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Lehrstuhl für Bodenordnung und Landentwicklung

**Implications of Land Governance on Natural Resources Management:
The Case of Land-Use and Forest-Cover Change in Kibaale District,
Uganda**

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Abstract

The research imperative was to investigate the root causes of land-use and forest-cover change in Kibaale District, Uganda, as a governance issue. Methodologically, Remote Sensing, socio-economic (household surveys, interviews etc.), and Geographical Information Systems (GIS) techniques were used. The study quantified the spatial and temporal patterns of land-use change by analysing the Landsat Thematic Mapper (TM) images of 1986, 1995, 2002, and 2010. The processes of land-use change were analysed and inferences drawn from the socio-economic data to answer research questions.

This study found that the high rate of forest-cover loss is a cause for alarm. Between 1986 and 2010, about 63% of the total forest-cover was lost. Forest-cover change patterns involved temporal variations. Between 1986 and 1995, the average annual rate of deforestation was approximately 1.8%, which reduced to about 0.9% by 2002, and increased to 2.6% by 2010. However, between 2002 and 2010 the average annual rate of forest-cover loss was found to be approximately 7.2%. At this rate, the amount of forest-cover available in future is not likely to support the livelihoods unless remedial and deterrent measures are put.

At the proximate level, expansion of agricultural land and excessive wood extraction (timber and woodfuel) dominate land-use change processes. These are in turn driven by factors beyond the forestry sector; and are mostly well-knit with land tenure issues. Some land issues are rooted in the colonial history; others are the artefact of the prevailing governance shortfalls occasioned by unmonitored influx of immigrant settlers and erosion of institutional control. The land issue is more expansive. The study shows that land administration systems are slow and cumbersome, and with the costs of cadastral surveying beyond the means of low income groups, land registration is almost certainly a preserve for elites.

The study concludes that the complex underlying drivers of land use and forest-cover change are integral to the land governance system. A land governance response model was set to reverse the rate of forest loss through sustainable land management. Among other recommendations, the synergy among land management agencies should be created and operationalized, the influx of immigrant settlers must be halted or strictly regulated, and the environment and natural resource sector should be prioritized for funding as a means for institutional strengthening.

Key Words; Land Governance, land tenure security, Land-use, forest-cover change, Kibaale District, Uganda

Zusammenfassung

Das Ziel der vorliegenden Studie bestand darin, die Ursachen und Hintergründe für den Rückgang der Waldbedeckung im Kibaale Distrikt (Uganda) als „Governance-Problem“ zu untersuchen. Hierfür wurden sowohl Methoden der Fernerkundung und Geographische Informationssysteme eingesetzt als auch sozio-ökonomische Daten aus Haushaltsbefragungen und Interviews ausgewertet. Durch die Analyse von *Landsat Thematic Mapper (TM)* Bildern aus den Jahren 1986, 1995, 2002 und 2010 konnten somit die räumlichen und zeitlichen Veränderungen der Waldbedeckung quantifiziert und vor dem Hintergrund der sozio-ökonomischen Daten diskutiert werden.

Hierbei wird deutlich, dass der Verlust an Waldfläche besorgniserregende Ausmaße annimmt. Zwischen 1986 und 2010 konnte demnach eine Abnahme der bewaldeten Fläche um 63 Prozent festgestellt werden. Der Rückgang der ursprünglichen Waldbedeckung unterliegt allerdings zeitlichen Schwankungen. So lag die durchschnittliche Abholzungsrate zwischen 1986 und 1995 bei circa 1,8 Prozent, verringerte sich bis 2002 auf 0,9 Prozent und stieg bis 2010 wiederum auf 2,6 Prozent an. Jedoch zeigte sich im Zeitraum von 2002 bis 2010 eine durchschnittliche Abnahme der Waldfläche um 7,2 Prozent pro Jahr. Hält ein entsprechender Rückgang an, bzw. werden nicht unverzüglich Schutzmaßnahmen eingeleitet, dann reichen die zukünftig vorhandenen Waldflächen nicht mehr aus, um die Lebensgrundlage der ansässigen Bevölkerung zu sichern.

Die dominierende Art der Nutzungsänderung stellt die Ausdehnung landwirtschaftlicher Flächen sowie die übermäßige Entnahme von Nutz- und Feuerholz dar. Ursachen dieser Entwicklung liegen außerhalb des Forstsektors und stehen in engem Zusammenhang mit boden- bzw. eigentumsrechtlichen Fragen. Diese resultieren teilweise aus der kolonialen Vergangenheit. Vor allem aber sind sie das Ergebnis weit verbreiteter „Governance-Defizite“, die durch unkontrollierte Zuwanderung und Aushöhlung der bzw. Fehlen von institutioneller Überwachung verursacht werden. Probleme hinsichtlich des „Landspekts“ reichen allerdings noch weit über diese Ebene hinaus. Strukturen durch die Grund und Boden vermessen und diesbezügliche Informationen verwaltet werden (engl. *Land Administration*) sind zu schwerfällig und langsam. Die Registrierung von Landbesitz ist ein Privileg der Reichen, da die Kosten für Katastervermessung weit über dem Einkommen der breiten Bevölkerung liegen.

Die Studie kommt daher zu dem Schluss, dass die wahren Ursachen für den Rückgang der Waldbedeckung in defizitären Landgovernance-Strukturen begründet sind. Entsprechend entwickelt die vorliegende Arbeit ein „Landgovernance-Response-Modell“, um nachhaltiges Landmanagement zu fördern und eine weitere Abnahme bewaldeter Flächen zu verhindern. Unter

anderem wird empfohlen, Synergieeffekte zwischen zuständigen Behörden zu fördern, den weiteren Zuzug von Einwanderern zu regulieren sowie den Sektor für Umwelt durch eine bessere Ausstattung mit Finanzmitteln institutionell zu stärken.

Schlüsselwörter: Land governance, land tenure, security, land-use, forest-cover, Kibaale District

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The List of Acronyms

A. DFO	Acting District Forest Officer
ACCU	Anti Corruption Coalition Uganda
ACODE	Advocates Coalition for Development and Environment
ADB	Asian Development Bank
AG	Auditor General
ALC	Area Land Committees
AOI	Area of Interest
APRM	Africa Peer Review Mechanism
AusAID	Australian Agency for International Development
CAO	Chief Administrative Officer
CBD	Convention on Biological Diversity
CFRs	Central Forest Reserve
CFRs	Central Forest Reserves
COM	Commission of the European Communities
CSOs	Civil Society Organisations
DEA	Directorate of Environmental Affairs
DEI	Directorate of Ethics and Integrity
DFO	District Forest Officer
DFS	District Forest Services
DLB	District Land Board
DLO	District Land Office
DPC	District Police Commander
EMCBP II	Second Environmental Management Capacity Building Project
ENR	Environment and Natural Resource Sector
ERDAS	Earth Resource Data Analysis System
ESAAMLG	East and Southern African Anti-Money Laundering Group
FAO	Food and Agriculture Organisation of the United Nations
FD	Forest Department
FGDs	Focus Group Discussions
FGLG	Forest Governance Learning Group
FIEFCP	Farm Income Enhancement and Forest Conservation Project
FIG	International Federation of Surveyors
FLEG	Forest Law Enforcement and Governance
FSSD	Forest Sector Support Department
GIS	Geographical Information Systems
GIZ	Germany Agency for International Cooperation

GLP	Global Land Project
GoU	Government of Uganda
HIPCI	Highly Indebted Poor Countries Initiative
IFF	Intergovernmental Forum on Forests
IG	Inspectorate of Government
ILS	International Land Systems
IMCF	Inter Ministerial Cooperation Framework
IMCF	Inter-Ministerial Cooperation Framework
IUCN	International Conservation Union
KDLG	Kibaale District Local Government
LEMU	Land Equity Movement in Uganda
LULCC	Land Use/Land Cover Change
MA	Millennium Ecosystems Assessment
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MDGs	Millennium Development Goals
MEA	Multilateral Environmental Agreements
MFED	Ministry of Finance, Planning and Economic Development
MLHUD	Ministry of Lands Housing and Urban Development
MTTI	Ministry of Tourism, Trade and Industry
MWLE	Ministry of Water, Lands and Environment
NASA	National Aeronautics and Space Administration
NEIC	National Environment Information Centre
NEMA	National Environment Management Authority
NEMA	National Environmental Management Authority
NFA	National Forestry Authority
NPAPDG	National Program and Action Plan on Democratic Governance
NRM	National Resistance Movement Government
NTFPA	National Tree and Forest Planting Act
PAC	Public Accounts Committee
PEAP	Poverty Eradication Action Programs
PEAP	Poverty Eradication Action Plan
PES	Payment for Ecosystems Services
PFO	Private Forest Owners
PMA	Plan for the Modernisation of Agriculture
PPDA	Public Procurement and Disposal of Public Assets Authority
PSCP II	Second Private Sector Competitiveness Project
REDD	Reducing Emissions from Deforestation and Forest Degradation
RoU	Republic of Uganda

RoU	Republic of Uganda
SD	Systematic Demarcation
SLC	Scan Line Corrector
SLM SIF	Strategic Investment Framework for Sustainable Land Management
SPGS	Sow log Production Grant Scheme
SPSS	Statistical Package for Social Scientists
SRB	Surveyors Registration Board
THF	Tropical High Forests
TI	Transparency International
UBOS	Uganda Bureau of Statistics
ULC	Uganda Land Commission
ULI	Uganda Land Inventory Project
UNCCC	United Nations Convention to Combat Climate Change
UNDP	United Nations Development Program
UNECE	United Nations Economic Commission for Europe
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Program
UNFF	United Nations Forum on Forests
UPE	Universal Primary Education
USAID	United States Agency for International Development
USE	Universal Secondary Education
UWA	Uganda Wildlife Authority
WB	The World Bank
WRI	World Resource Institute

1. Introduction

Illegal forest exploitation which closely associates with corruption and organised crime (COM, 2003) is entangled with difficult land tenure problems. Even the Protected Area concept that involves strict management of natural and semi-natural forest types through a variety of approaches (Maître and Amsallem, 1999) has not worked in the prevailing state of land governance. Therefore, despite becoming final refuges for threatened species and natural ecosystems processes in the wake of fast advancing deforestation, many protected areas in the tropics are themselves vulnerable to human encroachment and other environmental stresses (Laurence *et al.*, 2012). Despite the enormous efforts by state and global actors to arrest declines in biological diversity, rates of deforestation remain high (Asner *et al.*, 2009, cited by Bawa *et al.*, 2011).

Although detailed documentation of illegal activities in the forestry sector is a relatively recent phenomenon (Callister, 1999), quantitative data on where, when and why land cover changes take place are still incomplete (Lambin, 1997). Whereas studies have disagreed on the extent of deforestation, succeeding findings show that forest loss is speeding up (Colchester, 1995) and some estimates suggest that we may be losing about 150,000 square kilometres of forest each year (Najam *et al.*, 2006). Initially, the study by the World Resource Institute (WRI) had suggested that the figure could be higher, as much as 204,000 km² annually (WRI, 1992 as cited by Colchester, 1995). Despite the startling revelations, many have not fully internalised the extent of the problem which begs urgent attention. As a result, forest crime which includes illegal logging, illegal occupation of forest land, woodlands arson, wildlife poaching, encroachment on both public and private forests, and corruption is rampant throughout the world (The World Bank, 2006). The concern about deforestation has shifted to tropical countries because that is where the majority of forest removals occur now (Kaimowitz, *et al.*, 2005).

The rate of deforestation and the gravity of its impact such as the loss of ecosystems services and biodiversity, climate change and others are high on the international agenda. Some outcomes including climate change, species loss and extinctions transcend local and national borders. The foregoing, the growth in awareness was the basis for the birth of the global environmental governance system that gained momentum in early 1970s, complete with an impressive institutional machinery (Najam *et al.*, 2006). The challenge for policy makers in the 21st C. is to protect the entire systems Earth and its subsystems and building stable institutions that guarantee a co-evolution of natural and social systems on a planet scale (Biermann, 2011). Since the 1972 Stockholm Conference on the Human Environment established the United Nations Environment Program (UNEP), many Multilateral Environment Agreements (MEAs) have been signed, and annual meetings held to streamline

implementation. Most particularly, 155 biodiversity related MEAs and 46 land conventions have been held (Najam *et al.*, 2006:30). Of these, the United Nations Framework Convention on Climate Change (UNCCC), the Convention on Biological Diversity (CBD), and the United Nations Convention to Combat Desertification seek to sustain forest ecosystems functions by addressing forest loss and degradation.

The efficacy of the global environmental governance depends on implementation both at the global and national levels (Najam *et al.*, 2006). Hence, the 2010 Millennium Development Goals (MDGs) Summit's resolved to achieve the 8 MDGs, of which goal 7 seeks to ensure environmental sustainability. The United Nations Forum on Forests (UNFF) adopted the Non-Legally Binding Forest Principles with four Global Objectives on Forests and further commits member states to reverse forest-cover loss and strengthen forest-related institutions. Therefore, the persistent decline in forest-cover ultimately reflects failures in the national and international environmental policies.

Effective enforcement of forest law alone is crucial but is still only part of the solution. Weak governance in forestry is inextricably tied to weak governance in society more broadly (The World Bank, 2006) and there is a strong correlation between corruption in the land sector and overall public sector corruption in a country (TI, 2011a). The process of conservation should be reenvisioned to include political empowerment to people, restitution of rights and human dignity, and building of local institutions (Bawa *et al.*, 2011). The desired solutions to forest loss must tackle the issues of land tenure arrangements, access rights, overly complex laws and regulations biased against the poor, and transparency and stakeholder participation in decisions directly affecting their livelihoods (The World Bank, 2006). The research imperative was therefore to investigate the root causes of land-use and forest-cover change as a land governance issue. The study refers to land governance as *“the processes by which institutional structures and individual actors make rules and policy decisions regarding access to, and ownership of land and its use, and the modus operandi through which these decisions are enforced and implemented, and how divergent opinions, needs, and goals are reconciled.”*

Uganda has the potential for effective forest conservation, sound and sustainable natural forest management and viable timber plantation, but translating this potential has been undermined by various factors and mainly bad governance and politics (Kanabahita, 2001). The World Bank (2012a) affirms that sound Environment and Natural Resource (ENR) management is difficult to attain under poor ENR governance because transparency and accountability are absent. Although the National Development Plan (NDP) 2010 considers forestry as a primary growth sector to contribute 6% to national Gross Domestic Product (GDP), it excludes the ENR from the priority sectors of national development for funding (Kamugisha-Ruhombe, 2010, GoU, 2009), in-keeping with the Highly Indebted Poor Countries (HIPC) Initiative. The

latest Land Policy draft (see RoU, 2011) attributes rampant forest depletion to the government's failure to respect the principle of public trust doctrine. In fact official statements from the government reflect a shift in its position on the sanctity of protected areas especially the Central Forest Reserves (CFRs) (Kamugisha-Ruhombe, 2007).

FAO estimated Uganda's forest-cover to have reduced from 52% (10, 800,000 ha) of the total land surface area in 1890, to 24% (5 million ha) by 2000 (Kazoora, 2001). By 2009, Uganda's forest-cover was 18% having declined from 24% in 1990 (GoU, 2012). Today, the decline is estimated at 92,000 ha per annum with 34% reduction in private forests compared to 12% in protected areas (ibid). In fact Tropical High Forest, broadleaved plantations represent only 4% of Uganda's total land area, down from 24% 20 years ago (NEMA, 2010). While governance issues have increased the human impact on the environment, nowhere is this problem more perceptible than deforestation in Kibaale District. The study by NFA 2006 shows that Kibaale lost about 49% of the total forest-cover in 1990-2005 and ranked Uganda's leading rural district in deforestation (NEMA, 2008). However, the problem may have been worse than it was thought. If the present trends continue unabated at the present rate, limited tracts of moist tropical forest-cover if any at all, is likely to be available to support livelihoods in future.

Deforestation in Kibaale District is inevitable considering the extent of land tenure problems. Land tenure is rooted in discriminatory colonial policies through the 1900 Buganda Agreement that introduced the "*Mailo* land" tenure system. It adversely deprived indigenous landowners of their ancestral land rights that were allocated to the minority Baganda – the absentee landlords today. However, to limit the land issue to the realm of colonial history is to misconstrue the full extent of the problem. Firstly, the contemporary governance problems have failed the efforts to address the effects of the colonial past in the district. Thus, Kibaale District inhabitants must contend with complex overlapping land rights and uneasy state of land tenure where the majority of land users live as tenants by occupancy. Secondly, the colonial legacy does not excuse the rise in the unmonitored influx of immigrant settlers, inadequate planning and non-transparent population resettlement programs, ethnic rivalry over the control of land and political leadership, institutional inefficiencies and surging forest crime.

Moreover, the thin presence of land administration agencies on the ground has incited local leaders to allocate forest land through phoney means, irrespective of whether it is under public or private ownership (Schelnberger 2008, Nsamba-Gayiiya, 2003). Thirdly, many land issues and remedial measures are beyond the scope of Kibaale District. The processes for obtaining and transferring evidence of land ownership are cumbersome because property registration procedures at the national level are relatively inefficient, expensive and non-transparent (GIM International, 2010). In addition, addressing inequitable land tenure by compensating absentee landlords is well beyond the financial scope of the Kibaale District (Schelnberger, 2008).

Practice has shown that land reforms have not been successful and Okuku (2005) opines that with political patronage, land tenure reform is an opportunity to expand the regime's political base.

Apart from the land sub-sector problems, there are fundamental governance shortfalls in forestry. Many lucidly argue that forestry too is tainted with corruption, ethnic tensions and politicization of technical matters (Kamugisha-Ruhombe, 2007, World Bank, 2012a). In addition, the Environment and Natural Resource sector has been routinely reported by the Auditor General with cases of bogus compensation claims conveniently settled out of court, bribes for licenses and work contracts, bribes paid to officers to underreport resource extraction, material equipment theft, and unremitted environmental charges (The World Bank, 2012a). While vulnerable groups of the poor are roundly seen as agents and victims of environmental degradation (NEMA, 2004/05), the lasting solution lies with coming to grips with inherent land governance issues. The study used Remote Sensing and GIS tools to map forest-cover changes in the district between 1986 and 2010, and analysed the root causes in the ambit of land governance.

1.1. Biodiversity Richness

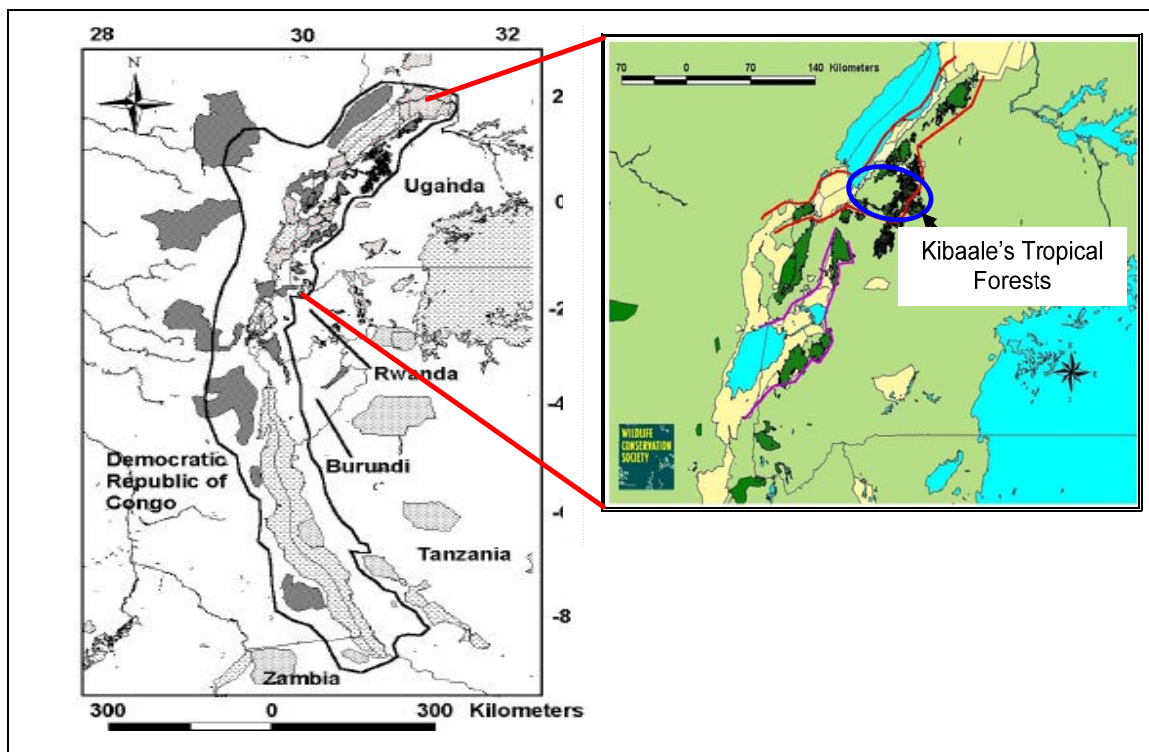
Uganda is a convergence zone for seven of Africa's distinct biogeographic regions or phytochoria (White, 1983, cited by USAID, 2006). Its geographical location is a zone between the ecological communities typical of the drier East African savannas and the moist West African forests which, combined with high altitude ranges, enriches the country with a high level of biodiversity (ibid). It is little wonder that Sir Winston Churchill referred to Uganda as the "pearl of Africa" at the start of the 20th C. (Kanabahita, 2001). For any account of Uganda's ecological integrity, it is difficult to ignore the valuable ecological systems of Kibaale District. Located in the ecologically sensitive Albertine rift, the critical biodiversity corridor, forests in Kibaale are linkages between natural forest habitats and allow connectivity for species dispersal and gene flow between larger forests. Albertine rift is a "biodiversity hotspot" and an endemic bird area, and also with high endemic¹ species of plants, mammals, amphibians, butterflies, birds, and reptiles than any other site in Africa (Plumptre *et al.*, 2003, USAID, 2006). In Map 1, the rift contains rift valley lakes and extends from the tip of L. Albert in the north down to the southern tip of L. Tanganyika.

The Albertine Rift is listed by Conservation International as one of the most endangered spaces of the world based on the levels of endemism and rates of habitat destruction (USAID,

¹ An "endemic species" is one which is only found in a particular region and no where else in the world. In the Albertine Rift, the range of these species is confined in habitats associated with the Albertine Rift valley (<http://www.albertinerift.org/Species/EndemicSpecies/tabid/2519/Default.aspx>).

2006). For Kibaale several tree *spp.* such as *Blidhia unijugata*, *Lovoa trichiloides*, *Khaya* and *Antiaris toxicaria* have been threatened with extinction due to over-cutting for timber (NEIC, 1995). A handful of surviving fauna such as elephants and baboons has been inventoried by World Wildlife Fund but most of it has been depleted through hunting and habitat alteration. Such loss of larger forest wildlife that facilitates tree seed dispersal in the tropics is known as the “empty forest syndrome” and such forests are known to be “ecologically dead” (Redford, 1992 cited by Sheil and van Heist, 2005). This has impaired natural ecosystems interactions which sustain forest regeneration and maintain forest structure and composition. This discussion is referred to in Chapter seven.

Map 1: Location of Kibaale Forests in the Albertine Rift



Source: Adapted from Plumptre (2002, 2003) (Kibaale area marked blue) by the author.

The components of biodiversity in Uganda in general are poorly understood and much is only known at initial stages of cursory studies from research institutions (USAID, 2006). More still, little is known about the primary pollinators of some tree species including the “African Mahogany” *spp.* e.g. *Khaya*, *Entandophragma*, *Lovoa spp.* (Osmaston, 1965 cited by Sheil and van Heist, 2000, 2005) that are being depleted. It is not surprising given that world-over, forest taxonomists have only managed to name 1.5 million of the world’s 5-80 million *spp.* of plants and animals of the Earth’s total dry surface, of which 7% is covered by tropical rain forests (NASA, 1998, Maître and Amsallem, 1999:4).

The National Environmental Information Centre (NEIC) (1995) reveals that Kibaale's forests contain high value tree species such as; *Blidighia unijugata* and *lovoa spp.*, but most have been depleted via pitsawing and agriculture expansion mainly in Buyaga, Bugangaizi, and KyanaISOKE. Kagombe CFR alone is known to have approximately 201 known tree *spp.*, of which 3 are endemic, 5 threatened and 9 are listed by IUCN (Plumptre *et al.*, 2003). Generally, the forest-cover outside forest reserves is classified as Albizia-Markhamia forests as a result of the dominance of these species, yet the main tree *spp* are; *Markhamia platycalyx*, *Albizia grandibrackteata*, *A. gummifera*, and *Antiaris toxicaria* (NEIC, 1995). The available species inventory cannot by any measure be construed as exhaustive. Thus, tropical forests in Kibaale District contain high biodiversity richness whose annual species extinctions go unnoticed. Given the lack of an exhaustive inventory of the surviving species, it is likely to be difficult to determine the amount of species extinctions between now and any particular date in future.

