Ficus natalensis</i> , <i>Euphorbia spp</i>
			Tree-pasture system	<i>Acacia sieberiana</i> , <i>Acacia tortilis</i> , <i>Albizia</i>

				<i>coriaria</i>
		Afforestation	Pure stands (single species plantations/woodlots)	<i>Eucalyptus camaldulensis</i> , <i>Pinus caribaea</i>
			Mixed stands	<i>Calliandra calothyrsus</i> , <i>Markhamia lutea</i> , <i>Grevellia robusta</i>
		Reforestation	Establishment of new stands	<i>Pinus caribaea</i> , <i>Eucalyptus camaldulensis</i> , <i>Prunus Africana</i>
5	Karamoja	Agroforestry	Tree-crop system	<i>Faidherbia albida</i> , <i>Calliandra calothyrsus</i> and <i>Leucaena</i> spp, <i>Tamarindus indica</i>
			Boundary planting	<i>Dovyalis caffra</i> (Kai apple)
		Afforestation	Pure stands (single species plantations/woodlots)	<i>Tectona grandis</i> , <i>Melia azedarach</i> , <i>Senna siamea</i> , <i>Eucalyptus camaldulensis</i>
			Mixed stands	<i>Acacia</i> spp, <i>Balanites aegyptiaca</i> , <i>Azadirachta indica</i> , <i>Jacaranda mimosifolia</i> , <i>Markhamia lutea</i>
		Reforestation	Establishment of new stands	<i>Acacia senegal</i> , <i>Azadirachta indica</i> , <i>Melia azedarach</i>
			Natural regeneration	<i>Balanites aegyptiaca</i> , <i>Acacia</i> spp, <i>Vitellaria paradoxa</i>
6	Western Mid altitude landscape	Agroforestry	Fruit tree-crop system (annual crops fruit trees)	<i>Persea Americana</i> (Avocado), <i>Mangifera indica</i> (Mango)
			Other tree-crop system	<i>Maesopsis eminii</i> , <i>Cordia</i> spp, <i>Ficus natalensis</i> , <i>Albizia coriaria</i>
			Boundary planting	<i>Ficus natalensis</i>
			Alley cropping	<i>Maesopsis eminii</i> , <i>Grevellia robusta</i>
			Contour bunds	<i>Calliandra calothyrsus</i>
		Afforestation	Pure stands (single species plantations/woodlots)	<i>Pinus caribaea</i> , <i>Pinus patula</i> , <i>Pinus oocarpa</i> , <i>Eucalyptus</i> spp, <i>Maesopsis eminii</i>
			Mixed stands	<i>Maesopsis eminii</i> , <i>Albizia zygia</i>
		Reforestation	Enrichment planting	<i>Maesopsis eminii</i> , <i>Khaya anthotheca</i> , <i>Antiaris toxicaria</i> , <i>Celtis mildbraedii</i> , <i>Blighia unijugata</i> , <i>Aningeria</i> spp, <i>Mitrogyna</i> , <i>Albizia</i> spp
			Establishment of new stands	<i>Pinus caribaea</i> , <i>Pinus patula</i> , <i>Pinus oocarpa</i> , <i>Eucalyptus</i> spp, <i>Maesopsis eminii</i>
		Natural regeneration		<i>Maesopsis eminii</i> , <i>Khaya anthotheca</i> , <i>Antiaris toxicaria</i> , <i>Celtis mildbraedii</i> , <i>Blighia unijugata</i> , <i>Aningeria</i> spp, <i>Mitragyna speciosa</i> , <i>Albizia</i> spp
			Other tree -crop system	<i>Cordia</i> spp, <i>Ficus</i> spp, <i>Maesopsis eminii</i> , <i>Albizia</i> spp, <i>Grevellia robusta</i> , <i>Calliandra calothyrsus</i>
		Afforestation	Pure stands (single species plantations/woodlots)	<i>Pinus caribaea</i> , <i>Eucalyptus</i> spp, <i>Terminalia superba</i> , <i>Maesopsis eminii</i>

7	Lake Victoria Crescent		Mixed stands	<i>Maesopsis eminii</i> , <i>Albizia spp</i> , <i>Cordia spp</i> , <i>Ficus spp</i> , <i>Grevillia robusta</i> , <i>Calliandra calothyrsus</i> , <i>Celtis mildabraedii</i>
		Reforestation	Enrichment planting	<i>Maesopsis eminii</i> , <i>Terminallia ivorensis</i> , <i>Prunus africana</i> , <i>Albizia coriaria</i> , <i>Antiaris toxicaria</i> , <i>Fantumia Africana</i> , <i>Entandophragma angolense</i>
			Establishment of new stands	<i>Pinus caribaea</i> , <i>Eucalyptus spp</i> , <i>Terminalia superba</i> , <i>Maesopsis eminii</i>
		Natural regeneration		<i>Antiaris toxicaria</i> , <i>Measopsis eminii</i> , <i>Lovoa spp</i> , <i>Celtis mildabraedii</i>
		Riparian vegetation restoration		<i>Rauvolfia caffra</i> , <i>Lecaniodiscus fraxinifolius</i> , <i>Phragmites mauritanus</i> , <i>Ficus vallis-choudae</i>
		Agroforestry	Fruit tree-crop system (annual crops fruit trees)	<i>Mangifera indica</i> (mango), <i>Citrus</i> , <i>Artocarpus heterophyllus</i> , <i>Persea americana</i>
			Other tree -crop system	<i>Cordia spp</i> , <i>Ficus spp</i> , <i>Maesopsis eminii</i> , <i>Albizia spp</i> , <i>Grevellia robusta</i> , <i>Calliandra calothyrsus</i>
		Afforestation	Pure stands (single species plantations/woodlots)	<i>Pinus caribaea</i> , <i>Eucalyptus spp</i> , <i>Terminalia superba</i> , <i>Maesopsis eminii</i>
			Mixed stands	<i>Maesopsis eminii</i> , <i>Albizia spp</i> , <i>Cordia spp</i> , <i>Ficus spp</i> , <i>Grevillia robusta</i> , <i>Calliandra calothyrsus</i> , <i>Celtis mildabraedii</i>
		Reforestation	Enrichment planting	<i>Maesopsis eminii</i> , <i>Terminallia ivorensis</i> , <i>Prunus africana</i> , <i>Albizia coriaria</i> , <i>Antiaris toxicaria</i> , <i>Fantumia Africana</i> , <i>Entandophragma angolense</i>
			Establishment of new stands	<i>Pinus caribaea</i> , <i>Eucalyptus spp</i> , <i>Terminalia superba</i> , <i>Maesopsis eminii</i>
		Natural regeneration		<i>Antiaris toxicaria</i> , <i>Measopsis eminii</i> , <i>Lovoa spp</i> , <i>Celtis mildabraedii</i>
		Riparian vegetation restoration		<i>Rauvolfia caffra</i> , <i>Lecaniodiscus fraxinifolius</i> , <i>Phragmites mauritanus</i> , <i>Ficus vallis-choudae</i>

Source: MWE (2015)

ANNEX 12: Maps showing change in forest cover between 1990 and 2015



Source: NFA 2016

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