1.2. Background to Forest Conservation and Exploitation

In Kibaale District, just as the rest of East Africa, establishment of reserves managed scientifically has a colonial bearing (Otieno *et al.*, 2012). Most of the Central Forest Reserves (CFRs) were created for protection under the Legal Notice No. 87 of 1932, and by 1950, the majority of the forest reserves in Kibaale District today had been gazetted (GoU, 2006). They were meant to conserve erodible forest areas and allow forests to act as the main regulator of the hydrology of an area (Morrison, 1974 and Vink, 1975 as cited by Otieno *et al.*, 2012). Thus, CFRs in Kibaale are part of the 506 CFRs that form Uganda's Permanent Forest Estate (PFE) on Protected Areas (NFA, 2005, NEMA, 2006).

Until 2004, the forestry sector was run by the Forest Department (FD), formed in 1898 as half of the new Scientific and Forestry Department (Webster *et al.*, 2003). The poorly staffed and poorly funded FD began to harvest forests for nearly 30 years, through wild rubber collection, pitsawing especially of Mahogany (*Khaya and entandrophragma spp.*), Mvule (*Chrolophola = Milicia excelsa*) and milling of Podo (*Podocarpus spp.*), from Budongo Forest, farmlands of Busoga, and swamp forests of Masaka respectively (Webster *et al.*, 2003:1). The first national white paper on forestry development and the Forest Act promulgated in 1921 emphasized conservation and sustainable exploitation of the Tropical High Forests (THF) (Owino and Ndinga, 2004). Permits, fees, and licenses were introduced to allow the utilisation of forest resources, apart from poles and firewood for domestic use (Otieno *et al.*, 2012).

The profession staff capacity that the FD gained during early 1940s with the services of botanists, ecologists, wood utilization experts, administrators, popularized Uganda's forestry administration in Africa (Owino and Ndinga, 2004). The country attained a model status among the Commonwealth States in forest management in 1950s and 1960s (NFA, 2005).

After Uganda got independent in 1962, the supportive forest expatriates left. In the 1970s, Uganda embraced a dictatorial regime which dealt a blow to forestry; because all sectors and society disintegrated, and a 1^{1/2} decades civil war broke out (Owino and Ndinga, 2004). The scarce resources available to the FD reduced further in the mid-1970s and the system of high-tropical-forest management collapsed (The World Bank, 1993). A general breakdown of law and order worsened between 1972 and 1986 and forest resources were massively plundered by the military elites. Given that the FD had become weak, encroachers easily turned to CFRs for agriculture and settlement (NFA, 2005).

The National Resistance Movement (NRM) government made radical changes in land resource management since 1986, through sector wide reforms mainly in the early 1990s. The country's forest sector vision was set under Uganda Forest Policy 2001 as; “A *sufficiently forested, ecologically stable, and economically prosperous Uganda.*” Over 85% of the population is rural based, with subsistence agriculture as their economic mainstay (Kanabahita, 2001). Since the agricultural sector is mostly rain-fed and undeveloped, typical with family labour, rudimentary technology, lack of improved seed varieties and fertilizers, etcetera (ibid), forests play a big role in economic development. However, land-users are rapidly destroying the very forest resources sustaining their livelihoods. Proportions of vegetation including the naturally occurring vegetation with the bulk of species and ecosystems of particular concern are incessantly shrinking through cutting, cultivation, grazing, and burning, among other anthropogenic activities (USAID, 2006).

1.3. Forest Encroachment: An Overview

The National Forestry Authority (NFA) (n.d:1) refers to encroachment as the “entry of people with their activities into CFRs without permission, in contravention of Section 32 of the National Forestry and Tree Planting Act (NFTPA) of 2003.” Until early 1970s, the FD strictly regulated logging, charcoal burning (The World Bank, 1993), demarcated, and regularly reopened forest boundaries to prevent encroachment. But forests have been under pressure for the last 100 years from agricultural conversion due to population increase, urban demand for charcoal, overgrazing, uncontrolled timber harvesting and policy failures (Kanabahita, 2001).

Encroachment is the main cause of forest loss (Kamugisha-Ruhombe, 2007) through a pattern of activities; illegal logging often followed by forest clearance for small-scale agriculture. This is further discussed in chapter 6. About 30% of Uganda's Tropical High Forests (THF) has been classified as degraded, of which 75% of the forest remnants are degraded via timber exploitation (Kayanja and Byarugaba, 2001). By extension, the term THF is used to distinguish between the wetter tropical rainforests and drier woodlands with lower and sparser canopy (ibid). The 2006 study by NFA particularly reveals that Kibaale District was Uganda's

most forested district by 1990, but by 2005, it had the highest rate of deforestation (NEMA, 2008) (see Table 1).

Table 1: Kibaale and other Districts with the Highest Deforestation Rates

District	1990 (ha)	2005 (ha)	Loss	% Loss
Kibaale	114,102.66	58,268.06	-55,834.60	48.9
Mukono	100,626.65	63,977.12	-36,649.53	36.4
Wakiso	28,461.12	3,781.68	-24,679.44	86.7
Hoima	75,143.95	58,889.27	-16,254.68	21.6
Mayuge	15,162.05	0	-15,162.05	100
Mubende	18,618.86	3,906.65	-14,712.22	79.0
Mpigi	40,300.64	27,169.67	-13,130.98	32.6
Mityana	10,247.86	4,137.66	-6,110.20	59.6
Masindi	36,373.82	31,933.49	-4,440.34	12.2

Source: NFA, 2006 as cited by NEMA (2008)

According to the RoU (2001) encroachment arises from the weak commitment of local authorities to sustainable forestry, for they prioritize revenue regeneration than forest conservation. In 1986-92, the government addressed itself to the issue of encroachment on Protected Areas and some encroachers were effectively evicted, but this effort was short-lived due to presidential elections (Kamugisha-Ruhombe, 2007). The exact number of encroachers in the district is not well known. What is very clear is that 300 of Uganda's 506 CFRs have been occupied by encroachers in varying numbers (NFA, n.d) and almost all CFRs in Kibaale are partially or entirely encroached on.

1.4. Forest Ownership and Management

Forest ownership is categorised into; private and government forests. Forest ownership in Kibaale District has however evolved from the problematic history of land tenure. It was not until 1968 when FRs became CFRs, that the management of FRs was split between Local Governments and Kingdoms. Even then, access to forest use rights in Kibaale and entire Bunyoro was still at the mercy of the governor in the colonial government. The 1933 Bunyoro agreement confirms that; *“The control of all existing forests and all areas... declared...forests shall vest in the Governor subject to the right of the natives to take forest produce in accordance to the procedure laid down...by the Protectorate laws. If ... the Native Government desires to exploit any forest, which is not being developed or exploited by the direction of the Governor, and the exploitation or development of which does not form part of any general plan approved by the Governor, then their wishes shall receive the sympathetic consideration by the governor”* (1933 Bunyoro Agreement as cited by GoU, 2006:12).

These restrictions on the Kingdom would later ease in 1955 when the 1933 Bunyoro Agreement was revised. The revised 1955 Agreement states; *“The control of all areas gazetted*

as Central Forest Reserves is invested in the Governor subject to the rights of the people of Bunyoro-Kitara to take forest produce in accordance with the procedure laid down...by the Protectorate laws. So long as Bunyoro-Kitara has an adequate forest estate, the control of all other forests including hill forest reserves, is vested in the Native Government of Bunyoro-Kitara” (Webster *et al.*, 2003). Table 2, shows forms of private forest ownership along: Freehold, ii) Leasehold, iii) Mailo land, and iv) Customary systems of land tenure. With respect to public forests, the government manages the Permanent Forest Estate through NFA and Uganda Wildlife Authority (UWA) in trust, on behalf of the citizens of Uganda. The Forest Policy 2001 refers to the Permanent Forest Estate as “the land that is set aside for forestry activities in perpetuity for Ugandans.”

Therefore, the State as a trustee simply holds the legal title, or “corpus” to the trust property, while exercising an ethical relationship of confidence or “fiduciary duties” as entrusted by the citizens, the beneficiaries of the trust (RoU, 2011:15). In Kibaale District, 15 natural CFRs of about 25,503ha are managed by NFA, and 3 plantation CFRs (Busana, Kakumiro, Kagadi plantation forests) of Eucalyptus *spp.* of 37ha are under Bunyoro-Kitara Kingdom. The district website notes that about 70% of the forest-cover is located outside CFRs, on private land, but this may have changed with losses in forest-cover.

Table 2: The Prevailing System Forest Ownership

Category	Type	Owner	Owner Rights/Responsibilities
Private	Customary	Individual/family	Vested in individuals/communities (clans, families) who own trees and regulate tree resource use. Use subject to local, national policy and legal framework
	Mailo	Landowner	Property of landowner, who has absolute rights to tree and forest resources. Tenants on land lack security of tenure over tree and forest resources, subject to local and national policy and legal framework
	Freehold	Private landowner-individual or institution	Individual or institution has absolute rights to tree and forest resources, with regulation from government, subject to local and national policy and legal framework
	Leasehold	Lessee: land owned on a contractual agreement with leaser	Agreement vests rights to tree and forest resources in the lessee, for the duration of the contract, subject to local and national policy and legal framework
State	CFRs, LFRs NPs, Wildlife Reserves	NFA, Local government UWA	Property held in trust for the people of Uganda. Planning and management by the responsible body, subject to local and national policy and legal framework

Source: Adapted from Plumptre (2002)

1.5. Classification of Tropical Forests

Forest growth and expansion in Kibaale and other areas including Kasyoha-kitomi along the western rift valley into areas abandoned in the last century emerged from rinderpest, sleeping sickness, and wars (Langdale-Brown *et al.*, 1965, as cited by Obua *et al.*, 2010). Under the

National Forest Plan, 2002 most of these forests are classified as part of the Permanent Forest Estate (PFE). The NFTP 2003 generally splits tropical forests into; a) Central Forest Reserves b) Local Forest Reserves, c) Community Forest Reserves, d) Private Forests, and e) Forests forming part of a wildlife conservation area declared under the Uganda Wildlife Act–Cap 200. Kibaale District forests therefore fall under Central Forest Reserves and Private Forests. Large portions of natural forests have been reduced to crop fields, savannah land and secondary forests. Secondary forests are “*woody formations where human intervention has destroyed the original natural forest*” (Maître and Amsallem, 1999).

NFA (2005) further splits CFRs into; i) CFRs of ecological value (*watershed protection, protection of water bodies and river courses*); ii) CFRs with biodiversity importance; iii) CFRs with Tropic High Forests, of importance for industrial plantations, and iv) CFRs subject to further consideration. However, CFRs generally summed up into; production and protection forests categories. Protection forests include Tropical High Forests, savannah woodlands and grasslands that protect watersheds and water catchments, biodiversity, ecosystems and landscapes prone to degradation from human use (NFA, 2005). Thus for their location in the L. Albert watershed and support of complex wetland ecosystems, CFRs in Kibaale District fall in the protection category.

1.6. A Global Dimension of Forest Land-Use Changes

Land-use change is a locally pervasive and globally significant ecological trend (Argarwal *et al.*, 2002) responsible for; loss of biodiversity, environmental services, and productive forest assets. Forest loss is a source of CO₂ and thus significantly factors in global climate change processes through the release of carbon dioxide (Pearce and Brown, 1994). NASA (1998) concurs that an acre of tropical forest stores 180 metric tonnes of carbon and when the forest is cleared by burning, cutting for pastures, cropland or settlement, the tree trunks release the carbon that was stored. As carbon joins with oxygen, it is released in the atmosphere as CO₂. Based on the global warming fact sheet, from 1950 to 1990, deforestation released into the atmosphere about 122 billion metric tonnes of carbon worldwide (NASA, 1998).

Forest loss in Kibaale is now clear but lack of valid data about its severity, impact and causes begs for more study. This will help to approximate the amount of carbon released through deforestation, and set deterrent and remedial measures against forest loss. What is known so far is that for 2010, the CO₂ sequestered by Uganda’s standing forests established using FAO 2010 estimates of the country’s carbon stocks, at 399 million tonnes (The World Bank, 2012a). The estimation of CO₂ release via deforestation is beyond the scope of this study.

1.7. Problem Statement

Deforestation is at the centre of any account of land and environmental problems in Uganda. It is little wonder therefore, that Kibaale District which has struggled with the “land question”

since the 1900 Buganda Agreement is simultaneously ranked Uganda's leading rural district in deforestation (see NFA, 2006 as cited by NEMA, 2008). Post-independence governments have done little to resolve the effects of the colonial history, and as a result, the land issue has transformed into an ethno-political crisis. Until recently, the ecological dimension of the land problem has not been noticed. With legal land owners being absentee landlords, land occupants are exposed to constant fear of eviction. Yet we must stop before we uncritically attribute land tenure problems to the colonial legacy. Admittedly, the unfair colonial policy undermined the indigenous system of land ownership, but does not excuse the rising tide of land grabbing, institutional inefficiencies, illegal land allocation, and illicit human activities (e.g. illegal logging, illegal occupation of gazetted forests, etc), and other ills prevalent in Kibaale District.

The USAID (2006) found that the Ugandan Albertine Rift (of which Kibaale District is part), lost over 800 km² of the forest habitat in 15 years to the high pressure from neighbouring communities. According to NEMA (2008), the study by NFA 2006 found that Kibaale District lost about 49% of the total forest-cover between 1990 and 2005. However, the extent of the problem could be worse than it was thought. To address the problem, the national government through the NDP 2010 (GoU, 2009) commits to restore the forest-cover to its 1990 extent by 2015. However, the government has, albeit with little success, sought to compensate absentee landlords and redistribute land to the occupants in line with the provisions of the Land Act. The real challenge is that the restoration of forest-cover is likely to be difficult unless sufficient investments are made to improve the governance conditions. Land reforms have not yielded to public expectations, and inadequate institutional control of land management processes has created room for land conflicts and encroachment. The problem is widespread, and the government has been faulted for the failure to observe her commitment to protect the sanctity of the Permanent Forest Estate (RoU, 2011, Kamugisha-Ruhombe, 2007). Against this backdrop, this study analyses the spatial land use patterns and processes of forest-cover change at the micro level of Kibaale District, and further assesses macro-scale processes to explain the ultimate drivers of forest-cover change in the context of land governance.

1.7.1. Objectives

With reference to the problem statement above, the study has been conducted under the guidance of the following research objectives;

1. To establish the spatial patterns and processes of land-use and forest-cover change
2. To examine the underlying drivers of land-use and forest-cover change processes in the ambit of land governance
3. To formulate a framework of recommendations for good forestry through an improved land governance system

1.7.2. Research Questions

In response to the objectives, the study was guided by the following research questions;

1. What are the patterns of land-use and forest-cover change?
2. What are the processes of land-use and forest-cover change?
3. What are the underlying drivers of land-use and forest-cover change processes?
4. How is land governance associated with land-use and forest-cover change?
5. What remedial measures are required to counteract excessive forest-cover change?

1.7.3. Research Hypothesis

This study was based on the hypothesis that forests conservation and management is dictated by the state of land governance. Thus, where forest-cover loss is rampant, then institutional capacity and efficiency, transparency, accountability, popular participation, and other universal principles of land governance are at issue in the land management processes.

1.8. Scope and Significance of the Study

1.8.1. Scope

In the spatial context, the study was conducted at a district level, with focus on the reality of the governance system at the district level nested in the national land governance framework. Therefore the study covered the micro-level where individual decisions on land use are made, to the macro level where complex factors interact to influence household decisions. In fact MA (2003) commends to limit the study on the spatial scale of individual actions to the area of access rights such as an agricultural plot, a forest patch etc., and assess socio, economic and political structures which include actors at larger scales. The study used successive land cover maps for 1986, 1995, 2002 and 2010, to quantify land use and forest-cover change patterns with Remote Sensing and GIS tools. Given the huge number of actors involved in land governance, the study narrowed down to those most critical at the time of data collection.

1.8.2. Significance of the Study

Information about forest loss in Kibaale District has been remarkably scarce. NEMA (2008) observes that the study by NFA 2006 brought to light the spatial extent of rapid forest loss in the district. Most of the extant literature is available at the regional and national scales. For instance Langdale-Brown (1960) estimates the extent of Uganda's vegetation-cover for 1900, 1926 and 1925, and Babigumira *et al.*, (2008) estimate an econometric model for the probability of deforestation in Western Uganda.

Much of the information available on land use and forest-cover change is obsolete and a few cursory studies have not linked land use change to the ultimate problem of land governance. This study establishes the spatial patterns of land-use and processes of forest-cover change in Kibaale District for the years; 1986, 1995, 2002, and 2010. At the micro-scale, the study

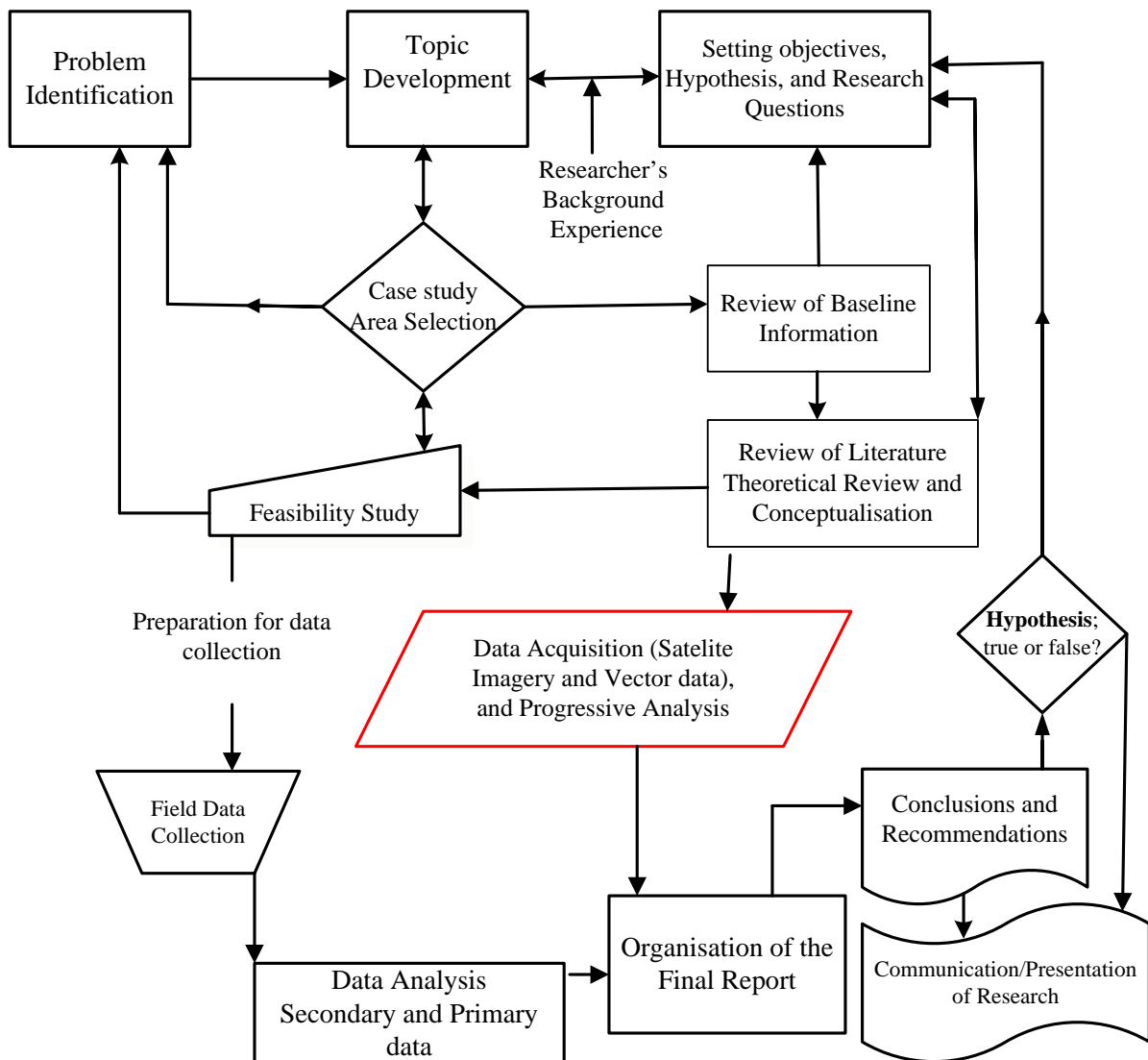
discusses the processes of human-land interactions or proximate drivers of forest loss, and further analyses the context of these drivers at the macro scale in the realm of land governance. The study sets intervention measures to avert forest loss, and at the international level, it is neatly linked with the Reduction of Emissions from Deforestation and forest Degradation in Developing countries (REDD) and the Millennium Development Agenda.

1.9. Organization of the Thesis

This thesis is organized in seven chapters. Chapter 1 discusses the introduction and Chapter 2 focuses on the theoretical background to the study. It analyses the relevant theories regarding land use and forest cover change in the context of land governance. The chapter uses the systems theory to explain complex interrelations in land management system as a basis for the irreducible complexity of the drivers of land use change. Chapter 3 assesses the background to Kibaale District with particular focus on the evolution of land governance including the rise of absentee landlords, influx migrant settlers, and interest groups. It reflects the path-dependence of land tenure; i.e. the evolution of land governance. Chapter 4 entails the research methodology, and critically analyses the rigorous process and methods of data collection, organization and analysis used. Chapter 5 analyses the contemporary system of land governance in the context of land administration and forestry. The chapter covers the structure, actors and instruments of the land governance that broadly represent the macro-structural aspects and micro actors in land use change processes. Chapter 6 presents the study results, including land-use and forest-cover patterns, the processes, and land tenure relations. Chapter 7 discusses land governance conditions as the ultimate forces behind forest loss in order to arrive at an encompassing account of causality. Chapter 8 entails conclusions and recommendations with a land governance response model to address deforestation.

1.10. Research Process and Framework

Figure 1: The Research Framework



Source: Author

In Figure 1, the procedure marked **red** is an enhanced step that has been further explained by figure 16 page 69 in chapter four.

2. Theoretical Background to the Study

During the 10,000 years before 1950, forest cover declined from around 40% to 30% of the total land mass of the Earth; and it has taken another 50 years to reduce to 18% (Bryant *et al.*, 1997 cited by Kaimowitz, *et al.*, 2005). It is against this prolonged history of forest destruction that led Hans Carl von Carlowitz (1645-1714) to develop the concept of sustainability or “Nachhaltigkeit” in Germany. To date however, there is no integrative framework to provide a unifying theory for the incites and pathways of land-use change and a more process oriented understanding of how multiple macrostructural variables interact to affect micro agency with respect to land (Lambin *et al.*, 2003).

Lambin *et al.* (2003) urge a level of integration in research on Land-use/land-cover change to adopt a combination of perspectives of understanding, through the agent based, the systems, and the narrative approaches. Each perspective approaches the impact on land of the interactions between macrostructure and micro agency from a different vantage point. The “immiserization theory”, the “Frontier theory” (See Rudel, 1993 as cited by Lambin and Geist, 2001, Rudel & Roper, 1998), and others tried to explain the paths to rain forest destruction. The immiserization theory attributes deforestation to expanding poor peasant populations who have few alternative economic opportunities and thus decide to clear additional land for agriculture (Rudel & Roper, 1998). The Frontier theory identifies entrepreneurs, companies, and small farmers working in concert as the chief agents of deforestation (Rudel & Roper, 1998).

2.1. Basic Concepts Understood

2.1.1. Forest: Evolution and Definition

The term “Forest” comes from the Latin word *forestis silva* meaning the Royal forests that were established as grounds for Emperor Charlemagne to hunt and exploit (Quinion, 2004). *Silva* meant “woodland” or “woody vegetation” (just as “sylvan” and “silviculture”) (Quinion 2004, van Noordwijk *et al.*, 2001) while *forestis* meant “outdoor, outside” which relates to the Latin word *fores*, “door” so that *forestis silva* generally meant “*beyond the main or central area of administration, outside the common law*” (Quinion, 2004). Such areas normally included a mixture of land uses with natural forests and plantations of native trees among others. Quinion notes that the phrase *forestis silva* was later shortened to *forest*, but retained a sense of separateness and exclusion. The Normans brought this ideology with them when they attacked England in 1066 where forest to them and their ancestors meant an area of unenclosed countryside comprised of highly variable mixture of woodland, heathland, scrub and agricultural land (Quinion, 2004). The term forest would later be spread at the heels of colonialism and globalisation.

There are many definitions advanced to define the forest, which defer on key points such as; the quantitative thresholds for crown cover, height and minimum area, the treatment of non-forest land uses and temporarily un-stocked areas (FAO, 2007). For instance, FAO (2000) refers to forest as the land of more than 0.5ha with a tree canopy cover of more than 10%, which are not primarily under agricultural or urban land use, with a minimum height of 0.5 meters *in situ*. This definition excludes the trees grown for agricultural production such as fruit plantations and agro-forestry systems. The working definition of forest adopted from RoU (2003 Cap 248) is; “*an area of land containing vegetation association mainly composed of trees of any size, and includes a natural forest, woodland or plantation, the forest produce in a forest, and the forest ecosystem.*” According to van Noordwijk *et al.*, (2001), the term forest is commonly used to mean land cover which is dominated by trees, although its meaning also includes stands of completely natural vegetation, monocultural, even-aged plantations, or any type of vegetation within this range. The confusion has spread to the terms associated with forest including such words as deforestation, reforestation, afforestation.

2.1.2. Defining the Land and Land-Use Linkages

The terms “land-use” and “land” are distinct, but they are intuitively inter-linked; partly because of the complex and holistic definition of land. It is crucial therefore that the definition of land is herein clarified prior to the discussion of what land-use actually is.

2.1.2.1. The Definition of Land

The working definition of land is adopted from FAO and UNEP (1997) as “*a delineable area of the earth's terrestrial surface, encompassing all attributes of the biosphere immediately above or below this surface including those of the near-surface climate, the soil and terrain forms, the surface hydrology (including shallow lakes, rivers, marshes, and swamps), the near-surface sedimentary layers and associated groundwater reserve, the plant and animal populations, the human settlement pattern and physical results of past and present human activity (terracing, water storage or drainage structures, roads, buildings, etc.).*” Williamson *et al.*, (2010) note that land includes the physical (buildings, resources) and cognitive (theory, concepts) aspects. They argue that as nature, land means natural environments, features associated with the working of nature without human effort; mineral deposits, forests, water, fish, sunlight, rainfall, soils and topography. It is a base to terrestrial biodiversity providing biological habitats and gene reserves for plants, animals, and micro-organisms below and above the ground (FAO, 1995) with physical, ecological, legal, and cultural perspectives (UNECE 2005). What constitutes land, the use of land, and the value of land is far more than can be seen with the naked eye (Larsson, 1997:8).

2.1.2.2. Defining Land-Use

From a general view, land use is an action performed on the land by humans to meet one or more objectives (van Noordwijk *et al.*, 2001). The term has been defined from two major perspectives; the natural scientists' perspective and the social scientists' perspective. From the natural scientists' perspective, land-use is interpreted in terms of patterns of human activities such as agriculture, forestry, infrastructure and building constructions which alter land surface processes including biodiversity, biogeochemistry and hydrology (Ellis, 2010). Consistent with this argument, Lambin and Geist (2006:43) refer to land-use as a “*sum of proximate causes of land-cover change; i.e. human activities or immediate actions that originate from the intended manipulation of land cover.*”

GTZ (1999) observes that land-use considers production and includes land functions such as; land recreation, protected areas, road building, waste disposal, and use restricted areas such as buffer zones for exhaust gases, areas for regenerating groundwater, buffer zones for traffic noise pollution, etc. From the perspective of social scientists and land managers, land-use includes social and economic purposes, but also contexts for and within which lands are managed or left unmanaged such as subsistence versus commercial agriculture, private versus public land, rented versus owned, etc (Ellis, 2010). This study adopts the definition of land use by Global Land Project (GLP) (2005:64) as “*the arrangements, activities and inputs people undertake in a certain land-cover type - to satisfy human needs and interests - which produce change or maintain it, and includes parks, reserved, national-state forests, cultivation and settlement*”.

2.2. Land-Use and Forest-Cover Change

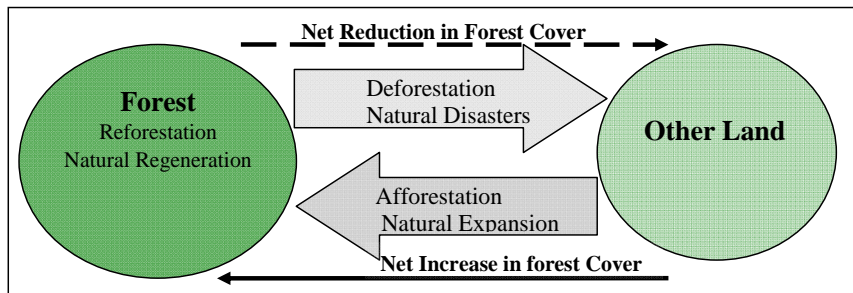
2.2.1. Decoupling Land-Use/Forest-Cover Change and Land Change

Forest is an important category of land cover. Land cover is the observed biophysical cover of the Earth surface such as forests, wetlands and grasslands (GLP, 2005). As such, forest-cover change is a fundamental element of Land-Use/Land-Cover Change (LUCC) (also called land change) which is the human modification of the Earth's terrestrial surface (Ellis and Pontious, 2007). In the mid-tropics, forest conversion to pasture or agriculture is one of the dominant land-use changes (Chappin III *et al.*, 2002, Lambin *et al.*, 2003). Moreover despite the global net reduction in forest clearance, available data shows dramatic land-use changes are taking place in the humid forested areas of the tropics and subtropics. FAO (2005) reveals steady removals of tropical forest-cover either selectively (removal of commercially viable trees) or rapid and spontaneously (burning, or biomass removals for settlement and agriculture).

Deforestation is often used synonymously with forest-cover change. To some, deforestation is simply the sum of all transitions from natural forest-classes (continuous and fragmented) to all other classes (see FAO, 1997 as cited by Contreras-Hermsilla, 2000). For Chappin III *et*

al., (2002), it is a category of land-use change, as a shift to a different use (land-use extensification) or an intensification of the existing one. Forest-cover change is not necessarily a result of land-use change, but can occur if for example, proximate drivers such as timber extraction and swidden agriculture are higher than the rate of forest re-growth (Turner & Meyer, 1994). It involves a sum of changes from forest to other land use types, or from other land-use types to forests as shown in Figure 2.

Figure 2: A Simplified view of Forest-Cover Change



Source: Adapted from FAO 2005

Land use change manifests through conversion and modification (Turner & Meyer, 1994). Conversion is a shift from one land-cover to another (e.g. forest to grassland), while modification is the alteration of the land-cover structure such as the thinning of a forest or change in forest composition (Turner & Meyer, 1994). Deforestation is a vital conversion in terms of spatial extent and ecosystem, and global consequences (Chappin III *et al.*, 2002). In terrestrial ecosystems, land-use conversion embraces human-induced changes from an ecosystem to another, dominated by different physical environment or plant functional type such as the change from forest to pasture (Meyer and Turner, 1992). Land-use modification is the human alteration of an ecosystem in ways that affect ecosystem processes, community structure, etc, without radically changing the environment or plant functional type, such as change from natural forests to managed forests, savannah management as grazing lands, or low input agriculture to high input agriculture (ibid, Chappin III *et a.l.*, 2002).

2.2.2. Drivers of Land-Use and Forest-Cover Change

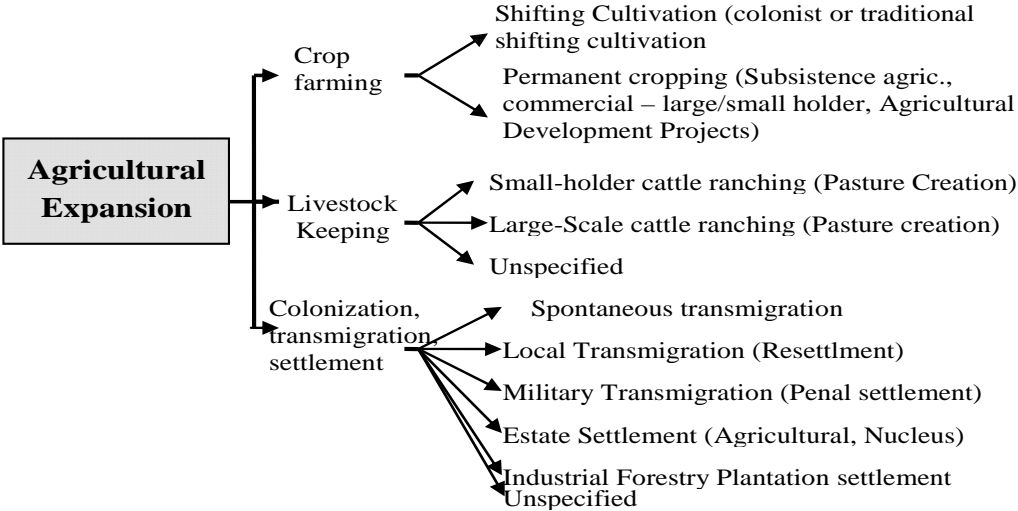
A driver refers to any natural or human induced factor which directly or indirectly causes a change in an ecosystem (MA, 2005:175.). The biophysical factors both biotic (primary productivity) and abiotic (soil quality, terrain, climate, high density of marketable woods) define predisposing conditions for land-use change among localities and regions and across time (Lambin *et al.*, 2001).

2.2.2.1. Direct Drivers

Drivers are split into two categories; direct drivers (proximate/local), and b) indirect (underlying/root) drivers. Direct drivers are physical forms of outright land cover alteration

that operate by unequivocally influencing ecosystems processes (MA, 2003). Contreras-Hermosilla (2000) however defines direct drivers of deforestation with emphasis on such factors as the search for commercial profits and the means of subsistence. The most held view is that direct drivers are physical actions on land-cover; expansion of agricultural land, infrastructure or extension of built up structure, and wood extraction operating at a local scale such as individual farms, households, and communities (Lambin and Geist, 2006). They explain how humans deplete forest ecosystems and can be split into numerous sources as shown in Figure 3

Figure 3: Broad Categories of Agricultural Expansion at the Proximate Level



Based on Lambin and Geist (2006)

2.2.2.2. Indirect/Underlying Drivers

Unlike direct drivers, indirect drivers originate in spheres that may be quite distant from, and apparently unrelated to, decisions by the main agents (Contreras-Hermosilla, 2000). They originate from regional (district, provinces, national) or even global levels. In fact most of the underlying drivers originate in the very nature of society, in ways that human societies organise themselves (Contreras-Hermosilla, 2000). Indirect drivers exist in complex political, institutional, economic, technological, demographic and socio-cultural realms. They mediate factors including institutional arrangements regulating access to land (e.g. privately, communally, federal and state held forests), ethnic affiliation, class or wealth status – power relations - gender, and biophysical factors (Young 2002a as cited in Lambin and Geist 2006). They are far removed in the causation chains from deforestation agents, and act more diffusely by altering one or more direct drivers and their influence can be established by clearly understanding their impact on direct drivers (MA, 2003, Contreras-Hermosilla, 2000) yet their influence varies from place to place (Geist and Lambin, 2001).

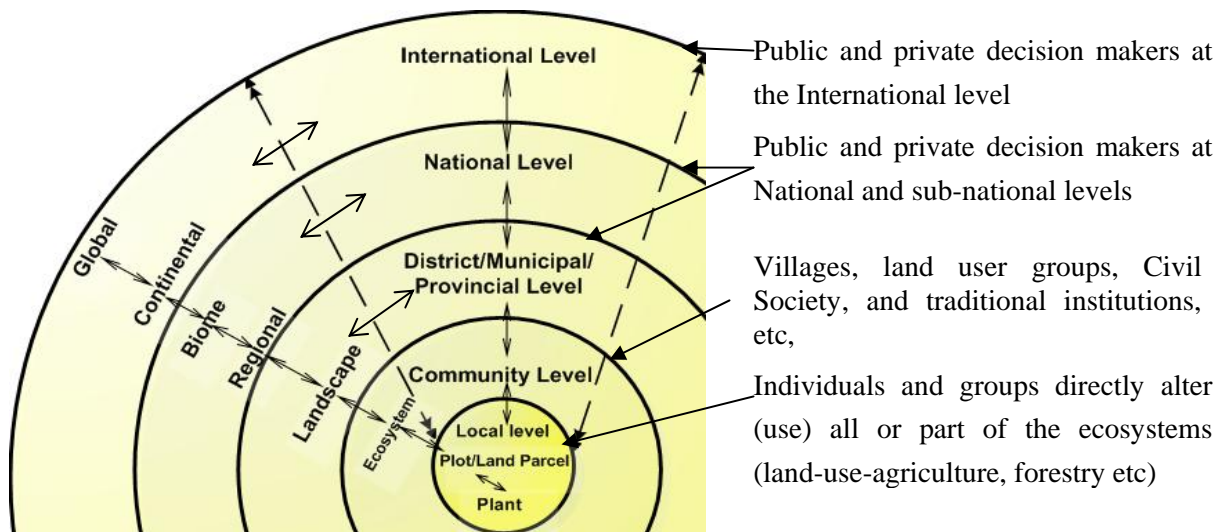
2.2.2.3. Agents of Land-Use and Forest-Cover Change

Forest-cover change arises from manifold activities of several agents. The agents are people who physically (or whose decisions over their labour forces) convert forests to non-forest uses, and they include small farmers, plantation-estate owners, infrastructure construction agencies, logging companies, mining and oil and farming corporations, forest concessionaires, and ranchers, among others (Kaimowitz *et al.*, 2005, Contreras-Hermosilla, 2000). While agents are associated with direct drivers, their actions are influenced by underlying causes (Sengupita & Maginnis, 2005, Kaimowitz *et al.*, 2005).

2.2.2.4. The Causation Chains in Land-Use and Forest-Cover Dynamics

At any given level of governance, decision makers control some drivers, but they are influenced by other drivers beyond their control. Drivers that decision makers control are endogenous, and those that control them are exogenous (MA, 2003). At local levels decision makers are individuals and small groups who directly alter part of the ecosystems, while public and private decision makers are at the municipal, provincial and national levels, and even the international level (*ibid.*). There is complex interplay between levels of organization that translate indirect drivers into complex interactions.

Figure 4: Governance Hierarchies and Corresponding Ecosystems



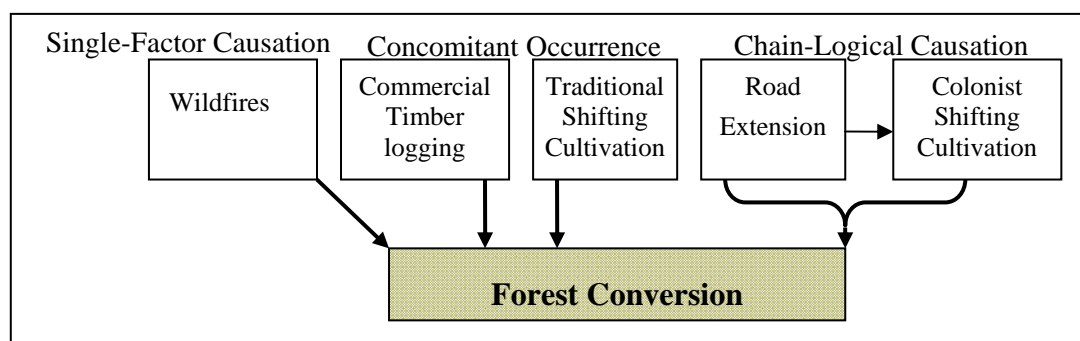
Source: Based on MA (2003)

But while some drivers are partially controlled by decision-makers, the separation between endogenous and exogenous drivers is sometimes not as neat as one would expect (Contreras-Hermosilla, 2000). There are long causation chains that ultimately result into deforestation. Depending on the analysis, individual causes can be seen as the effect of higher causes (*ibid.*). Land-use change involves the interaction of drivers that operate intermittently (trigger events) or gradually, and they may be biophysical (droughts, hurricane) or socio-economic (such as

violent conflicts) (Lambin *et al.*, 2001). Figure 5 shows a common scenario, but levels of governance may exceed the three levels in some areas.

The interactions are classified as single-factor causation, chain logical connection of several factors, and concomitant occurrence of factors (Geist and Lambin, 2001) (See Figure 6). Single factor causation involves factors operating individually in change processes. Chain logical causation lies at proximate and underlying levels, as well as between the two levels, where one or several underlying factors drive one or two proximate factors. Meanwhile, concomitant occurrence is separate from the two, because factors operate independently or separately at proximate and underlying levels (Geist and Lambin, 2001). However, different drivers may intervene in synergistic factor combination; where several mutually interacting drivers cause change in an ecosystem over time (MA, 2003).

Figure 5: Categorization of the Factors of Forest-Cover Change



Source: Based on Geist and Lambin (2001)

2.2.3. Why Land Governance in Land-use and Forest-Cover Dynamics?

As earlier noted, this study refers to land governance as “*the processes by which institutional structures and individuals make rules and policy decisions regarding access to, and ownership of, land and its use, and the modus operandi through which these decisions are enforced and the divergent opinions, needs and goals harmonized.*” Scholars and practitioners alike have advanced numerous definitions for land governance. The most celebrated definition is perhaps from Palmer *et al.*, (2009:9) that land governance “*concerns the rules, processes and structures through which decisions are made about access to land and its use, the manner in which decisions are implemented and enforced, the way that competing interests in land are managed.*”

The proximate/direct and underlying are linked and similar world-over (Sengupta and Maginnis, 2005) but their direction and magnitude of impact have spatial and temporal variations. However, that “governance problems underlie many forest problems” (Mayers *et al.*, 2002:3) is a view beyond superficial rhetoric. Swiderska *et al.*, (2008) note that weak governance (e.g political marginalization, lack of rights) is a key underlying driver of both

biodiversity loss and poverty, but is also a constraint to addressing the two issues together. Thus forest degradation and deforestation is not a technical issue but a result of laws, policies, and incentives that shape the behaviour of individuals and institutions with respect to forest management and land-use change (Sengupta and Maginnis, 2005:45).

The main causes of forest loss are due to the “realm of governance” including unfavourable macro-economic conditions, institutional deficiencies, lack of political will, inadequate legislation and law enforcement, insecure tenure and insufficient participation from the civil society (GTZ, 2008:6). This is supported by Kaimowitz *et al.*, (2005), that forest related corruption and the wide-spread violation of forest laws seriously undermine the rule of law and discourage legitimate investment, while giving the wealthy and powerful unfair advantages due to their networks and ability to foot large bribes.

Even more crucial is that drivers of deforestation transcend the sectoral lines. Mayers & Bass (2004:15) concur that forestry policies fail because policies from outside the forest sector exert more influence than the “forest sector” policy, which is not reflected in most efforts dealing with forest problems such as; the gulf in communication between forest actors and national policy-makers; increase in sectoralism and polarization of views, the uncertainty and complexity of forestry issues, among others. The answer probably lies with land governance system by which a spectrum of actors, institutional arrangements, and processes are summed up relative to the land management framework.

2.2.4. Land Governance: Beyond Poverty and Demographic Factors

The literature exploring forest degradation and deforestation reveals, at least indirectly, that poor governance, and not poverty and demographic dynamics per se, underlies deforestation. For instance, Turner (1989), and Young (2002a, 2003 as cited by Lambin *et al.*, 2006) note that the aforementioned are mediated by institutional arrangements regulating access to land, class or wealth status (power relations) etc and several biophysical factors.

2.2.4.1. Critiquing the Economic Factor

Affirming that deforestation is not less than an expression social injustice, Colchester (1995) holds that while wealth and poverty underlie deforestation, the roots of forest loss can be located in the inequitable structures that link the two. Colchester avows that because economically strained farmers are the principal and direct agents of deforestation during their mass movement into the forests, many government officials find a way to blame them directly for deforestation and completely divert attention from the forces that deprive them of land and other means of subsistence. Lohmann (1995:30) notes that if “poverty” is regarded as “lack of material wealth”, then the claim that poverty is responsible for rapid deforestation is false. He notes that the only type of poverty that may be said to have contributed deforestation is “destitution and uprootedness” but still there is no proof that poverty causes deforestation just

as there is no ground to attribute deforestation to wealth and development - wealth enables forests, land and water to be enclosed, cashed in and devastated by corporations and development agencies, and deprives the poor of their livelihood and independence by expropriating them and pushing them further into the forests, “making them poorer.”

2.2.4.2. Demographic Dynamics Downplayed

While not denying that population pressure exerts overwhelming demand for forest products and services, intermediate factors require due attention. Myers (1994) looks at factors in addition to population such as; pervasive poverty, inequitable land tenure systems, lack of property rights, lack of rural infrastructure, faulty development policies maldistribution of farmlands, inefficient technologies and limited attention to the subsistence farming sector. It is therefore not so much the number of human beings with an important impact as the way in which human societies are organised (Westoby, 1989 as cited by Lohmann, 1995) as well as the military and technocratic governments that promote forest destruction “not to meet the needs of a growing population,” but to “line the pockets and secure the power of a few” (Lohmann, 1995:20). To Geist (2005:163), that population growth is axiomatically associated with land degradation is a deterministic assumption serving the interests of powerful groups.

In fact a high population growth rate and forest colonisation rate have similar causes – “small farmers’ lack or loss of power over land and a means of livelihood” (Lohmann, 1995:24). While ambiguous statistical correlations between population and deforestation models are done on a national scale; they are disapproved at a closer examination - “however intuitive (divide a limited stock of the Earth’s resources by a potentially infinite hungry human population and the result is zero)”, the assumption is still “historically false and conceptually flawed” (Robbins, 2004:8).

2.3. Sound Land Governance: A Framework for Sustainable Forest Management and Conservation

2.3.1. Assessing the Fundamentals of Land Governance

Unlike governance, land governance is a new concept that has received various definitions but with almost similar conceptual meaning. Land governance is essentially premised on the fundamental universally accepted principles of good governance. The apt definition of good governance is adopted from AusAID (2000) as “*competent management of the country’s resources and affairs in a manner that is open, transparent, accountable, equitable and responsive to people’s needs.*” Rotberg (2004-5 cited by UN, 2007:4) notes that Governance is “good” when it allocates and manages resources to respond to collective problems.

Consequently, measuring land governance partially or wholly lends itself to the indices and scales applied in measuring good governance; Weberian Comparative Study, Corruption

Perception Index, Bertelsmann Transformation Index, World Governance Assessment (WGA) among others. These indices are based on the universal indicators of good governance derived from various sources such as the Universal Declaration of Human Rights, African Charter on Human's and People's Rights, the American Convention on Human Rights and others.

Basing land governance on "good" governance has raised critical disputes conceptually. Good governance is perceived as condescending and imperialistic term that should be replaced with terms such as sound or effective governance (Johnson, 2007). It is not absolute and the constraints and opportunities to achieve it depend on the individual circumstances of a country (WRI, 2009). But, applying the principles of "good" governance alone cushions the land governance concept from much of the increasing academic and professional debates hinged on the adjective "good".

2.3.2. Governance in the Land Management framework

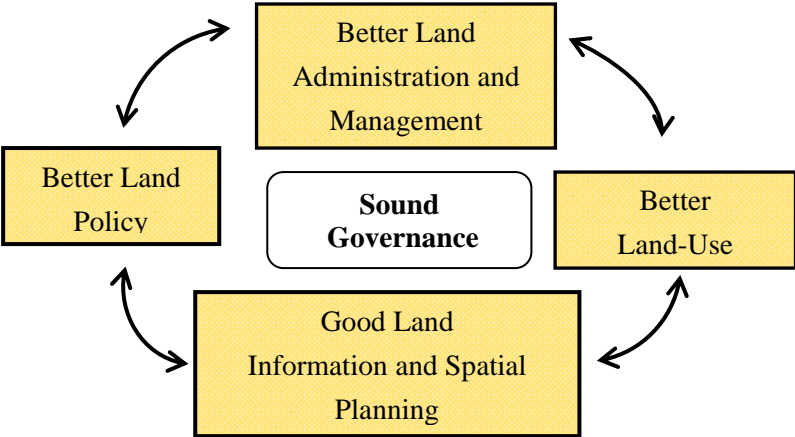
Land governance is a complex term not because governance is complex, but because land is such a broad concept which includes; vegetation, soils and terrain, hydrology, underground materials, climate, among others. Whereas land and governance are familiar terms, they have only been recently combined into the "land governance" concept (Palmer *et al.*, 2009:7) which has attracted significant resonance in the international circles.

What is clear is that governance is not government but, Government is just one of the governance actors (Williamson *et al.*, 2010, Enemark, 2009), i.e. governance is "government plus" public policies, institutions, a system of economic relationships or a role for the non-governmental sector in the business of the state (Smith, 2007:3). This view is not without dispute. FAO (2007:6) posits governance is "good" means the "government is well managed, inclusive, and results in desirable outcomes"; an incorruptible but tyrannical government or democratic but incompetent can lead to weak governance outcomes. Thus, government equivocally influences the state of governance. Governance upholds but transcends land administration and includes all activities associated with the management of land and natural resources (Enemark, 2009). To some, land administration is about governance (Williamson *et al.*, 2010) and for land tenure and administration it is easy to define various aspects of good governance in terms of legally enforceable human rights (FAO, 2007).

In Figure 6, Magel and Franke (2007) opine that good governance in land administration is a precondition for sustainable development. Governance is thus a desirable concept towards the actual realisation of security of land tenure, equitable access to land, as well as rural and urban environmental sustainability. Magel (2001b) however stresses the need for the stronger interdependent rural-urban continuum. Good governance may cause easy and affordable land administration service delivery, tenure security, ecological sustainability, social stability and others (Palmer *et al.*, 2009). They further hold that by defining access and security of rights to

land tenure, it critically affects how people make land-use decisions and whether they will make investments in improvements to the land, i.e. farmers are likely to invest in land improvements through soil erosion protection measures, tree planting, and improve pastures only if they have secure tenure to expect benefits from their investments over a long term. Meanwhile inappropriate tenure policies and inequitable access to land can actually result in over-cultivation and overgrazing of marginal lands (ibid).

Figure 6: Good Governance in Land Administration Systems



Source: Based on UN-FIG (1999), as adapted by Magel and Franke (2007).

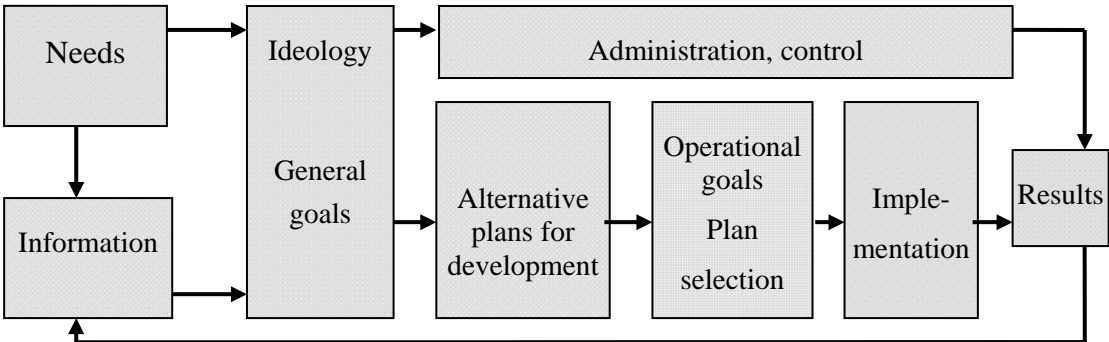
2.3.3. Land-Use Planning in the Land Management Framework

The necessity to harmonize people’s needs with environmental conditions has promoted land use planning in the ambit of land management. Planning means “figuring out what needs to be done and how to do it” (Friedmann, 1987 as cited by Randolph, 2004:16). According to GTZ (1999:18), the “Working Group on Integrated Land Use Planning” (WGILUP) defines land-use planning as “an iterative process based on the dialogue amongst all stakeholders aiming at the negotiation and decision for a sustainable form of land use...as well as initiating and monitoring its implementation.” It is one of the four interrelated functions of the land management infrastructure (LAS) and land management is hinged on the human-environment systems.

As such, the GLP (2005:64) simplifies land management as “the practices applied in the management of agricultural land (e.g. crop rotation, contour strip-cropping and fertilizer application) or forest land (clear cutting and selective logging).” Larson (1997) locates the birth of land management to land mismanagement including soil erosion, vegetation-cover destruction from overgrazing and over-cutting without replacing the natural woodland mainly in the developing world. He defines land management as a “set of comprehensive activities aimed at achieving established goals for the use of certain land resources”, where activities may be of monitoring, administrative and controlling nature to promote efficient use of land

(see Figure 7). Magel (2009a, 2012) stresses the generic nature land management as being no more than the sum or composition of all related/possible/suitable philosophies, visions, ideas, goals, concepts, programmes, plans, measures and actions in order to achieve sustainable development in urban and rural areas. Others associate land management with biophysical manipulation, or techno-managerial aspect of land-use systems; the specific ways humans treat vegetation, soil, and water, for the purpose in question (Geist, 2005).

Figure 7: Land Management



Source: Larson (1997)

The UN-FIG (1999) views land management as “activities associated with the management of land as a resource from both an environmental and an economic perspective towards sustainable development.” It entails daily decisions of land administrators (surveyors, valuers and registrars), government and private initiatives, and aid workers, economists, engineers, sociologists, lawyers, etc, serving to identify new tools, technologies, and approaches to improve land access and organisation (Williamson *et al.*, 2010). Land management is thus a “game” with many actors all with different roles and it is only when these roles are known and recognized that the game functions as it should (Larsson, 1997:10).

2.3.3.1. Land Administration System (LAS)

According to FAO (2002:12, 2007:3) land administration is the way in which “*the rules of land tenure are applied and made operational.*” The definition leaves room for both statutory and customary land administration systems. UN-Bathurst Declaration (1999) refers to land administration as the “processes of determining, recording and disseminating information about the tenure, value and use of land when implementing land management policies.” Inherent processes to land administration are; dividing up land, land allocation for identifiable and secure uses (securing and transferring rights in land and natural resources) and, land parcel distribution, tracking changes, facilitate land transactions (sale, lease, loan, inheritance etc), adjudicating rights and parcel boundaries), and others (Williamson *et al.*, 2010, FAO, 2002:12, 2007:3). In its functioning, land administration is an effective infrastructure for land management (UNECE, 2005).

While the evolution of land administration revolves around the management of land parcels; the small units of land used by people in their daily lives (Williamson *et al.*, 2010), the LA theory seems reflects European values, traditions and attitudes. This presents a huge challenge to the Developing Countries seeking to build effective statutory LAS yet with customary backgrounds and fragile governance systems. This notion is aptly reflected in Williamson *et al.* (2008) list of the four main concepts to explain modern land administration systems;

- a) Land management paradigm and its influence on the land administration framework,
- b) Role of the cadastre in contributing to sustainable development,
- c) Changing nature of ownership and
- d) Role of land markets” and a “land management vision” which promotes land administration in support of sustainable development and spatially enables the society.

2.3.3.2. Cadastre and Cadastral Systems

Despite its existence for about 300 years, the cadastre represents an estimable database which is also vital for the study of land-use/cover change in small territorial units (Jelecek, 2005). The term cadastre was derived from Latin word that means “inventory” (*caput = head, capitastrum = inventory after heads, later meaning “according to any unit”*) (Jelecek, 2005:81). Cadastral surveys deal with geometric data especially the size, shape, and location of each parcel of land (Dale and McLaughlin, 1999:49). In supporting all the functions of the land management paradigm, a cadastre is thus a number of tools with one conceptual framework that any LAS set to support sustainable development will make its priority tool (Williamson *et al.*, 2010).

The categories of the cadastre include the; German approach, Torrens title, French/Latin approach (Williamson *et al.*, 2010) as well as the “*stabile*” (Franciscan) cadastre founded in Austria (Habsburg Monarchy) in the 19th century (Jelecek, 2005). The key relevance of the cadastre in land administration and sustainable land-use is its ability to give an authoritative description of how people relate to specific land and property, and the basic and authoritative spatial information in digital land information systems (Williamson *et al.*, 2010). It entails comprehensive and systematic written and cartographic descriptions and inventory of individual plots of land elaborated to detect their accurate land use, evidence of their property, and to register and chart their land use as property changes (Jelecek, 2005). Multipurpose cadastral systems’ functions are based on land tenure, value, use and development and can be considered a land administration system (*ibid*).

2.3.3.3. Access to Land

Crews-Meyer and Norman (2006:1) define access to land as “the ability to derive benefits from land and its associated resources”, and includes “*tangible*” and “*intangible*” accessibility. They refer to “*tangible accessibility*” as physical access to a land parcel via existing transportation infrastructure, forging agricultural frontier and settlement frontier environments. It is affected

by seasonal (e.g. intermittent floods) and permanent (economic and political) impedances. “*Intangible accessibility*” deals with property rights, land tenure policies in an area and financial mechanisms (e.g. mortgages) to facilitate land procurement (ibid). Local people may have physical access to a forest but have no property rights, or they may not share economic benefits from the forest products even if they had a property right.

Magel (2001a) observes that access to land is more important than ownership and has to be broadened to resource tenure, including water rights and forest rights. Ideally, property and access to natural resources are intricately bound up in the exercise of power and authority (Sikor and Lund, 2009), which explains the political economy of land. Access to land may be formal or informal. The formal perspective of access drawn from land reform is devised to provide systematic access to land through deliberate government actions to ensure equitable land distribution (Dalal-Clayton *et al.*, 2003, FAO, 2002). Informal access to land involves a claim of rights via initial clearance and settlement of land by ancestral societies (FAO, 2002). The main modes of access to land are: purchase; adverse possession or prescription; sharecropping; leasing or paying rent; inheritance; illegally squatting on land (FAO, 2002).

2.3.3.4. Security of Land Tenure

Tenure security means the certainty that a person’s rights to land will be recognised by others and protected in cases of specific challenges (FAO, 2002, Palmer *et al.*, 2009). It is a relative concept as a core responsibility of land administration systems and an epicentre for sustainable land management. Tenure security cannot be directly measured and it is largely what people perceive it to be (FAO, 2002). This is consistent with Gavian and Ehui (2002:111) view, that defining tenure security depends on the “*farmers’ subjective assessment of the political and legal climate*”. Security of land tenure is but not all about the possession of the legal title to land. Broegaard (2009) concurs that while many argue that land titling and land registration are essential, they are not the absolute options for tenure security. Magel (2001a) points out the euphoria over western models; that solely distributing land titles that they will solve all problems related to land should be reconsidered.

Broegaard (2009) outlines four vital factors of tenure security, as having; bought or inherited the land, possessed the land for a long time, the recognition of land rights from local institutions and from neighbours, economic wealth and social contacts to influential individuals and participating in various forums. In areas with strong community-based tenure people may enjoy tenure security, but with no right to sale land or rights to transfer are strictly limited (FAO, 2002). To Broegaard (2009), land titles and written documents are vital for the level of perceived tenure but are only important in combination with other resources. Dalal-Clayton *et al.*, (2003:20) concur that security of tenure means;

- *Robust rights*: Resource managers (owners/users) absolute to permit genuine control, where the most critical rights are the right to; possess resources, exclude others, improve, to harvest and fallow the resources as well as mortgage land.
- *Adequate duration*: A resource manager has to be assured of control over the resource till the anticipated benefits from investment accrue. Duration of required time varies with the level of investments – Investments in conservation and permanent improvements yield returns after several generations, and thus require inheritance rights.
- *Legal certainty*: Property rights alone do not offer adequate incentives without confidence in sufficient enforcement mechanisms and dispute solving processes. This applies to both informal mechanisms in local communities and formal judicial structures

Land tenure is core to the human-environment systems. Efforts for sound forestry must focus on tenure practices that promote environmentally sustainable land-uses, ensure access to resources by disadvantaged groups and address conflicts over the rights to use the land (FAO, 2002). In fact inadequate access to land has been blamed for environmental and land degradation in areas with land scarcity (Crews-Meyer and Norman, 2006).

2.3.4. Indicators of Land Governance

Table 3: Land governance Indicators and Critical Issues with Respect to Forestry

Components of Land Governance			
Major Land Management Issues			
1. Land tenure Systems, 2. Land Use Planning and Control, 3. Unsustainable Forestry			
Major Indicators	Actors	Instruments	Practices
	<i>Government, Civil Society, Private Sector International Institutions, Donors</i>	<i>Policy and Law Content, Policy and law-making Processes</i>	<i>Implementation, Administration, Monitoring, Enforcement, Evaluation</i>
Transparency	• Land Administration Institutions	• Land and Forest Sector Visions	
Accountability		• Legal clarity and certainty	
Participation	• Forest and resource Conservation bodies	• Land, Forest, and/or Environmental Policies	
Subsidiarity	• Law Enforcement Organs	• Cross and trans-sectoral coordination	
Capacity		• Public participation	
Regulatory quality, Rule of law, and Legal certainty	• Local/Traditional Institutions • etc.	• Capacity of legal enforcement bodies • Anti-corruption bodies involved	
Country Profile (Historical, Political, Cultural and Economic Background and Orientation)			

Source: Based on Palmer *et al.*, (2009)

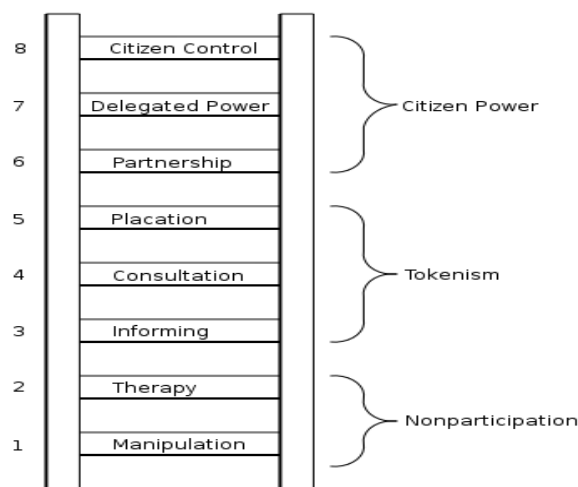
2.3.4.1. Regulatory Quality and Rule of Law

From Table 3, land laws and regulations are freely available, well drafted in a fully participatory transparent manner, responsive and consistent, enforceable by the government and citizens. This ensures legal certainty on diverse forms of tenure for land tenure security, by protection from forced evictions and prevention of unsustainable development (FAO, 2007). It also implies that agents have confidence in and abide by the rules of the society especially; contract enforcement, property rights, the police, courts, and the likelihood of crime and violence (Kaufmann *et al.*, 2009).

2.3.4.2. Participation/Civic engagement and Voice

Land governance requires full citizens' participation through consensus-building, and approval of land use plans by democratically elected politicians after effective public consultation (FAO, 2007). Good governance prompts citizen participation through consensus building in decision making processes. Government structures are flexible at the grassroots level to offer the beneficiaries and stakeholders a chance to improve the design and implementation of public programs and projects which increases local "ownership" that enhances results (ADB, 2010).

Figure 8: Eight Rungs of the Ladder of Participation



Source: Arnstein (1969:217)

However, participation is used to mean different things, tendering euphemisms for selfish interests. Arnstein (1969) discerns consultation, passive participation and active participation. She uncovers empty rituals of participation and reveals genuine citizen's power through a ladder of participation, with each rung corresponding to citizen's power in determining a program. For instance, Rung 5 (placation) in Figure 8 is simply a higher level of tokenism because, despite that the ground rules permit the have-nots to advice, the powerful retain the decision making right. In rung 6, citizens can enter into partnership that enables them to

negotiate and actually engage in trade-offs with traditional power holders. Arnstein states, that at rungs 7 (delegated power) and 8 (citizen's control), the have-nots hold majority of decisions making seats or full managerial power. This typology uses examples from federal programs in the US such as; urban renewal and model cities, but it neatly represents participation generally.

2.3.4.3. Capacity and Efficiency

Capacity is the ability of individuals and organisations or organisational units to perform functions effectively, efficiently and sustainably (UNDP, 1998 as cited in Williamson *et al.*, 2010). Cornell (2002) refers to institutional capacity as the ability of the society to produce the results it wants - the measure of governing power; the right to make decisions competently and implement them effectively. Cornell describes three interactive parts of institutional capacity;

- a) Institutional authority (decision making control over assets, strategies and processes of implementation),
- b) Institutional environment; rules and incentives set up in pursuit of institutions' objectives – some rules define who has the authority to make which decisions, other rules define the obligations of the government to its citizens, and obligations of citizens and organisations to the society, and rules governing relationships among various parts of the society/ institutions.
- c) Institutional effectiveness; this is administrative competence to enforce existing rules. It implies mobilising required financial and technical resources, employing skilled personnel, acquiring necessary equipment, enforcing rules without favour, building cooperative relationships with relevant stakeholders, and others.

Institutional effectiveness demands ground-level administrative procedures such as recruitment and retention of skilled and committed workers and enhanced responsiveness to the clients among others – as a capacity building process. Magel (2009b) refers to capacity building as the process of transferring knowledge, skills and understanding of especially the societal systems to students and or professionals. Efficiency exhibits a system of good policy formulation and efficient implementation through high quality service delivery (FAO, 2007). The costs of acquiring services should be affordable and procedures simple and clear, forced evictions eradicated and where it is utterly necessary, they are done in line with the national law and international standards in the due process and fair and just compensation (Palmer *et al.*, 2009). FAO (2007) includes accurate work with timely response to enquiries, work undertaken by competent persons and awarding good performance, disciplinary action on, or dismissal of ineffective professionals and ensuring an affordable cost of land registration.

2.3.4.4. Transparency

This is a principle of openness in land management processes. It entails revealing for scrutiny by outsiders (Brito *et al.*, 2009) through free and easy access to accurate and timely

information; to inform and engage citizens in crucial decision making in meetings open to the public, where citizens can present arguments to the decision-makers (FAO, 2007, Brito *et al.*, 2009). Transparency is possible where efforts are backed by strong legal and policy frameworks. Graefen and Baldi (2009) observe that a coherent land policy should employ democratic rules, rule of law and law enforcement. They argue that transparency can exert control over political power to avoid land related corruption, land concentration, and land grabbing. It reduces uncertainty, reinforces predictability and helps to inhibit corruption among public officials (ADB, 2010).

2.3.4.5. Accountability

Power over land resources, without clear mechanisms of checks and balances can cause widespread corruption, encroachment on forests, fraud, land grabbing, among others. A system should respond to questions explaining its actions with evidence of how it functions (FAO, 2007). Whether under public or democratic governance, accountability is a key principle of regulation and expectation in all social relations, and the private sector, non-profit, and civic organizations must all be accountable to both the public and their institutional stakeholders (Drüke, 2007:61).

Box 1: Answerability and Enforcement Concepts of Accountability

Answerability and Enforcement

Accountability in institutions can be analysed in two ways; answerability and enforcement (Jenkins, 2007:138). Drüke (2007:61) however perceives accountability as external and internal accountability, by which the legitimacy of governance is ensured. Answerability means “*having to provide information about one’s actions and justifications for their correctness*” and is consistent of explanatory and informational components whose relevance varies with circumstances (Jenkins, 2007:138-139). By enforcement, victims suffer penalties imposed by those dissatisfied either with the actions themselves or with the rationale invoked to justify them, on a principle that actors in the government, organizations or corporations must be accountable to those who assigned them their tasks (Drüke, 2007:61)

Enforceability presumes the requisite information and the opportunities for the justification of action (Smith, 2007:22). Answerability is an interface between accountability and transparency. Thus, external accountability can be achieved through increased transparency and openness (Drüke, 2007: 61). The stronger the accountability is, the greater the costs of political leaders for acting selfishly and corruptly (Smith, 2007:18). According to Peters (2005:18-19) accountability should be perceived as a means of assessing what the government has actually produced for its citizens and answer questions as; have the programs adopted by the government programs delivered goods and services? Or, Are there any failures in delivery? And what is the cause of failures and how can it be corrected? In other words, accountability; “*...reaches well beyond our talk and good intentions...we are expected to deliver, be involved, walk our talk, embrace new thinking and new people, adjust our policies and practice, live up to the values we espouse*” (Kennedy, 2000:7).

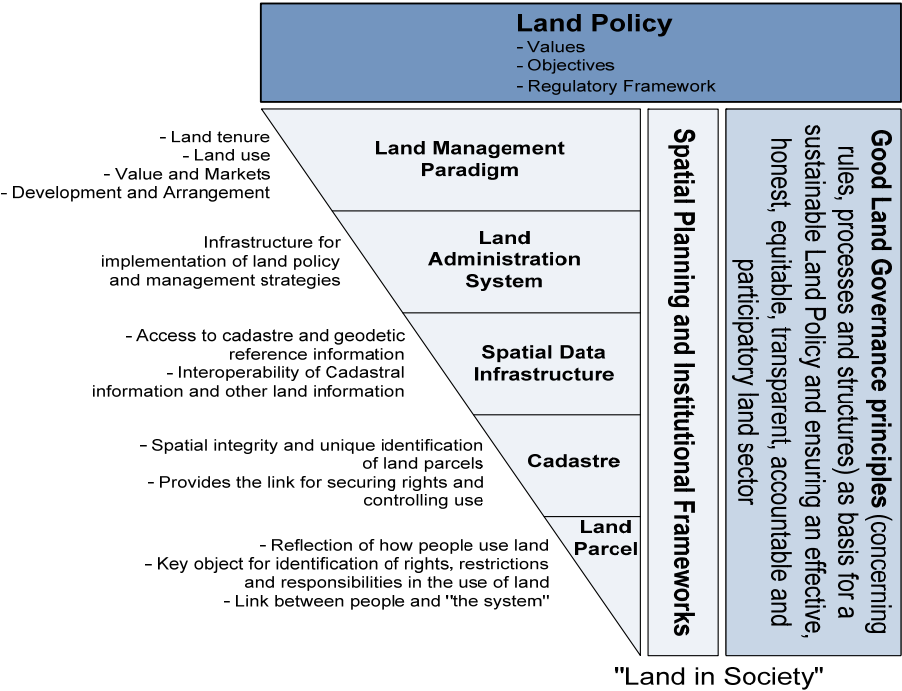
Accountability may be administrative or political. Administrative/horizontal accountability seeks to know whether policies are being implemented as intended and resources are being put to use for the purposes specified by the law makers (Smith, 2007). Here, one part of the state is entitled to an explanation from another on which it can impose sanctions in case of dissatisfaction. Administrative agencies (e.g. ministries, departments, and boards) are answerable to ministers, legislatures, and regulatory bodies, auditors, anti-corruption commissions and ombudsman (ibid). Political/vertical accountability is conventional and includes political involvement rather than objective analysis (Peters, 2007, Smith, 2007). The state is held to account by non-state actors via formal (electoral accountability) and informal ways where citizens organize themselves into associations by which they lobby governments for explanations threatening less formal sanctions such as negative publicity (Jenkins, 2007). From the available body of literature, accountability is neatly linked with answerability and enforcement as presented in box 1.

2.3.4.6. Responsiveness and Subsidiarity

This implies decentralisation of land administration to the lowest levels possible, and based on accountability (Palmer *et al.*, 2009). The principle is a potential for service delivery to respond to the needs and wants of the citizens at the lowest level possible, and causes local involvement in sustainable land use decisions.

2.3.5. Synergies between Indicators of Land Governance

Figure 9: Principles of Land Governance in the Land Management Processes



Source: Magel *et al.*, (2009) as adapted from Enemark (2009)

The indicators entail complementarities and synergies that lead to sustainable outcomes. Accountability promotes and is influenced by participation, safeguards transparency, while transparency and information openness cannot be assured without clear good legal frameworks that balance the right to disclosure, against the right to confidentiality, and without institutions that permit accountability (ADB, 2010). Meanwhile, the collective impact of a land governance system is spatially identifiable at a land parcel level. A land parcel is a piece of land geographically determined by its boundaries and held under relatively homogeneous property rights (Williamson *et al.*, 2010). It is a spatial unit of human activity and land-use regulation; a principle point at which land change processes occur. Therefore, the effect of land governance with respect to the degree of tenure security, sustainability of land-use, and ecology, and participatory planning among others are reflected at the land parcel level as shown in Figure 9.

2.4. A Systems Approach towards Sustainable Forestry

The study is hinged on the theoretical argumentation that land governance is core to the human-environment systems where the human social systems and ecological systems are interactive and interdependent components. The systems perspective emphasizes on the material interactions between humans and the biophysical environment, information flows in the system, and the self-organizing capacity of systems. In retrospect, the GLP (2005:64) has developed a land systems concept as a “coupled social-environmental terrestrial system that includes of land use, land-cover and ecosystems”. Ideally, the systems/structures perspective attempts to explain land-use change via the organization and institutions of society (Lambin *et al.*, 2003). Some scholars have perceived the approach to reflect a shift from operational inefficiencies. Viswanathan *et al.*, (2005) argue that addressing human impact on ecosystems on the traditional basis of sector by sector approaches has led to fragmented actions and institutions and as result, natural and social linkages have been ignored, compromised or insufficiently strengthened. This has not been helped by conceptual polarization of governance through a sector by sector approach.

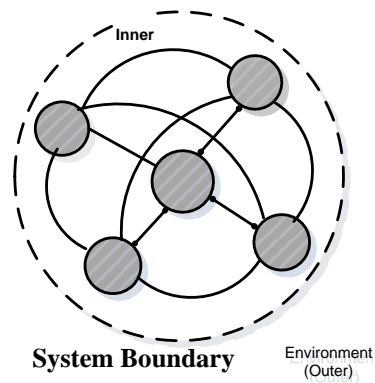
A systems perspective is a functional platform to effect detailed parcel-based land information records in pursuit of cross-sectoral institutional goals to support multiple land-use restrictions and development processes; zoning of ecologically fragile areas, and others. In fact Dale and McLaughlin (1999) posit that with information on land and property rights, public agencies and private corporations can effectively plan for resource management and governments enforce environmental and other regulations.

2.4.1. Understanding the Systems Theory

The systems concept is a complex of interconnected components, and/or concepts typical of organised wholes such as interaction, sum, mechanisation, centralisation, competition and finality etc, that can be applied to a concrete phenomenon (Von Bertalanffy, 1968:97). Also

known as a General Systems Theory, it is based on the significance of “wholes” and not “parts”, derived from the building blocks of reality - the dynamic interaction of its components. It entails a synergy concept where the whole is better than the sum of the parts, as a methodology approach against increased particularisation of societal production and compartmentalisation of knowledge (ten Haaf *et al.*, 2002)..

Figure 10: Symbolisation of the System.



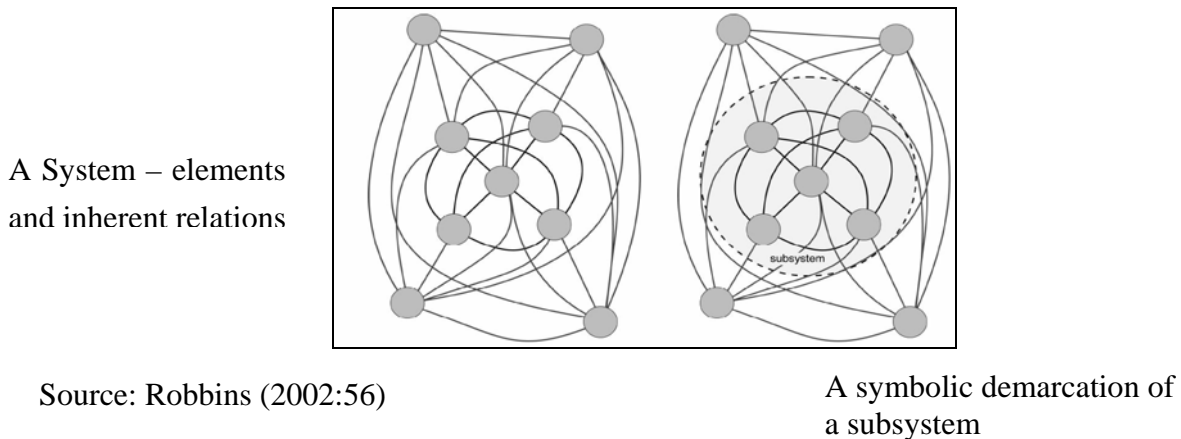
Source: ten Haaf *et al* (2002)

The theory calls for the assemblage of elements, their intrinsic relationships and appearance of structural similarities in different fields. Von Bertalanffy (1968) holds that the physicist, biologist, psychologist, and the social scientist are encapsulated in their private universe with the difficulty to get a word from one cocoon to the other, as the effect of splitting science into innumerable disciplines, and continually generating new disciplines. The GST thus embraces relationships between elements that form cohesive “wholes”, and requires prior knowledge to support the distinction of the elements, their functionalities, and relations between them and the description of the functioning of the “whole” system. In figure 10, balls portray the element parts of a system while the arrows illustrate the relations between the elements (ten Haaf *et al.*, 2002). A certain inner-outer polarity and the system boundary show the influence of elements in the outside environment on the systems’ elements. It is a case of open systems with exchange of matter with their environment, presenting import and export, building-up and breaking down its material components (Von Bertalanffy, 1968).

It touches the concept of cybernetics as a systems control based on information transfer between the system and the environment and within the system, as well as the control (feedback) of the system’s function in regard to the environment (Von Bertalanffy, 1968). But the systems theory chiefly focuses on the structure of the systems and their models, while cybernetics focuses more on how these systems function; how they control their actions, how they communicate with other systems or with their very own components (Heylighen *et al.*, 1999). The cybernetics and systems theory can be seen as two facets of the same approach, as the structure and the function of a system cannot be understood in separation (*ibid*). In Figure

11, the system approach entails; the content and the structure. The content of a system is an assemblage of all the elements minus their inherent interactions. The system's structure comprises the pattern of how these elements are related to each other (ten Haaf *et al.*, 2002:56), leading to the definition of “subsystems” and “aspect systems”.

Figure 11: A Subsystem



A “subsystem” is a partial collection of all the system elements in which all the original relations between the elements remain unaltered (ten Haaf *et al.*, 2002:56). Sub systems lie within component systems, arranged in hierarchies with distinctive boundaries. They include inputs, processes, and outputs by which they perform roles to realize the overall goal of the entire system². The survival or failure of a “whole” system depends on the interaction of subsystems and their contribution to the ultimate goal of the entire system. Hence, where each system regarded separately is made to function with maximum efficiency, the system as a whole will not operate with utmost efficiency. It is the “sub-optimisation principle” (Skyttner, 2005:100). “Aspect systems” means a partial collection of the systems relations in which all the elements remain unchanged and preserved (ten Haaf *et al.*, 2002).

2.4.2. Synergies in Land Management/Land-use Change Dynamics

The study views land management as an open system with hierarchic structures and interactions between inherent elements and the outer environment. Land use activities at the local level stem from decisions from multilayered levels of governance. At each level, land managers can control some factors (endogenous factors), but are also influenced by factors beyond their control (exogenous factors). Hence, the systems boundary can be located at any level of choice; household, community, district, or national. The outer environment at the local level may include aspects of; land tenure, energy supply, off farm employment opportunities, rural development programs etc. Local decision makers may influence the

² McNamara: Systems thinking, Systems Tools and chaos theory <http://managementhelp.org/systems/index.htm>

choice of technology, land-use change, external inputs etc, but they have limited or no influence on property rights, technology development, markets and prices, or local climate. At higher levels, regional and national decision makers can control property rights, technology development, macroeconomic policy, prices and markets, etc, that are endogenous at lower levels of governance (MA, 2003).

Land Management entails identifiable interactive elements and subsystems dominant in the natural and human social systems. Thus, advances in technology, technical skills, and institutional arrangements within polarised institutions will not singly facilitate tenure security or sustainable land-use without creating synergies and complementarities. Basing on the systems sub-optimisation principle by Skyttner (2005), if the governance in the forestry sector alone is regarded separately to perform with maximum efficiency, land governance system as a whole will not perform efficiently. Similarly, optimising transparency and accountability in disregard of participation, capacity, and other indicators of good governance lead to an effective land governance system. The “aspect systems” properties from which partial relations are defined lead us to identify the systems properties towards sustainable land management; technical aspect systems, organisational aspect systems, and institutional aspect systems (see Figure 12). Technology, organisational component, and institutional arrangements synergistically dictate sustainability of land and forest management, inherently drawing from the state of governance. Alcorn (1996:234) posits that *“If it were possible for a satellite image or aerial photo to show not only the forest structure at a given place but also the tenure structure and the community organizational structures and institutions that exist in forested areas, then we would have a better picture of the world’s forests.”*

2.4.2.1. Technological Aspect Systems

This includes technologies used in land management processes. Access to technology; computers, Geographic Positioning Systems (GPS), internet, etc, improves the institutional capacity and service delivery. Some technologies such as theodolites, steel tapes or Electronic Distance Measuring (EDM) systems that involve total stations support cadastral surveys (Dale and McLaughlin, 1999). Remote Sensing, GIS, digital networks, and topographic mapping, Technologies play multiple functions. They are applied in field survey and photogrammetry from which graphical and digital output are obtained respectively. They generate a comprehensive land/environmental information systems, support forest monitoring, and land use planning. They form an important infrastructure for sustainable land-use.

Another category of technology involves Environmentally Sound Technologies (ESTs) defined by Agenda 21 Chapter 4 to promote sustainable forestry, water and pollution control, etc. These technologies; i) protect the environment; ii), are less polluting; iii), use all resources more sustainably; iv), recycle more of their wastes and products; and v), handle residual wastes in a more acceptable manner than the technologies for which they are

substitutes. However, with technological progress also come deleterious problems. While providing to farmers security of land tenure and enabling them easy access to credit and markets technologies can also encourage deforestation instead of relieving forests of pressure (Geist and McConnell, 2006).

Figure 12: Aspect Systems Properties within a Land Management Framework



Source: Author

While new technologies can solve old problems, they can also introduce new ones (Najam *et al.*, 2007). Science and technology carry power and danger (Dale and McLaughlin, 1999) since they can be tools for high gains and also tools for irreversible losses. Technologies in logging activities (e.g. chainsaw or heavy equipment), wood processing and wood consumption can hasten deforestation. In fact the trade-off natural capital, by substituting natural capital with human-made technological alternatives for the provision of ecosystems services (GLP 2005) is also a critical issue.

2.4.2.2. Institutional Aspect Systems

The term institution has many ways of application. Here, Institutional Aspect Systems includes instruments that govern the social behaviour land management. Moreover land-use decisions lay in a complex, multi-layered system of institutions at different scales (GLP 2005). The rules define how to allocate property rights to land within societies (FAO, 2002) either formally or informally. With statutory law, rules and regulations are written down and

codified, but the record under customary law does not exist on the assumption that the code is known by all members of the society (Dale and McLaughlin, 1999). National land policies guide the allocation and distribution of land. Regulations may state standards to be achieved in cadastral surveys and the methods that may be used, define or regulate land-use in fragile ecosystems, etc (ibid).

2.4.2.3. Organizational Aspect Systems

This is the organizational component of land management. Ideally, foresters, administrators, ecologists, bankers, surveyors, lawyers, and land users perform their respective tasks through functional organisational structures. They include public sector or private sector organisations or Civil Society Organisations. The organisational structure deals with networks of formally sanctioned and relatively durable relationships between individuals and work groups, between individual and machine, and also between individual and organisational arrangements (Saiyadain, 2003). It deals with the human behavioural dynamics across the disciplines; forestry, land administration, environment, soil and water management that affect productivity of an organisation. It is about how the tasks and reporting relationships of the members are controlled, coordinated, motivated, and how they complement each other. Structural land management organisation designs differ from place to place based on the area's political, legal and cultural backgrounds.

2.4.3. Human-Environment Systems: Functional Interdependencies

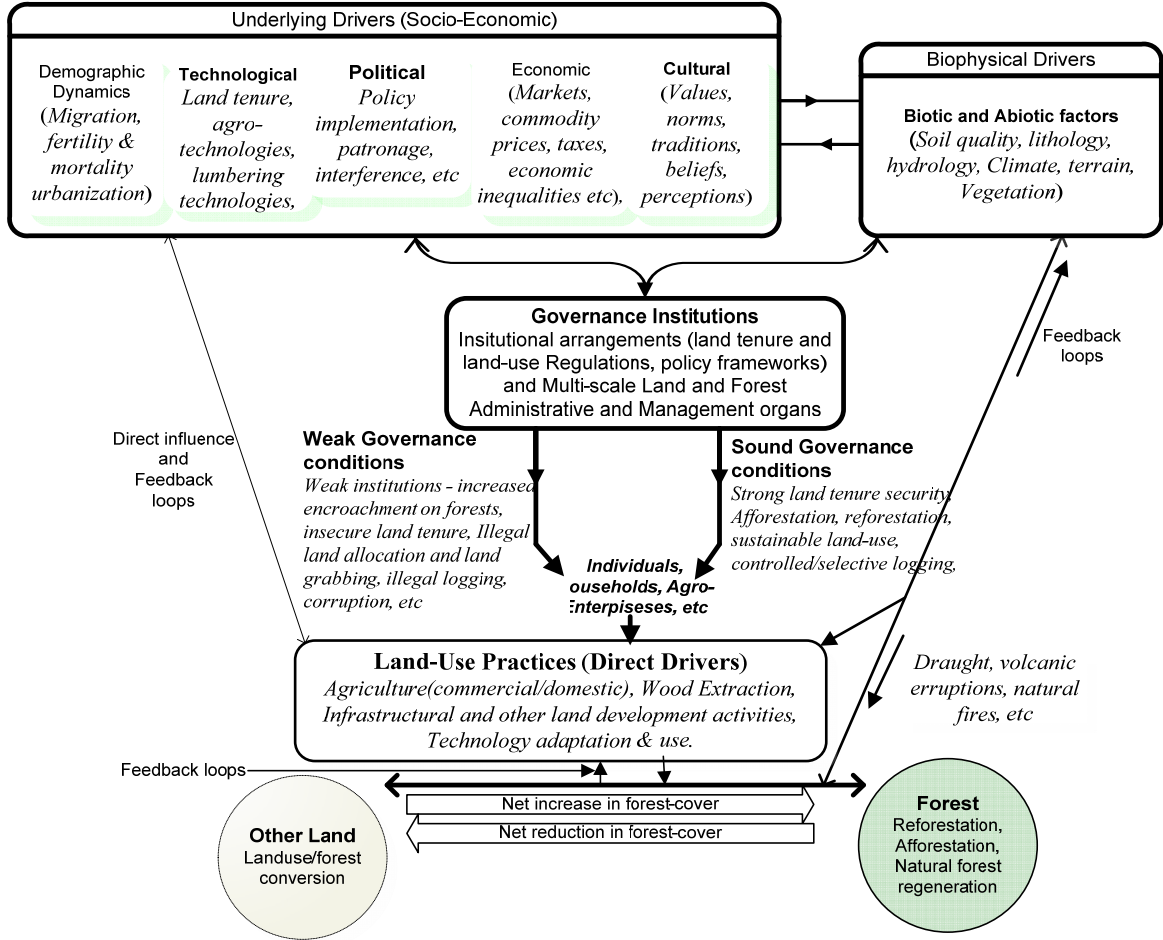
Functional interdependences between all causes of land-change exist at each organisational (horizontal interplay) level, and between levels of organisation (Young 2002b cited by Lambin *et al.*, 2006) abound. Hence, different levels of governance correspond with natural land units at different spatial scales. It is argued however that in reality, typical scales of ecological and human processes do not often match and the distinction between levels of decision making is diffuse and hard to define (MA, 2003). Conversely FAO and UNEP (1997) holds that for systems interactions, vertical (climate, atmosphere, down to the ground water resources) and horizontal (vegetative or land-use elements, terrain, soils, etc.) land units correspond with vertical and horizontal negotiation platforms; horizontally between ministries, provincial or municipal governing bodies, and vertically between governing bodies, local/actual or potential land resource users linked in both top-down and bottom-up approaches.

2.5. Conceptual Framework

Land use change results from interactions among various components of the coupled human-land system, which then feedback to the subsequent development of those interactions (Le *et al.*, 2008). Positive feedbacks like increased agricultural productivity and output in forest products, etc, amplify land change processes, leading to severe deforestation and collapse of

the society. “Negative feedback loops” may cause institutional and technological innovations, or mechanisms associated with the decrease or reversal in the trend of forest change (Geist and McConnell 2006, GLP, 2005). The processes of forest-cover change operate at two neatly linked levels; the micro (household) level where individuals seek to achieve specific objectives, and the macro level which embodies the context in which decisions are made.

Figure 13: The Conceptual Framework



Source: Author

Figure 14 shows that at the household level, individuals make land use decisions to alter forest-cover mainly through agriculture and wood extraction. Gradually, the small-scale subsistence farmer becomes the most dominant agent of tropical deforestation in space and time. Agents make trade-offs between forest-cover and alternative land use types, but their decisions are influenced by complex and highly interactive underlying factors (institutional, political, technological, etc) operating diffusely from the macro level.

Despite the inherent complexity, underlying drivers manifest through inequitable structures, and most especially, the realm of land governance including inadequate institutional capacity, skewed land distribution and land tenure insecurity, lack of, or negative political will,

inadequate participation in decision making processes, ineffective law enforcement, and others. The complexity of causal explanation is further enhanced by the interactions among the agents, and also, between the agents and the biophysical factors including soil fertility, soil drainage, soil pH, wood density, etc. Tropical forests ecosystems have high species diversity (but not often commercially viable) and fragile soils with rapid rate of depletion, and yet their natural regeneration is difficult to induce (FAO, 1993) i.e. neither technological innovation nor institutional change can help to reverse the impact. Land-use and forest-cover change lends itself to complexity, not so much because of the inherent differences in the definition of concepts, but because at the macro level, there is less agreement about the ultimate causes and processes. A large body of literature has come to the rescue of the impoverished farmer from blame over forest destruction.

2.6. Conclusion

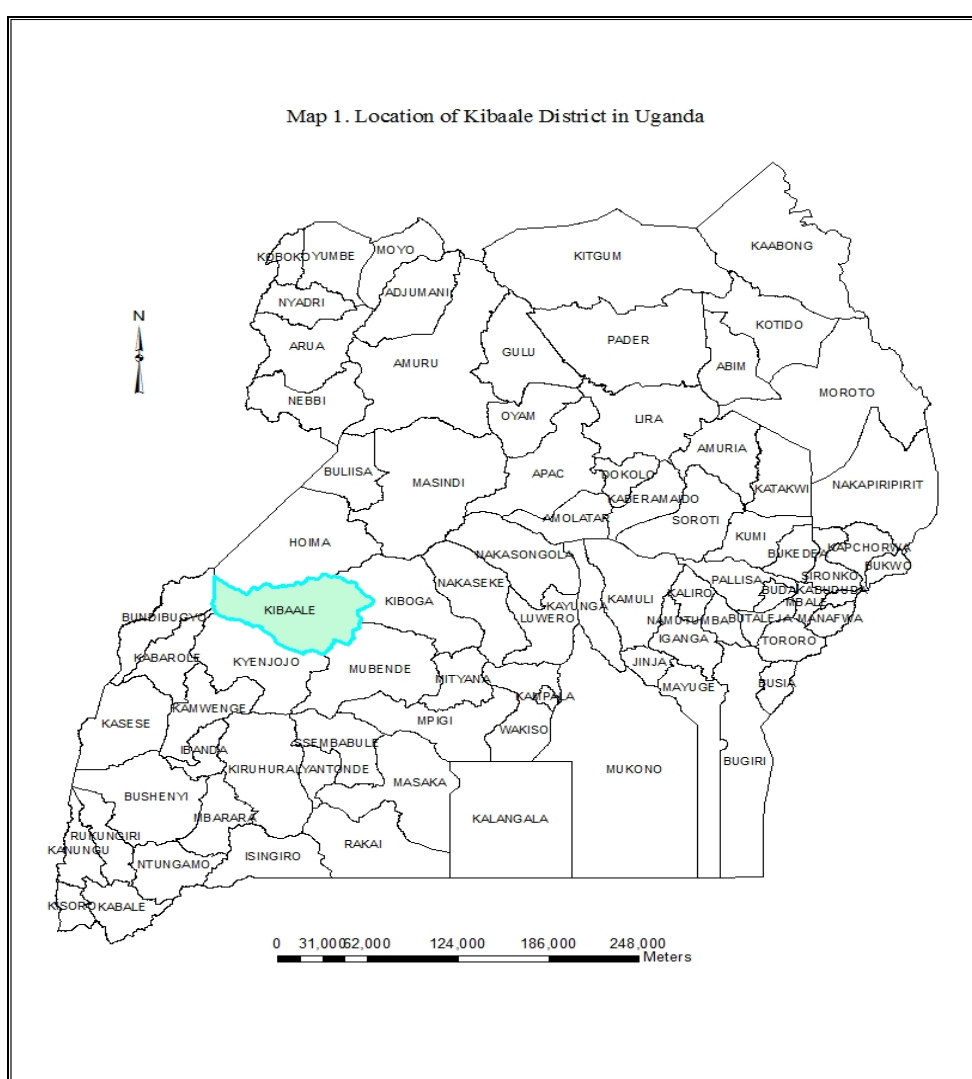
Rather focus has shifted to the changes at the macro-scale which are often un-predictable, because they result from inequitable structures and interactions between the political, economic, and transnational institutions and social processes (See Colchester, 1995, Brown *et al.*, 2004). As the startling rates of deforestation are being revised upwards by succeeding studies, attempts to arrive at an all-encompassing causal explanation have found that while macro-scale factors shape the realm of forest-cover change, they by no means predetermine any particular land use or land cover outcome (See Brown *et al.*, 2004). More importantly, the complexity of macro-scale variables in forest-cover dynamics are underpinned problematic characteristics of land governance shortfalls. Different land stakeholders have different understanding of the nature, scale, and scope of the problem, yet the problem itself and the stakeholders' understanding of the problem is constantly evolving (Palmer *et al.*, 2009)

3. Geography and Background to Land Management

3.1. Location and Geographical Characteristics of Kibaale District

Kibaale is located in Mid-Western part of Uganda, as one of the country’s 112 Districts. Until July 1 2012, Kibaale District was a single unit, but eventually split into 3 districts namely; Kibaale District, Kakumiro, and Kagadi. This study covers Kibaale District, prior to the new administrative changes, which was bordered by Hoima district to the North, Kyenjojo to the South, Lake Albert and Bundibujjo District to the West, and Mubende and Kyiboga to the East (See Map 2).

Map 2: The Location of Kibaale District in Uganda



Source: Based on UBOS (2006) data

Kibaale District area coverage is about 4,400 km², of which the total surface land area covers 4081km² and water covers 319km² (KDLG, 2010, NEIC: 1995).

3.1.1. Topography

According to KDLG (2010), the district is part of the central plateau with an altitudinal range of about 2000-4000ft above the sea level. The lowest part of the district is located around L. Albert at 2040ft above the sea level, while one of the highest points is Magoma hills at 5100ft above the sea level in Kasambya Sub-county, Bugangaizi West County.

3.1.2. Climatic Conditions

Kibaale District climatic conditions are characterized by a bi-modal type of rainfall that varies between 1000mm-1500mm annually. Rainfall patterns have two peaks: one from March to May, and another from September to December. Western parts of the district adjacent to the Rift Valley zone are comparatively dry with temperatures ranging between 15⁰C to 30⁰C (KDLG, 2010).

3.1.3. Administration

Administratively, the district is split into five counties; Buyanja, Buyaga West, Buyaga East and Bugangaizi West and Bugangaizi East. These were subdivided from the original two counties of Buyaga and Bugangaizi. In 1991, the district of Kibaale was carved out of Hoima district to improve service delivery, following the outcry of the local inhabitants over what they called the blatant neglect by the local ruling elites of Hoima District (Schelnberger, 2008:195). From the resolutions of the District Council in 2010, Kibaale was to be further split into three separate districts namely; Kibaale; Kagadi; and Kakumiro; notably, to calm tensions, promote political harmony, and bring services closer to the people. This politically motivated plan was arguably aimed at creating about 600 new civil servants and over 100 political posts (The Observer Sep. 29th 2010).

3.1.4. Land Ownership in Kibaale District

Land in Kibaale is unevenly split into two land tenure systems; the *mailo* and customary tenure. Customary tenure was created from the former public land by the Land Act 1998. Based on the DFID funded Land Act Implementation Study Report 1999, the land in Kibaale District identifies with the following distribution of land tenure;

- a) Customary land (former public land): 1262 sq.km (30%)
- b) Mailo land: 2946 sq.km (70%)
- c) Total Mailo land: 592,500 acres (250,000 ha)
- d) Total Tenanted mailo land: 215,00 acres (90, 1717 ha)

Most Kibaale inhabitants are “tenants by occupancy” de jure obliged to pay nominal ground rent of UGX 1000 (€0.3) irrespective of the land size. Thus, *mailo* land is owned by absentee landlords, but occupied by land tenants (the *Bibanja*³ holders). The Land Act defines *Lawful*

³ Kibanja (or Bibanja pl.) means a piece of land occupied under some duty or obligation to the legal owner.

and *Bona fide* occupants. A *Lawful* occupant is a person who entered the land with the consent of the registered owner or as a customary tenant who entered the land but their tenancy was not compensated for when the registered owner acquired the leasehold certificate. Most lawful occupants are indigenous Banyoro (MISR, n.d cited by Nsamba-Ngayiiya, 2003). *Bona fide* occupants are the people resettled by the government or an agent of the government including the local authority. It includes any person who purchased or otherwise acquired the interest of the bona fide occupant (RoU, 1998).

3.1.5. The District Population Size and Growth

Kibaale is ethnically heterogeneous. It has one of the highest population growth rates in the country and 95% of the population rural (NEIC, 1995). The indigenous population is mainly Banyoro, but immigration has increased the population of other ethnicities in the area. Major migrant tribes include; Bakiga, Alur, Banyarwanda, Lugbara, Bagisu, Basoga and Baganda. It is reported that today, the Bakiga migrants from S. Western Uganda comprise half of the district population (Schelnberger, 2008). By 2002, Kibaale had a total population of 405,882 (GoU, 2006), but by 2010, it was projected at 613, 200 in 2010 based on the population growth rate of 5.2% per year as derived from the 2002 Population and Housing Census (KDLG, 2010).

3.2. Evolution of Land Governance

Land governance in Kibaale District can be aptly assessed by understanding the evolution of land tenure system. After all, even where a revolutionary change occurs, its rationale lies in the past and chances of success of the change will be determined by the past and the extent to which path dependent patterns of development can be overcome (McAuslan, 2003). Forest-cover change is path-dependant, and draws from past land-use as influenced by diverse institutions that regulate access, ownership, and use of land which prompt insights into the future land-use. This is called the narrative perspective which precludes simplifications and erroneous interpretations likely to emerge from studies on the present and immediate past ignoring the longer histories of human-environment interactions (Lambin *et al.*, 2003).

Analysing forest-cover change in Kibaale District therefore strongly draws from the ownership and use of land, to explain the present complexities, suggest remedial measures and predict future trends. Indeed Alcorn (1996:234) argues that “*if on top of the community organizational layer could be overlain the past and present forest users (including indigenous and outside users, and the final end users...), the de jure and de facto rights exercised over the areas in question and the status of the common property management systems in place, then we would have an even better starting point for understanding forest dynamics and the factors behind the loss of biodiversity.*”

3.2.1. The Genesis of Land Governance

Kibaale District lies at the core of any historical account of Uganda's land governance profile. The 1900 Buganda Agreement signed between British Colonial Government and Buganda Kingdom, was in equal measure about land and governance (McAuslan, 2003). In fact the 1900 Agreement instituted a new system of land ownership known as Mailo land tenure which dispossessed the Banyoro of their ancestral land and further annexed some territories of Bunyoro-Kitara to Buganda Kingdom. The evolution of land tenure in Kibaale is therefore rooted in discriminatory policies than actual market forces. The situation uniquely differs from the historical reforms instituted to transform the autochthonous customary tenure into freehold tenure system in Uganda or even E. Africa by the colonial government.

The 1933 Bunyoro Agreement was later signed to cement the denial of the indigenous Banyoro, their king and the royal family of their land ownership rights (GoU, 2006). Rather, land ownership with full control, use and exclusive rights were granted to the Kabaka (King) and the Royal family of Buganda Kingdom. The 1933 Agreement further subjected any decisions of the king (Omukama) of Bunyoro-Kitara Kingdom regarding land to the instructions of the Governor, stating that; *“Territories...within the boundaries of Obukama bwa Bunyoro-Kitara are held by the Governor for the occupation and the use of the natives of...Bunyoro-Kitara, but subject to...rights already recognised by the governor. The administration of such land for the occupation and use of all natives shall be entrusted to the Mukama and Native Government, subject always to any instructions, general or specific, which the governor may issue in his regard...”* (The 1933 Bunyoro Agreement, cited by GoU, 2006:12).

The 1962 Constitution created Kingdom Land Boards and Bunyoro-Kitara formed a Board to administer land on behalf of the Omukama's Government. Under this arrangement even the central government would ask for permission from the Kingdom in return for royalties (GoU, 2006). This arrangement collapsed later in 1967 when the Milton Obote's government abrogated the independence constitution and abolished the Kingdoms (ibid). Meanwhile the 1975 Land Reform Decree sought to streamline equitable access to land with a uniform land tenure system. Absolute titles were converted to leasehold of 99 years for individuals and 999 years for public agencies, religious and other charitable bodies; to be administered by the Uganda Land Commission. Tenants turned into customary owners with no obligation to pay rent. However, when the Decree was promulgated, more vigorous land invasions occurred, for the Banyoro interpreted its provisions (with the abolition of Mailo land tenure) as returning land to them (Nsamba-Ngayiyya, 2003:7).

Whilst the Decree was weakly enforced, it opened way for land grabbing and land speculation. State bureaucrats and agents including army officers used power to consolidate land grabbing (Okuku, 2005). These issues collectively triggered national land reforms since

1995 with provisions to resolve the “Kibaale land question”, but whose impact is still limited in practice. After the National Resistance Movement government rose to power in 1986, traditional kingdoms including Bunyoro-Kitara Kingdom were restored. While Bunyoro-Kitara kingdom re-established land boards with operations in Kibaale District, their roles are very limited to the private property of the Kingdom. In fact the recent land reforms since mid-1990s do not grant a special recognition of the traditional institutions in the statutory land management processes.

3.2.2. Critical Facts about the 1900 Buganda Agreement

The 1900 Buganda Agreement was signed between the Protectorate Government and Buganda Kingdom after the British defeated King Kabalega of Bunyoro, assisted by Buganda Kingdom. The agreement was a tool meant to reward friends (the Baganda) and punish foes (Banyoro). The counties of Buyaga and Bugangaizi which had been conquered from Bunyoro were “formally” annexed to Buganda Kingdom (GoU, 2006, Nsamba-Ngayiyya, 2003). “Formally” because by the time the agreement was signed, these counties were already part of Buganda Kingdom (Nsamba-Ngayiyya, 2003). Under the terms of the agreement, approximately 2,995 square of land miles (68% of the lost territories) was divided among the Kabaka (King) of Buganda, the notables and the Protectorate government and the rest of the land was made “crown land” and forest reserves (GoU, 2006, Schelnberger, 2008).

Land in Buyaga and Bugangaizi was dished out by the Kabaka to his chiefs, military commanders, relatives, and friends as gifts (GoU, 2006, NEIC, 1995). The necessity for an elaborate survey in parcelling out land as per the agreement, led to the introduction of a cadastral survey in Buganda Kingdom (including the lost counties) that had not been offered anywhere else in the African dependencies at the time (West, 1964 as cited by Batungi, 2008). The Baganda landlords sustained a deliberate policy of not selling their individual landholdings to the indigenous Banyoro even after the 1964 referendum which returned the lost counties and administrative powers to Bunyoro-Kitara Kingdom. Whilst the referendum led to the transfer of administrative powers of the two counties back to Bunyoro, the legal ownership of land remained with Baganda chiefs.

After the referendum most Baganda landlords opted to migrate to Buganda with their certificates or even destroyed them rather than to sell them to the indigenous Banyoro (NEIC, 1995). The formalization of land tenure did not have any economic implications with regard to developing an operational land market. Since then, expanses of land in Kibaale District are still legally owned by absentee landlords. As will be later shown, the national attempt through the Land Fund Project at compensating absentee landlords and redistribute land to the tenants has also not progressed so far.

3.2.3. Land Regulations in the Post 1900 Buganda Agreement

Soon after the 1900 Buganda Agreement, new regulations were introduced. The 1903 Crown Lands Ordinance provided for the freehold and leasehold ownership of the Crown land. Following over exploitation of tenants by landlords, the Buganda parliament (*Lukiiko*) passed the 1908 Land law to implement annual rent requirements - termed as “*busulu*” (rent) and “*envujjo*” (tythe) - by tenants and peasants, In 1928 *envujjo* and *busulu* laws were formed in response to the agitation of tenants, effectively putting a limit to the amount of rent landlords were allowed to levy, while granting tenants hereditary tenure security, provided they kept their land under continuous cultivation (Okuku, 2005). In 1962, a Public Lands Act was enacted following a Constitutional Conference at Lancaster House, London, in 1961. The Act was aimed at establishing a consolidated national land policy before Uganda’s independence, and it converted all former Crown land into Public land – subject to customary tenure (Okuku, 2005). Since then different sets of regulations have been made by different political regimes.

3.2.4. Land Conflicts and Social Unrest

After adverse provisions of the 1900 Buganda Agreement regarding land tenure, many associated the colonial government’s intent with creating conditions to keep inhabitants of today’s Kibaale District in perpetual poverty as squatters. The changes denied the Banyoro of their land rights, and created room sufficient for violent conflicts. Under the 1900 Buganda Agreement, approximately 70% of the total land owned by the indigenous Banyoro in Kibaale was awarded to Baganda landlords for their role in fighting and “subjugating” Omukama Kabalega the King of Bunyoro Kingdom (Schelnberger, 2008:197, Nsamba-Ngayiyya, 2003). A handful of Banyoro benefited from land allotments (Nsamba-Ngayiyya, 2003). Batungi (2008) confirms that of the 341 initial mailo land allottees claiming land in Buyaga and Bugangaizi, only 12 were Banyoro. The situation implied that the Banyoro had two colonial masters; Baganda chiefs and the British.

The Baganda introduced a policy of forced assimilation as they encouraged Banyoro to marry Baganda and speak their language (GoU, 2006:9, Schelnberger, 2008). The Banyoro felt subjugated and enslaved by the Baganda whom they considered foreigners (Schelnberger, 2008) that dispossessed them of their land. In 1907, the disgruntlement among the Banyoro against the ownership and administration of land by Baganda led to the rise of Nyangire rebellion. Nonetheless, as early as 1907, the repressive governance by Baganda chiefs had compelled the Banyoro to start the expulsion of Baganda Landlords. The conditions subsequently led to the rise of Mubende Banyoro Land Committee (MBC) in 1918 (GoU, 2006:9, Nsamba-Ngayiyya, 2003), which operated on defined aims;

- a. Return of their disposed King Kabalega;
- b. Redemption of land from the Baganda and the British,
- c. Reinstatement of socio-cultural aspects and resistance to foreign rule,

d. Exploitation and subjugation (MBC, 2003:1 cited by Schelnberger, 2008).

This phase of local demand for land reforms led to the 1964 referendum which returned the administration of the “lost counties” (Kibaale) to Bunyoro-Kitara Kingdom. Table 4 shows the results from the 1964 referendum that returned the lost counties to Bunyoro. The referendum further empowered the MBC to drive the Baganda landlords off their land, but the fleeing Baganda remained with their land titles and are “absentee landlords” to date (Schelnberger, 2008:196). Land invasion soon started by the Banyoro where the village chiefs rigorously led the land reallocation exercise (Schelnberger, 2008).

Table 4: The 1964 Referendum Results Returning the Lost Counties to Bunyoro

Voting Options	Bugangaizi	Buyaga
<i>Voting to;</i>	2,253	1,289
Remain in Buganda		
Transfer to Bunyoro	5,275	8,372
Have a Separate District	62	50

Source: Government of Uganda (GoU) 2006

3.2.5. Influx of Migrant Settlers: Non-Banyoro Population

Kibaale is a multi-ethnic district because, for some time now, it has been a destination for the non-indigenous Banyoro, from Kigezi, West Nile, D.R. Congo, Acholi (GoU, 2006) and Rwanda, among other areas. The district became depopulated due to punitive measures by the colonial government, the 1900 war, and disease outbreaks, which attracted human population resettlement from overpopulated parts of Uganda (Schelnberger, 2008, GoU, 2006:21). The influx of migrants can be attributed to the work of the government, landlords, local chiefs and indigenous Banyoro. Available information attributes the first immigration to Baganda landlords who offered land in Bugangaizi and Buyaga to the mainly Bakiga settlers, (a group of plantation workers from western Uganda) in the 1940s, long before resettlement schemes were established (Schelnberger, 2008, Nsamba-Ngayiyya, 2003) by the central government.

In 1972 Kagadi Resettlement Scheme was established, arranged between the government, Sir Tito Winyi (the then King of Bunyoro) and the Secretary of Kigezi (the late Paul Ngorogoza). Kagadi was confirmed as resettlement scheme in 1973 by the then Minister of Lands and Natural Resources with the full of consent Bunyoro District Administration (Nsamba-Ngayiyya, 2003). People from former Kigezi District were voluntarily moved to Buyaga County where 100 miles² was reserved for this purpose, and each settler family was allocated 10 acres of public land (Nsamba-Ngayiyya, 2003). Other groups of people including returnees from Tanzania, settlers from Bugisu and other parts of the country were also resettled. The second resettlement scheme in Bugangaizi County was negotiated between the area Member of Parliament (MP), and the government. However, there are conflicting accounts on the

number of the Bakiga migrants resettled. The GoU (2006) notes that 3,600 families were resettled, comprising of 20,000-30,000 people. Nsaba-Nagayiiya (2003) notes that about 6000 families were resettled, although 3000 families had been planned for, where each family was allocated 5 hectares of land. To Schelnberger (2008), around 5,000 families were resettled.

Most writers agree that 100 miles² were reserved for resettlement (Schelnberger, 2008, Nsaba-Nagayiiya, 2003) but the number of resettled people was underestimated – a reflection of gaps in planning and organisation. For instance, unlike Kagadi, Bugangaizi Resettlement Scheme lacked clear written rules and regulations on whether migrants could sale their allotments or buy land outside the scheme (Nsaba-Nagayiiya, 2003). Literally, many migrant settlers subdivided and sold their allocated plots to purchase land outside the Bugangaizi Resettlement Scheme. The indigenous Banyoro fervently pleaded to the central government and chiefs to bring settlers in the “elephant corridor” to shield them from wild animal and vermin attacks (Nsamba-Ngayiyya, 2003:10, Schelnberger, 2008). Igayaza and Kikwaya parishes of Kakindo Sub-County in Bugangaizi County received heavy migrant settlement to create a buffer zone that constituted what was known as “Ekisinde Ky’enjojo” (elephant corridor) located between Banyoro settlements and Miyoma forest (Nsamba-Ngayiyya, 2003).

The local Banyoro chiefs also allotted land to the Bakiga for a token payment such as a jerry-can of local brew (Nsamba-Ngayiyya, 2003) or very small payments. Today land pressure has incrementally pushed land prices higher by local standards. The influx of migrants however continues because the breakdown of institutional control facilitates cheap and irregular land allotment on public and private land. Immigration has created many faces of the land question by introducing migrants and the government into play.

3.2.6. Irregular Land Allocation

Whereas the 1900 Buganda agreement began formal land allocation, it was followed by a series of land allocation activities in the early 1940s, with the influx of Bakiga settlers from south western Uganda. For instance, Kikwaya Parish in Kakindo Sub county Bugangaizi County was settled by Bakiga migrants at the invitation of the indigenous Banyoro to buffer them from life threatening wild animals and vermin (Nsamba-Ngayiyya, 2003, Schelnberger 2008). Besides, land allocation by Banyoro chiefs against a token fee (locally named ekanzu) was not uncommon. Mpefu which is heavily settled by migrants today was a hunting ground (Ibid). Settlers’ accounts in Nkooko Sub-County reveal that a local Munyoro chief was specially assigned to allocate land in Rutooma, while Subcounty authorities handed out receipts at Ug. 5000/= for more than 10 acres of land on average.

Irregular land allocation in Bugangaizi County is linked with the structure of the resettlement Committee and the process of resettlement under a Resettlement Officer from the Central Government. The Committee which excluded LC officials from the allocation of plots and

important decision making processes later became impotent. As migrants grew in number and assumed political positions on Local Councils, they too started allocate large swathes of land to their kinsmen, sometimes through corruption and nepotism. LC leaders could take as little as Uganda Shs 5000 (about €1.4) for as much land as 20 acres (Nsamba-Ngayiyya, 2003). The practice continues in some parts of the district especially on the Central Forest Reserves. The problem is worsened by politics and corrupt businessmen (big men) that pull settlers as employees in the illegal logging (Plumptre, 2002, Nsamba-Gayiyya, 2003).

Gradually, land became commercialised and an informal land market grew. A willing buyer willing seller basis created more opportunities to the financially stable Bakiga and tea plantation workers at Muzizi to purchase land in Muhoro and Bwikara Sub counties (Nsamba-Ngayiyya, 2003). However, the land market led to covert deals, as some indigenous Banyoro encouraged Bakiga to migrate to their areas and buy land, or secretly engaged Bakiga agents to bring settlers that would buy their part of tenant holdings (Ibid). Literally, migrants bought land from four classes of people; the Baganda landlords, indigenous Banyoro, old migrant settlers, and local council leaders, often with informal written agreements/receipts as evidence of transactions and tenure security. Today, the migrant settlers are viewed by some sections of indigenous Banyoro, as illegal immigrants that must be evicted. In fact many regard the non-Banyoro to have acquired land illegally through land grabbing, corruption, invasion or theft.

Formal land allocation involved the Central Government. Large swathes of land in Kagadi and Bugangaizi were set aside for population Resettlement Schemes, and people from over-populated districts and especially the former Kigezi District were resettled. However, the schemes were negotiated without the input of the local government (Schelnberger, 2008). Informally, Kibaale District has for a long time witnessed callous means of land allocation as local leaders exchange “votes” and “tithes” for land even in Central Forest Reserves to foreign and national migrants (Kamugisha-Ruhombe, 2007:11). An increase in unofficial settlements was recorded between 1998 and 2002 (Schelnberger, 2008:197, Nsamba-Gayiyya, 2003). Whereas the information on land distribution, land tenure and land use in Uganda is generally poor and unreliable (Bosworth, 2003/3), Kibaale District land issues are central to a high level of national and local political indecisiveness.

3.2.7. Politics and Local Interest Groups

As already noted, Mubende Banyoro Committee (MBC) was formed in 1918 out of local agitation among the Banyoro against land dispossession. It was formed as a political movement with a military wing (Nsamba-Ngayiyya, 2003) with close links to Bunyoro-Kitara Kingdom. The institution assumes the representation of all the Banyoro people. As the influx of migrants into the district stiffened competition for land and political power between migrants and indigenous Banyoro, the Kibaale Settlers/immigrants Community - later called the Bafuruki Committee (BC) was formed in 2001. Among others it was meant fight-off

threats of eviction by Banyoro and MBC. These ethnic based institutions have become pressure groups behind protracted violent conflicts over land and political positions.

In the struggle against land dispossession among others, the MBC successfully orchestrated the violent expulsion of Baganda chiefs after 1964 referendum using “spears and machetes” (Schelnberger, 2008:196). This Committee soon dissolved because the administrative and political powers had been returned to Bunyoro. After its reconstitution in 2003, the MBC renewed its demand for the restitution of mailo land and lobbied at the Constituent Assembly. Thus, in addition to the initial goal of securing land from Baganda landlords, MBC was faced with; halting the influx of immigrants, control of political arena and invasion of forests that the indigenous Banyoro had preserved for their future generations. The Bafuruki Committee (BC) however seeks protection from eviction threats by MBC, and to secure land from absentee landlords.

The divide between the MBC and BC is further widened by differences cultural lifestyles and attitudes. Schelnberger (2008) notes of different attitudes and characteristics between Banyoro and the settler community mainly the Bakiga who are considered hard working and tend to be rich by the Ugandan standards. Schelnberger notes that Banyoro are less industrious with a degree of resignation to an “attitude of poverty”, and it is these incompatible lifestyles which created jealous among the indigenous Banyoro over the economic successes among the settlers. The indigenous Banyoro further contend the issuance of registered land rights to the migrant settlers (Bafuruki) by the government, the service that they too covet.

The MBC demands that political control of key affairs in Kibaale be outside the remit of settlers but fully under the Banyoro. Through MBC, the Banyoro claim that land including that in Kisiita and Nalweyo under formal resettlement schemes be returned, for it was under the *mailo* land claimed after the 1964 referendum (Nsamba-Ngayiyya, 2003). This led to the violence after the election of a settler as the District Chairperson, which would later calm when he stepped-down for a compromise candidate, under the influence of the president of Uganda. From a closer viewpoint, political conflicts are underpinned by the struggle to guarantee access to land and tenure security to the rival ethnic groups. Some politicians in turn use the interest groups and the land issue mainly to amass political capital at the expense of social harmony and ecological sustainability.

3.3. Conclusion

The land issue has undergone gradual transformation since the 1900 Buganda Agreement. The land question is not beyond resolution except if inescapable effects of the weak governance persist. According to Kamugisha-Ruhombe (2007), 25 years after the leaders noted for bad leadership in the 1970s were driven out; forestry has yet to recover. Inasmuch as legal and institutional reform became a major preoccupation of the government to reverse the

antagonisms of land inequity, deforestation, land conflicts, poverty etc, in Uganda and Kibaale District in particular, no single government (maybe except Amin's radical intervention in 1975) has emphatically tried to resolve land issues. According to Tukahriwa, (2002) land reform failures arise because of the governments' fears for socio-political uprisings. The prognosis for land reform processes to break the historical and contemporary land problems appear bleak, at least for now, but still they (reforms) are the only splendid opportunity to affirmatively embrace.

4. Research Methodology

The choice of Kibaale District was guided by rapid loss of forest-cover, inherent complex land tenure problems and the availability of affordable remotely sensed data for analysing the spatial land use patterns and quantification of forest-cover changes. This chapter presents the methods and tools used for socio-scientific assessment and multitemporal spatial analysis. In Table 5, the study shows the time-line for this research which is mutually reinforcing with Figure 1 on page 14.

4.1. Methods and Materials of Socio-Scientific Research

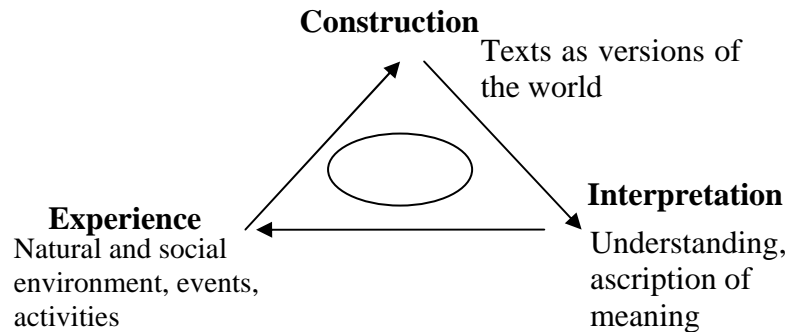
4.1.1. Research Design

According to Kerlinger (1986 cited by Kumar, 2005) a research design is a plan, structure, and strategy of investigation so conceived as to obtain answers to research questions or problems. In the quest to establish valid data to satisfy the research objectives, the study adopted the cross-sectional and retrospective-prospective study designs. A cross-sectional study design (also called one-shot study) seeks to find out the prevalence of a phenomenon, situation, problem, attitude or issue, by taking a cross-section of the population (Kumar, 2005). By distinction, the retrospective-prospective study design focuses on past trends in a phenomenon and study into the future. In other words, part of data is collected retrospectively from the existing records before the intervention is introduced and the study population is followed to ascertain the impact of the intervention (Kumar, 2005:99). The study used the cross-section survey loss to establish the facts on forest-cover change in the ambit of land governance. The cross-section of the study population was identified, a sample selected, and data collated and analyzed. By the retrospective-prospective research design took the form of the narrative perspective; to track the path-dependant forestland use change process by assessing the historical perspective of land governance in Kibaale District (see Chapter 2).

The qualitative and quantitative approaches were used. The two are complementary than competitive methods, yet, the use of one particular method must be based on the nature of the research problem at hand (Wilson, 1982, cited by Flick, 1998). Ideally, the theoretical premise of the qualitative design is that the text is a result of data collection and yet, an instrument for interpretation where interviews are transformed into transcripts (i.e. texts) and their interpretations produced afterwards (in observation, field notes are often in textual database); or research starts from recording natural conversations and situations to arrive at transcriptions and interpretation (Flick, 1998) as shown in Figure 15. The interview of respondents obtained the first-hand account of the situation with data recorded in the textual format, leading to the analysis of respondents' constructions from the reality. The qualitative design also explains the results from the quantitative data analysis. The quantitative design

entails counting and measuring (Gillham, 2000) and carries with it an aura of scientific respectability (Denscombe, 1998). Hence, probability and non-probability sampling methods were used.

Figure 14: Construction from Theory to Text



Source: Flick (1998)

By probability sampling, people or events are chosen as a sample because the researcher has some notion of probability that these will be a representative cross-section of the people or events of the population being studied (Denscombe, 1998). By contrast, non-probability sampling involves no concerns about whether the sample is representative of the overall population (Neumann, 1999:196). The author used interviews, questionnaires, observation and documents for data collection. Notably, none of these methods is perfect and none can be regarded as rubbish; for none has the sole key to “truth” and none can be dismissed as hopelessly irrelevant for enhancing knowledge (Denscombe, 1998:84).

4.1.2. Sampling Frame for Study Area Selection

Data collection was based on the information available from which the study area and target population could be sampled - the sampling frame. According to Denscombe (1998), a sampling frame is an objective list of the population from which the researcher makes his or her selections. He adds that a sampling frame should contain an up-to-date list of all those that comprise the population for research. To select representative areas for study, the author used an area map frame and formal list of villages. The real challenge was that like many parts of Uganda, Kibaale experienced administrative changes through radical subdivision of local government and administrative units in the run-up to the time of data collection in the guise of improving service delivery. As a result, emerging villages including those in public forests did not exist on the formal list of villages available with Kibaale District Local Government. In addition, there was no list frame of households available at any level of governance to guide the selection of survey respondents through simple random or systematic sampling. This compelled the author to seek alternative methods of sampling the respondents as has been discussed in the subsequent sections.

Table 5: Research Time Line

Months	2009	2010	2011	2012
January	Gathering literature, Developing concepts, theories Selection of the Study Area Background literature on the study area Collection of Landsat TM images	Drafting of Chapters 1, 2 and 4: Introduction, Background to the Study Area Methodology Chapter (concretizing the methods/strategies, tools, and instruments for data collection and analysis)	Socio-economic Data Analysis – deriving the descriptive and inferential statistical information Training in Remote Sensing (ERDAS Imagine 2010) for Change Detection Analyzing the Remotely Sensed Data <i>(Preliminary Drafting the Chapter on Presentation of Results simultaneously)</i>	Review of Preliminary Chapters
February				Discussion of findings, Conclusions and Recommendations First Draft Submitted
March				
April				
May				
June				
July	Choosing appropriate methods, tools and strategies for data collection (Based on theoretical information and background knowledge of the study area)	Seminar Presentation at Chair of Land Management (for constructive ideas and criticisms)	Reading relevant literature, editing the thesis	
August	Field Data Collection: Phase 1 Key Informant interviews: Bunyoro-Kitara Kingdom leaders Assistant Commissioner FSSD Secretary District Land Board Ag. Chief Administrative Officer District Surveyor/Ag. Land Management Officer District Environment Officer Head of Surveying Department, Makerere University District Internal Security Officer	Field Data Collection: Phase 2 Key Informant Interviews with Ag. Kagadi Forest Sector Manager, Bunyoro-Kitara Land Board Officer for Kibaale District Forest Rangers Ex Manager for Kagadi Forest Sector The District Planning Officer Data collection from institutional reports, archives, memoirs, letters, Summonses, etc.		Addressing the comments made to the thesis
September			Final (second) Draft Submitted to the Promotions Office	
October				Feasibility Study – Key informant interviews with: Commissioner of Land Registration, Kampala Spokesperson MLHUD Kibaale District Forest Officer
November	Kagadi Forest Sector Manager Natural Resources Officer Kibaale District			
December		Socio-economic Data Analysis with SPSS Package		

4.1.2.1. Selection of the Study Area through Multi-stage Sampling

To Denscombe (1998:14), multi-stage sampling is a process of selecting samples from samples; i.e. each sample is drawn from a previously selected sample. Here, multi-stage sampling goes on through any number of levels, where each level involves a sample drawn from the previous level. Through this method, the author reached the village level from where household surveys and focus group interviews were conducted. Sampling was done through four levels to select; counties, sub counties, parishes, and villages. At each level, supportive sampling methods were employed; cluster, purposive, and simple random sampling as explained later in this section.

The Sub-Counties were selected from the three Counties had been purposively selected. The study used the area map frame, with the administrative units as of 2006 to avoid the confusion from the new administrative subdivisions. For instance, in 2010 Bugangaizi, Buyanja, and Buyaga were split into five counties in total. Besides, the Central Government through the ministry of Local Government approved 11 Sub-counties created by Kibaale District Council for political reasons (The Observer 23rd May 2010). Similarly, new parishes and Cells were also created from existing ones. However, the new governing structures were not on the ground, and neither did they exist on any up-to-date administrative maps.

a) Selection of Sub Counties from Counties

i) Through Cluster Sampling

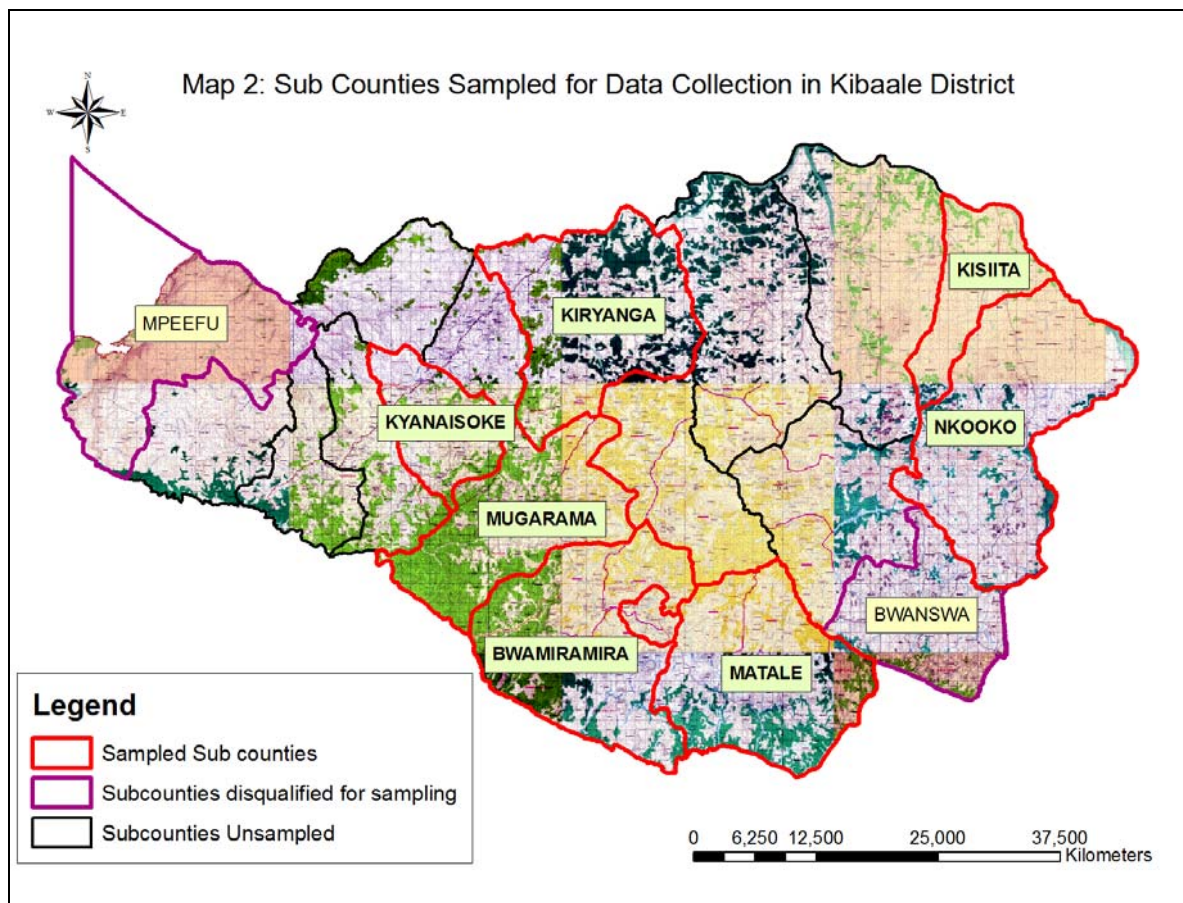
The study used forest clusters based on the 1960 topographic map and the 2006 political map to identify selectable administrative units. With cluster sampling, a researcher can sample areas or institutions and locate a sample within those clusters (Bernard, 1995). Consistent to this view, Denscombe (1998) opines that it is logical to focus on naturally occurring clusters of the particular thing the researcher wishes to study, to get a good enough sample. Most importantly, even if there were no lists of people whom you want to study, you can sample areas or institutions and locate a sample within those clusters (Bernard, 1995:89). Ideally, Cluster sampling primarily seeks to get a representative cluster and the means of attaining it rely on random choice or stratified sampling (Denscombe, 1998).

Prior to their use for cluster sampling, the 1960 topographic maps were swiped with the 1986 false colour image composite. The two images showed minor visual differences in the extent of forest-cover. The validity of the topo-map was later confirmed after the initial supervised image classification. The Sub-Counties in the forest clusters were listed and through simple random sampling, seven Sub-counties were selected for the study (See Table 5). In Map 2, apart from Mpeefu and Bwanswa Sub counties, all other Sub-Counties were fit for sampling.

ii) Through Purposive and Simple Random Sampling

By purposive sampling, a sample is “hand-picked” for research and it applies to the situation where the researcher already knows something about specific people or events (Denscombe, 1998). This method applies in studies of hard-to-find populations, pilot studies, intensive case studies, and critical case studies (Bernard, 2002) and a researcher selects particular samples seen as instances likely to produce the most relevant data (Denscombe, 1998). In retrospect, the Sub Counties of Nkooko and Kisiita of Bugangaizi County were purposively sampled. Nkooko Subcounty was particularly selected due to severe encroachment on Guramwa FR by immigrant settlers. It was reported to have incited the indigenous Banyoro into invading Ruzaire, Kanaga, and Kangombe among other CFRs located in the previously sampled areas. Kisiita Sub-county was hand-picked due to threats of forced evictions by elites and what was perceived as marginalisation of locals by some public agencies such as the District Land Board, Area Land Committees, and National Agricultural Advisory Services (NAADS).

Map 3: The Sub-Counties Overlaid with Forest Clusters



Source: Based on the 1955 (Uganda Maps Series Y732), and UBOS (2006)

After attaining a list of selectable Sub Counties, simple random sampling by way of the lottery method was conducted. Two Sub-counties were selected from the Counties of

Bugangaizi and Buyaga (see Map 3). Three S/Countries were selected in Buyanja County because it had the largest area coverage by forest clusters.

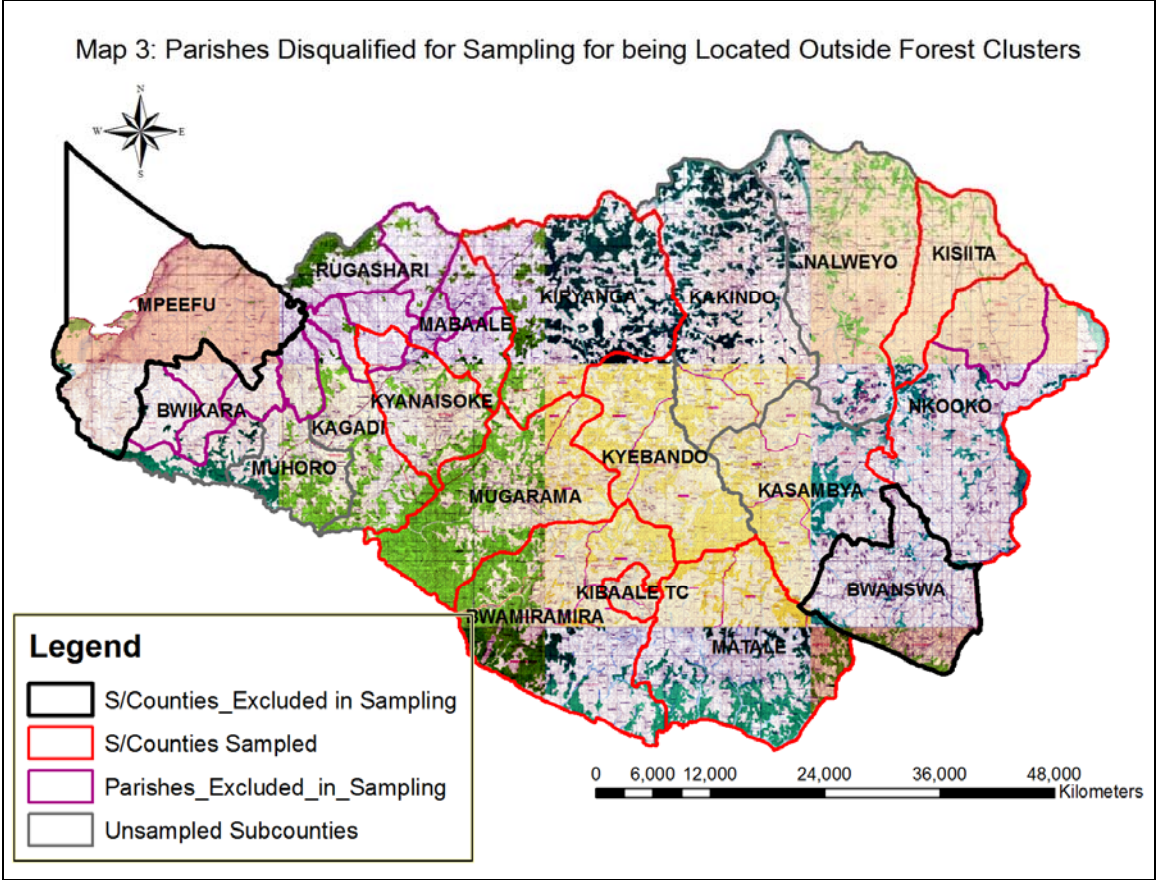
b) Selection of Parishes and Villages

In each Sub-county sampled, a list of parishes was obtained; also based on the 2006 administrative map. The author used a filtering process to eliminate 25 parishes from a total of 91 parishes. As a result, 66 parishes were deemed selectable for the study (see Table 6).

Table 6: Summary of Areas Selected and Selection Process

Sampled Area	Particulars	Total No. Selected of Units	Sampling Method Used
County	All 3 Counties	3	Purposive
Sub-Counties	2 S/counties/County (3 in Buyanja County)	7	Cluster, Purposive, Simple Random
Parishes	2 Parishes per Sub-county	14	Simple Random, Purposive
Villages	2 villages/Parish	28	Simple Random, Purposive

Map 4 shows the sub counties sampled from Kibaale District.



Source: Based on the 1955 Uganda Maps Series Y732, and UBOS (2006) Data

Subsequently, simple random sampling was used to select 2 parishes per Sub-County (via the lottery method), and 14 parishes in total were selected from 7 Sub-Counties. This was the last stage before the selection of villages. Village map data was not available to the author, and instead, a list of villages for each sampled parish was obtained from Kibaale District Local Government. This guided the selection of 2 villages from each parish sampled. In total, 28 villages were sampled from 14 parishes.

4.1.3. Data Collection

Data collection was preceded by the funneling process through a reconnaissance survey in Nov. 2009. This involved in-depth interaction with relevant actors who offered an insight into the magnitude of the study problem. It was later to be a firm ground for strategic planning to collate valid data from which inferences were subsequently drawn and conclusions made.

4.1.4. Sources of Data

a) Primary Sources: Primary sources of data are the first hand evidence left behind by participants or observers at the time of events. They include personal memoirs, government documents, transcripts of legal proceedings, oral histories and traditions, archaeological and biological evidence, and visual sources like paintings (Storey, 1999). Others included personal accounts through interviews and the data gathered with questionnaires. However, the remotely sensed data especially satellite images for multitemporal spatial analysis obtained from the US Geographical Survey (USGS) web portal was qualified as primary data.

b) Secondary Sources: Secondary data refers to those data that have already been collected by someone else and only need compilation (Kothari, 2004). Kumar (2005:141) splits sources of secondary data into four categories; a) government or semi-government publications, c) earlier research, d) personal records, and e) mass-media. The study used published materials, some with the background data to the study area to keep up the researcher with the field. More data was obtained from libraries, online databases, and institutional archives, and mass media. The journals, guide handbooks, magazines, text books, newspapers, national regulations and policies, etc, were accessed for the study. From government documents and publications at the central and local government levels, an overwhelming amount of data, including; topographic maps, official correspondences, reports (e.g. Commission of Inquiry reports) was obtained.

4.1.5. Target Population

For this study, the target population included households, public institutions and civil society organizations, opinion leaders, and groups of individuals (see Table 7, Annex 9) operating at different levels of organization. At the local level, households' land-use decisions exist in response to underlying institutional influences at higher levels and the general policy

environment. Public agencies (e.g. DLB, DFS, the NFA, ULC, etc), Civil Society institutions, and the private sector institutions were important to the study.

Selection of the Sample Size from Households

The choice of the sample size from the households considered the fact that findings based on the larger samples have more certainty than those based on smaller samples. “As a rule”, Kumar (2005) argues, “the larger the sample size, the more accurate will be the findings.” Besides, the sample should be representative of the true population (Diamond and Jefferies, 2001). To select a scientifically reliable sample, the author used Yamane’s (1967:886) simplified formula to calculate the sample size, at 95% Confidence Interval and 0.05 level of significance.

$$n = \frac{N}{1 + N(e)^2}$$

Where;

N = Total population size,

n = Sample size,

e = Degree of precision (significance).

Based on the District Development Plan 2010/2011, Kibaale District was projected to have a total of 85200 Households (HHs) (see KDLG, 2010). Based on Yamane (1967) therefore;

$$n = \frac{85200}{1 + 85200(0.05)^2} = 398.13 \text{ households}$$

Hence, a sample size of 398 households was fit for selection. It must however be noted that sampling of the study areas eliminated some sub-counties and parishes unfit for the study (See 3.1.3) where of the 91 parishes as of 2006, only 66 were fit for selection. This meant that, the population of the HHs from which a sample was to be selected remarkably reduced. In fact Mpeefu S/County and neighbouring parishes known to experience rapid population growth (KDLG, 2010) were among the areas that were ruled out by the researcher from the selection process (Map 3). Given that no projected data on the population of HHs was available at the Sub-County level, the researcher deliberately reduced the sample size to 312 HH (Table 7), as being representative of the true population.

4.1.6. Methods and Instruments of Primary Data Collection

4.1.6.1. Questionnaire/Socio-economic Surveys

The term survey means “to view comprehensively and in detail”, or “the act of obtaining data for mapping” (Denscombe, 1998:6). The socio-economic survey was perceived to be a convenient method for the study. Besides, Bulmer and Warwick (1983:146) note that socio-economic surveys help to; obtain “*relevant information*” and ensure the “*reliability and*

validity” of the data collected. The method was adopted for its suitability to the study circumstances such as the large number of respondents to be surveyed and the huge amount of data to be collated. The structured questionnaire (see Annex 8) was used for effective collection of the required measurable data from land users. The questionnaire focused on factual details; figures, opinions, views, reservations, etcetera, associated with land and forest management. Hence, data was collated on variables including land tenure relations, security of land tenure, land parcel size, types of land-use, and sources energy, among others. Household surveys were methodically preceded by interactions with LC 1 leaders and focus group interviews to win public confidence. The questionnaires method had been used by NFA as a basis of forced eviction of encroachers on CFRs in 2008-9, in Nkooko Sub-County.

Table 7: Target Population, Size and Methods of Data Collection Used

Respondents	Number	Data collection methods
Household Heads (HH)	312	Questionnaire Survey
Key Informants	21	Face to Face interview
Group 1 (Kabale Cell)	11	Focus group Discussions/Interviews
Group 2 (Bujogoro Cell)	10	
Group 3 (Kiryanga Cell)	20	
Group 4 (Nyamuguhya Cell)	36	
Group 5 (Rutooma Cell)	48	
Group 6 (Kalangala Cell)	35	
Officials (District Internal Security Officer), LC 1 Leader	2	Telephone interview

Source: Author

The possibility of hostility towards the research team for using questionnaires was certainly inevitable. Three native research assistants were employed, trained and routinely evaluated as a control measure against errors. During household surveys, the author changed from simple random sampling method as earlier planned, when it became apparent that there was no operational and up-to-date list of households in the selected villages. Applied in selecting survey respondents at the household level, systematic sampling was tailored to field realities where the researcher/author methodically skipped two households after every household surveyed, as a way to standardize data collection process and ensure representativeness.

4.1.6.2. Interview Methods

a) Face to Face Interviews

Also known as “elite interview” (Gillham, 2000:63), or one-to-one interviews, face-to-face interview entails a meeting between one researcher and one informant (Denscombe, 1998). It has a freewheeling quality of unstructured interviews but uses an interview guide. An interview guide is the “*written list of questions and topics that need to be covered in a*

particular order” (Bernard, 2001:212). Face to face interviews were used to interview; public, private and civil society institutions and some politicians. On the other hand, key informants are the people you can easily talk to, who understand the information you need, and who are glad to give it to you or get it for you (Bernard, 2001). This method was used to gather data from key informants who widely discussed issues raised by the researcher. Qualitative open ended questions (see Annex 9) used sought personal perceptions and experiences.

b) Informal Interviews

Informal interviews are characterized by a total lack of structure or control (Bernard 2001:211). The author conducted informal interviews with Local Council 1 leaders and forestry institutional staff; mainly the forest guards. It was based on Bernard (1995) guide that you sit down with a person and hold an interview with no shared feeling that you are engaged in pleasant chitchat. They are unstructured interviews based on a clear plan constantly kept on mind with minimum level of control over people’s responses, aimed at getting people to open up and let them express themselves in their own terms.

c) Focus Group Interviews/Discussions

Kumar (2005) holds that a focus group interview (FGI) is undertaken to explore the perceptions, experiences, and understanding of the group of people with the some experiences in common with regard to some situation or event. But Denscombe (1998) cautions that FGI is vital in exploring attitudes on non-sensitive and non-controversial topics with focus groups. This view may be disputed on the context of the research problem and circumstances that may ignite the group’s willingness to openly discuss even sensitive matters.

Photograph 1: Focus Group Discussion in Guramwa Forest Reserve



Source: Author

In fact the study used FGDs to gather attitudes on sensitive facts on tenure, access to land, encroachment, graft and others, using unstructured interview guide (open ended questions). In addition, FGDs always preceded household surveys in areas where land grabbing and threats of forced evictions abound, that almost rendered the discussion on land matters anathema and especially guided by the locally unknown people. Besides, in contrast to Bernard's (2006) assertion that FGDs normally comprise 6-12 members sessions, the discussions in this study often attracted bigger groups (see Table 7, and Photograph 1) especially due to the sensitivity of the land matters. As a result, control over the discussions was tedious, but was eventually made possible by the researcher's clear explanation of the research purpose. The consideration of ethnic heterogeneity in FGDs was affected by the clustered settlement patterns defined on the basis of ethnicity. Hence, at least one FGD was held in two parishes, from where the researcher homed-in on groups from different ethnic backgrounds. Normally, a research assistant kept record, with ink, of whatever was expressed. The data was edited immediately after each session to ensure that vital aspects were not left out. The use of audiotapes was out-rightly rejected by the respondents for fear of retribution despite of the author's genuine guarantee for privacy.

d) Telephone Interview

To Denscombe (1998), the telephone interview is a suspect research method because of the bias sample mentality. Yet, the method is suitable for collecting information from the physically inaccessible respondents that have been purposively selected. After all the merits of face-to-face interviews over telephone interviews or vice versa is subject to epistemological debate and so far there is no universal position on which of the two is the best method for data collection. Each method is suitable for specific circumstances and carries with it some demerits. Telephone interviews were made with the District Internal Security Officer, and the Chair Person LC 1 Ijumangabo Cell. This was applied in what was perceived to be appropriate situations. Prior to the telephone interviews a pre-arranged schedule was made with the interviewees, and the purpose was clearly stated to avoid the negative effects of what Gillham (2000) prefers as "cold-calling". An interview guide was set prior to the interviews to streamline consistency in collecting valid data.

4.1.6.3. Observation

This method of primary data collection draws on direct evidence of the eye to witness events first hand, given that for certain purposes, it is best to observe what actually happens (Denscombe, 1998). It is "a purposeful, systematic and selective way of watching and listening to an interaction or phenomenon as it takes place" (Kumar, 2005) and therefore tests theoretical concepts for certain phenomena on the basis of their occurrences (Flick, 1998). Some scholars have split observation into; participant, and non-participant (systematic) (Denscombe, 1998:139, Kumar, 2005), or detached/structured (Gillham, 2000).

This section focuses on participant and non-participant types of observation which the study used. Denzin (1988:17-18, cited by Flick, 1998:141) prefers participant observation as a strategy that simultaneously combines document analysis, interviewing of respondents and informants, direct participation and observation, and introspection. The researcher thus becomes a participant and gains access to the field and to the persons or groups, and moving through a process of becoming more concrete and concentrated on critical aspects for the research questions (Flick, 1998, Kumar, 2005:120). By non-participant observation, the researcher does not get involved in the activities of the group and remains a passive observer, watching and listening to its activities and drawing conclusions from this (Kumar, 2005). The researcher intensely participated in forestry patrols to grasp the extent of the forest crimes (See Photograph 2). Diving headlong into the field, the researcher witnessed the prevalence of illegal logging and/or encroachment. Non-participant observation was used during questionnaire surveys in areas with severe encroachment.

Photograph 2: Researcher with Captured Illegal Loggers in Kangombe Central Forest Reserve



Source: Author

This high risk task forced the author to limit physical contact with the “resented” forestry staff to smoothly collect data while observing illegal forest activities taking place. Otherwise, this could confirm the initial suspicion that the researcher was a government spy, and this could prompt unexpected consequences. However, the author participated in forest patrols at the end of questionnaire surveys and focus group discussions. Indeed an informal arrangement with the forestry staff was made to arbitrarily halt patrols in some areas pending the completion of the surveys. It helped to easily break into the communities often without much opposition. This offered undisputable first hand evidence of forestry crimes, and challenges to forest monitoring and law enforcement.

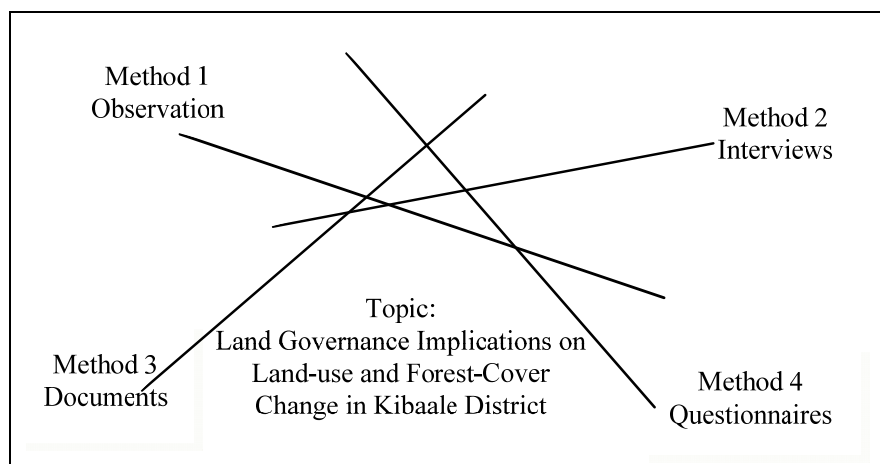
4.1.6.4. Photography

While photography is not commonly applied, the use of photos is not less than a revival of second-hand observation both as a topic and a method (Flick, 1998). As photography has a long tradition in anthropology and ethnography (ibid) the study used photos to relay the facts on the substance of the forest destruction. The reality that cameras are incorruptible (Flick, 1998) in the presentation of reality; perception and documentation of the world boosted the relevance of photography towards providing the physical evidence of forest alteration. Photography offered the visual evidence of participant observation, and reinforced all the data collection methods the study used.

4.1.7. Triangulation Method

Triangulation means a practice where the researcher uses multiple methods, data sources and researchers to enhance the validity of research findings (Mathison, 1998). This is reaffirmed by Denscombe (1998) that triangulation is a multi-approach method that allows findings to be corroborated or questioned by comparing data produced by different methods; for there is no single method theoretically perceived as the “universally accepted” for all situations. In a rather enhanced argument, Denzin (1970) gives various forms of the triangulation process; data triangulation, investigator triangulation, theoretical triangulation and methodological triangulation. Triangulation virtually involves locating a true position by referring to two or more other coordinates. It heavily relies on the known properties of triangles (angles, length of sides, ratios) and was often used by sailors for their navigation to know their true positions with reference to known fixed points such as the stars (Denscombe, 1998).

Figure 15: Methodological Triangulation



Source: Adapted from Denscombe 1998.

Gathering valid data on forest-cover loss, involved mutually reinforcing data collection methods. Data triangulation was tied with methodological triangulation using questionnaires, published materials, online databases, institutional achieves, etc. Methodological triangulation

entailed the use of household surveys, interviews, focus group discussions, observation, and documentation (See figure 16). Methodological triangulation may not necessarily imply that the data collected is absolutely true but it shows consistency and attracts reliability. Flick (1998:259) concurs that different methodological perspectives complement each other to investigate the problem; i.e., through complementary compensation of weaknesses and blind spots of each method used

4.2. Validation and Verification for Data Reliability

4.2.1. Validity

Validity means the “*accuracy and trustworthiness of instruments, data, and findings*” (Bernard, 1995:38). It is split into; instrument validity, data validity (is the data valid? Are the findings and conclusions too?), and finding validity (are valid explanations given to account for the valid data) (Ibid, 1995). Of note, data validity has often been tied to the validity or reliability of instruments, emphasising that valid instruments and valid data determine the reliability of the research results. But while valid measurements make valid data, validity itself depends on the collective opinion of the scientific community (Bernard, 2006). The researcher did a test/re-test task to ensure consistency and stability of the questionnaire to gather valid results. The questionnaire was pre-tested twice, and the second time was carried out in the study area. By extension, this was meant to; a) improve the wording and simplicity of the questionnaire, so that it is understandable to the respondents - that, questions get a logical flow in line with the study objectives b) ensure that questions covered all important issues to be addressed by the study

Based on Kumar (2005), test/re-test is a procedure of determining the external reliability of an instrument. But he also argues that validity refers to quality. Implicitly, improving the quality of questionnaire qualifies test/re-test as a procedure for both validity and reliability. This improved the questionnaire’s validity for gathering valid data and consequently, the results had the due integrity and are scientifically defensible.

4.2.2. Verification

Verification is the process of checking, confirming, making sure, and being certain (Morse *et al.*, 2002:9). It implies mechanisms used during the research process to incrementally contribute towards ensuring reliability and validity, leading to the rigor of a study (ibid). Without a clear strategy for verification during the data collection process, it is likely that the researcher runs into the risk of missing serious threats to the validity and reliability, until it is too late to correct them (Morse *et al.*, 2002:4). This study entailed verification of; a) the socio-economic data, and b) the image classification results. In the socio-economic data verification, daily evaluation of data ensured that it was in line with their intended use. The researcher often moderated focus group interviews as research assistants recorded responses which also

required quality check. The data was edited to avoid losing vital facts through errors, incompleteness, and gaps in the information gathered. This may also be an integral element of data processing. Questionnaires were therefore evaluated to ascertain data completeness, correctness and consistency. Ideally, every research assistant recorded their names on each questionnaire administered to enable easy verification of their work.

4.2.3. Reliability

The definition of reliability is a subject of scientific debate. For Bernard (2006) and Kumar (2005), reliability means whether or not you get the same result using the same instrument to measure something more than once under the same or similar conditions. Yet, like other kinds of instruments, some questions tend to be more reliable than others (Bernard, 2006). Flick (1998) however argues that the understanding of reliability such as frequently repeated data collection leading to the same data and results should be rejected. He asserts that the criterion for reliability in qualitative research is founded on the direction of checking the dependability of data and procedures that can be grounded in the specificity of various qualitative methods. Flick premises reliability on; the genesis of the data and how it is explicated to enable checking the statement of the problem, and where the interpretation begins; making procedures in the field or interview explicit in training to improve compatibility with different viewers' or observers' conduct.

The researcher used the internal consistency procedure to ensure reliability using the "split-half technique." This, according to Kumar (2005), is designed to ensure that two questions or statements intended to measure the same aspect fall into different halves. The scores obtained from administering the two halves can be correlated. Thus, the researcher variantly phrased mutually reinforcing questions. The agreement between answers was an immediate test of consistency and dependability of the results. For example, a question on the land size owned by households was matched with a query on approximate coverage of each land-use type on the whole household land. The difference between the overall total of the latter question tested the reliability of the results from the former.

4.3. Data Processing and Analysis

Data processing started with editing as a data cleaning exercise to remove inconsistencies and ensure completeness. As earlier noted, data processing is typically linked with the verification process and reliability. For the case of interviews, any conflicting or unclear information gathered from a key informant was checked by going back to the informant or checked by interview with another key informant. Data cleaning was further done after data entry in the SPSS computer package to remove errors of wrong entries and any other anomalies. While questionnaires were pre-coded, coding was repeated to integrate the additional variables obtained from the field. Coding according to Denscombe (1998) is a scientific process of

transforming the material from words into the numerical format suitable for quantitative analysis. Analysis, according to Bernard (2006:453), means the search for patterns and for ideas that help to explain why those patterns are there in the first place. Bernard emphasizes that data analysis begins with having ideas about what you are going to study.

4.3.1. Qualitative Data Analysis

Qualitative data analysis method lends itself to the analysis of textual data obtained in a raw qualitative format. Qualitative data whether words, or images, are the product of the interpretation process (Denscombe, 1998). Mainly obtained in the format of field-work notes, the researcher organised and analysed data with a touch of confidentiality. The data was organised in themes based on particular events or special highlights (ideas, issues, etc) in the data. The analysis of the text and photos supported quantitative data in describing complexities patterns and causative factors inherent in forest-cover loss and associated issues of access to land and poor security of land tenure.

4.3.2. Quantitative Analysis

Quantitative analysis methods such as factor analysis, cluster analysis, regression analysis, double as methods of processing data and for finding patterns in data (Bernard, 2006). Quantitative data analysis was done at two levels: a) analysis of socio-economic data; and, b) quantification of land use change. The latter is a kind of spatial analysis that yields quantitative information on changes, performed with thematic land cover maps derived from the classification of raw remote sensing bands (Gao, 2009). The tools used were ERDAS (Earth Resource Data Analysis System) Imagine 2010 and ArcGIS 9.2. The data from questionnaire surveys was summarised into numerical data with means, percentages and frequencies and inferences were drawn through Regressions. The SPSS 17.0 package was used because it entails comprehensiveness and simplicity in quantitative data analysis.

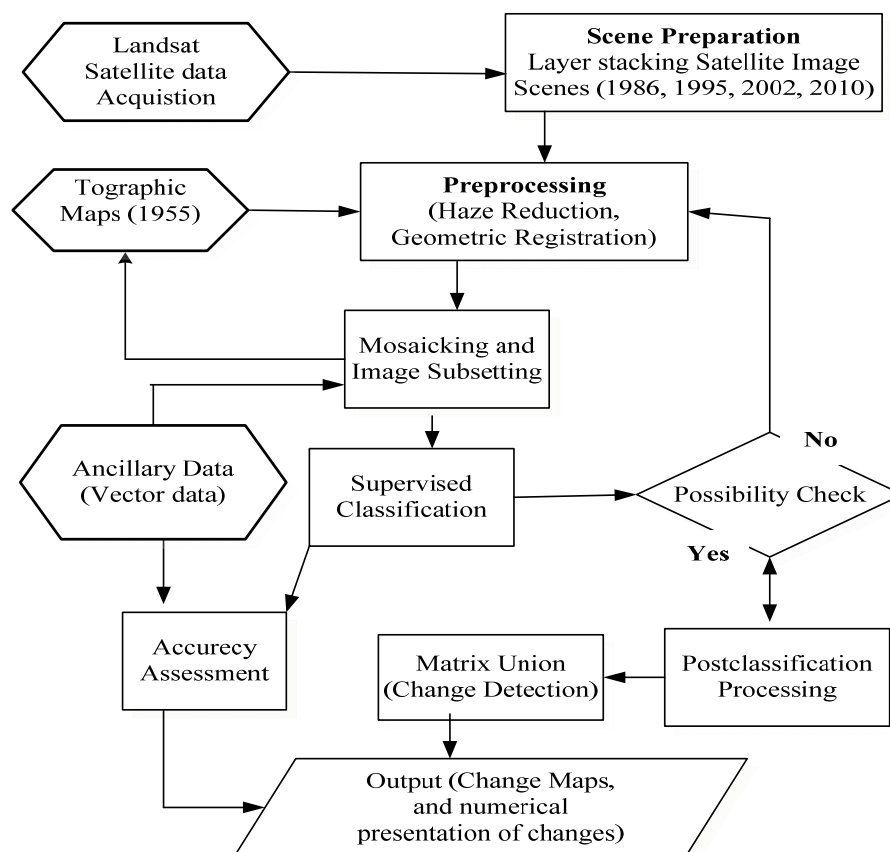
4.4. Land Use and Forest Change Detection

Change detection is the “spatial comparison of two or more land covers of the same geographical area produced from remotely sensed data that are recorded at different times” (Gao, 2009:527). In identifying what has actually changed on the ground, any spatial variation in the boundaries of land cover signifies changes taking place during that interval (ibid). The study sought to assess the magnitude of land-use and forest-cover change in Kibaale District. It quantitatively establishes how much forest still exists (how much forest-cover reduced via deforestation or increased by reforestation, afforestation, or natural forest expansion) for the years 1986, 1995, 2002 and 2010.

The availability of the repetitive and spatially explicit remote sensing data on the biophysical attributes such as vegetation and landscape heterogeneity was crucial. The study used ERDAS Imagine 2010 software together with the ArcGIS 9.2 software. For ERDAS Imagine was

developed closely in parallel with ESRI's ArcInfo software, it (ERDAS Imagine) offers a full suite of image processing, photogrammetry, GIS analysis, database and visualization tools (Gibson and Power, 2000:84). Hence, some GIS suited operations were done without switching to ArcGIS 9.2 software. The study by Bender *et al.*, (2005) shows that it is vital that historical cadastral maps, land registry data and other relevant forms of archival data should be used in the land change studies. While this would provide the necessary trajectory of land ownership and land use in the study area, the data available was found to be obsolete. Instead, some ancillary data integrated in the digital satellite image analysis were topographic maps and administrative maps. The use of this data is explained later in this chapter. Figure 16 illustrates the process of change detection.

Figure 16: Multitemporal Spatial Change Detection Process



Source: Author

4.4.1. Why 1986 was used as a base Year in Change Detection

The researcher hand-picked 1986 as a base year, because it coincides with fundamental political changes that involved the restructuring of the governance system after the rise of the National Resistance Movement (NRM) government which is still in power to date. According to Hartter and Ryan (2009), natural resource management has shaped Uganda's national identity since 1986 and with the decentralization agenda, the perceptions of unprotected

forests and wetlands have since shifted from being wasteland and ignored in the political arena to vital elements in securing livelihoods.

Table 8 summarises governance conditions for successive political regimes. For many writers, 1986 is a shift from the tumultuous years of failed governments, civil wars, abolition of kingdoms, and centralization of government functions and powers, high inflation rates, chronic budget deficits, rampant destruction of natural resources such as forests, and environmental degradation among others (Hartter and Ryan, 2009, Hamilton, 1984 cited by NEMA, 2004/05). Tukahirwa (2002) concurs that by early 1980s, Uganda faced persistent political turmoil and the resultant dearth of the industrial sector which plunged the country into economic disequilibrium.

Table 8: Summary of Changes in Governance through 1986

1900-62	1963-1985	1986 -
<ul style="list-style-type: none"> • 1898 Forestry Department formed, • Mailo land tenure imposed- 1900 Buganda Agreement 1933 Bunyoro Agreement limits the rights of Banyoro further • 1930-1960: Most CFRs created in Kibaale District • 1962 Uganda independent, new Constitution 	<ul style="list-style-type: none"> • 1964 Buyaga/Bugangaizi Referendum, 1966 -7 Political crisis and abolition of Kingdoms, • 1967: Forestry Centralised • 1975 Land Reform Decree abolishes all land tenure systems except leasehold • 1979-85 civil wars: eight changes of government via military coups 	<ul style="list-style-type: none"> • 1986 rise of NRM Government and democratisation • 1987: control of forests transferred to local agencies • 1990-2004: legal and structural reforms, decentralised land and environmental management, economic transformation • 2005 – political corruption, institutional incapacity, forest encroachment
<p>Key Points, Forestry formalized, Land ownership concentration, land owners turned tenants, Departure of technocrats and forestry agencies incapacitation</p>	<p>Key Points: Violent political instability and gross human rights abuses, Consolidation of land invasion, land grabbing and land speculation by elites, military brass, and bureaucrats.</p>	<p>Key points: Relative political stability, paradigm shift in land & natural resource management, land ownership reverts to the citizens, anti-corruption agenda institutionalised</p>

Source: Based on NEMA (2004/05), Nsamba-Ngayiyya (2003), Okuku (2005), Webster *et al.*, (2003), Owino and Ndinga, (2004), Hartter and Ryan (2009), The World Bank (1993, 2012a)

Hartter and Ryan (2009) emphasise that since independence in 1962, Uganda neglected natural resources management during the eight changes of governments of which four were forced through military coups. However, while it is held that under the NRM government, reasonable democratization has been achieved (NEMA, 2004/05) and natural resource management included in the national agenda (Hartter and Ryan, 2009), practice has shown contrast between the paper-stuck reforms and implementation. Given the rate of rapid spatial transition in land cover through deforestation despite the radical transformation of land management and governance since 1986, the study analyses the dynamics of land-use and forest-cover change with particular focus on Kibaale District.

4.4.2. Image Acquisition

To methods and processes of change detection; the dates of imagery acquisition, the choice of the sensor(s), change categories, and change detection algorithms are essential (Coppin and Bauer, 1996) and played a vital role in the choice of Landsat TM images. Landsat TM has 7 spectral bands, each with specialized areas of application. Vivally, the Land Process Distributed Active Archive Centers (LPDAAC) which supports educational users, offered to the researcher free access to Aster images. However, the use of Aster images was hampered by cloud cover and temporal scale limits. The Landsat TM images obtained from the United States Geographical Survey (USGS) web portal⁴ were a suitable option.

Table 9: Landsat TM Spectral Bands and their Major Applications

Band	Wavelength	Primary Use
1	0.45–0.52 (blue-green)	Water body penetration, useful for coastal water mapping, and for differentiation of soil from vegetation, and deciduous from coniferous flora
2	0.52–0.60 (green)	For measuring visible green reflectance peak of vegetation for vigour assessment
3	0.63–0.69 (red)	A chlorophyll absorption band important for vegetation discrimination
4	0.76–0.90 (NIR)	Useful for determining biomass content and for delineation of water bodies
5	1.55–1.75 (mid-IR)	Indicative of vegetation moisture content and soil moisture. Also useful for differentiation of snow from clouds
6	2.08–2.35 (mid-IR)	For discrimination of rock types and for, hydrothermal mapping
7	10.40–12.50 (TIR)	Vegetation stress analysis, soil moisture discrimination, and thermal mapping

Source: Gao (2009)

Moreover, Landsat TM images were: i) available with insignificant cloud effects and at a required multitemporal scale for 1984-2010, ii), captured by the same sensors, and thus with similar spatial resolution, spectral resolution and limited radiometric variations, iii) covering identical geographical area, and scenes mosaicked for each epoch were acquired on similar dates. Landsat TM images were affordable and support a wide-range of applications. Gao (2009) concurs that Landsat TM/ETM+ supports mapping of land use, natural resource management such as forestry and water resources, flood monitoring, agriculture, etc.

⁴ USGS Global Visualization Viewer: <http://glovis.usgs.gov/> as on visited July 2009-May 2011

Anniversary dates or anniversary windows principle was not critically observed based on the availability of the satellite data with acceptable quality and phenological stability.

Tropical moist forests are evergreen; and therefore, change detection does not easily yield to the influence of phenology; the discrepancies in reflectance due to seasonal vegetation fluxes. The study area is located in the tropics and does not lend itself to the impact of shadow length variations with seasonality. Six spectral bands were stacked together to form false colour composites per satellite image (for each image acquisition epoch) for classification. Spectral bands were edited through the spectral signature editor as a measure against spectral overlap. This is discussed in section 3.4. The limitations faced with remotely sensed data rhyme with those listed by Price (1994) as; a) spectral overlap of some classes and, b) limited resolution of affordable satellite data. Therefore, whereas the 1986 epoch was hand-picked, the selection of subsequent epochs 1995, 2002, and 2010 was tied to the availability of satellite images.

Data availability was confronted with the problem of striping in Landsat TM imagery since 2003 due to the sensor error. On 31st May 2003, the Landsat 7 Enhanced Thematic Mapper (ETM) experienced a Scan Line Corrector (SLC) failure (USGS and EROS Data Centre, 2003). Since then, Landsat ETM images had wedge-shaped gaps on both sides of each scene, leading to the loss of about 22% of the data. To solve the anomaly, Scaramuzza *et al.*, (2004) designed a technique to fill gaps in one scene with data from another Landsat scene (see Yale Centre for Earth Observation, 2011) but its accuracy is not widely documented. Of note, Landsat 7 ETM+ is still capable of acquiring useful image data with the SLC turned off, without compromising the radiometric and geometric fidelity it had prior to the SLC failure (USGS, n.d). The analyst thus accessed the quality Landsat TM image for 2010 epoch fit for scientific assessment. The high resolution SPOT images covering the years of SLC failure could not have been compared with the Landsat TM due to the huge spatial variations.

Table 10: Details of Landsat TM Images used in the Study

Imagery Date	Landsat (TM)	Bands	Spatial Resolution	% Cloud Cover
Jan. 17th 1986	Northern Scene	3, 4, 5, 7	30m	10
	Southern Scene		30m	40
Feb. 27 th 1995	Northern Scene	3, 4, 5, 7	30m	0
	Southern Scene		30m	30
June 2 nd 2002	Complete Area	1, 2, 3, 4, 5, 7	30m	0
Dec/2010	Northern Scene	1, 3, 4, 5	30m	0
	Southern Scene		30m	0

Source: United States Geographical Survey

4.4.3. Image Pre-Processing

This is a core procedure to data preparation. It is aimed at correcting geometrically distorted and radiometrically degraded images to create a more reliable presentation of the original scene (Gao, 2009). Pre-processing, as Coppin and Bauer (1996) note, includes a series of sequential operations such as atmospheric normalization and correction, image registration and rectification, geometric correction and masking (for clouds, water, haze, etc) and interpretability enhancement. Pre-processing procedures are conducted prior to image classification and change detection. For this study, geometric registration and haze reduction process were conducted.

4.4.3.1. Geometric Registration/Coregistration

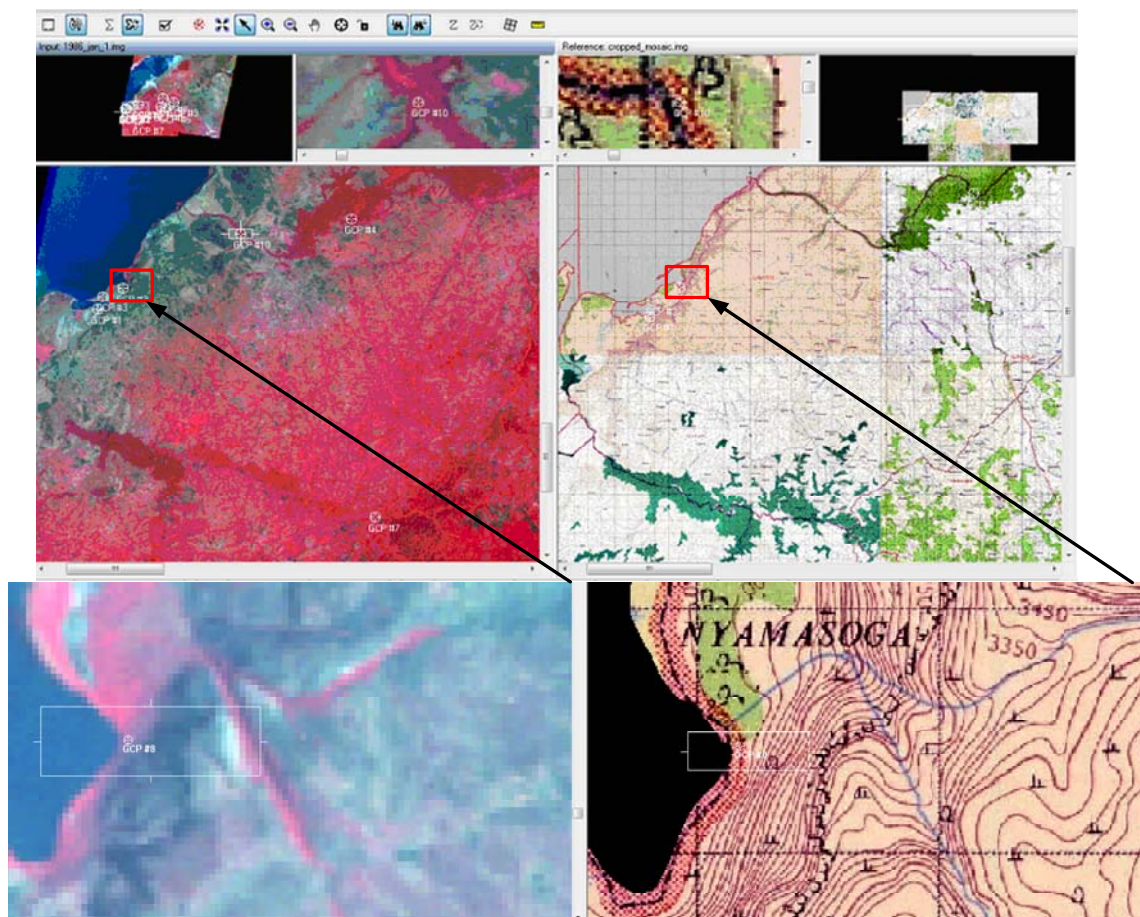
Satellite images entail geometric distortions; either systematic, or random (Gao, 2009). Generally, the factors behind geometric distortions are intimately linked with the target (Earth's rotation during scanning, and Earth curvature), the sensor (scale distortion and scanning mirror inconsistency) and the platform (position and orientation in space) (ibid). Also known as image registration (Zitova and Flusser, 2003), geometric registration involves the reorientation of the image data to selected parameters, for accurate spatial assessments and measurements of the satellite imagery data (King and O'Hara, 2001) which is taken at different times, from different viewpoints or even by different sensors (Zitova and Flusser, 2003). Two images are geometrically aligned together; the reference and sensed image, even though both may have the same local coordinate system (ibid).

Of particular note is the fact that Landsat mosaics are delivered in a Universal Transverse Mercator (UTM)/World Geodetic System 1984 (WGS84)⁵, and ERDAS allows the preservation of their geometric information. The geocoding process (linking coordinates in a model space to the Earth's surface (ERDAS, 2009)) was thus skipped. But, this was not a solution to the geometric distortions and a spatial mismatch that caused extensive errors (misregistration) along the fragmented land cover boundaries when coregistration was first ignored. The 1986 satellite image was registered to the geometrically reliable digital topographic map projected in Arc 1960 UTM Zone 36N (1:50,000), derived from 1955 panchromatic aerial photographs (Uganda Maps Series Y732) (see Figure 17). The same was done to the subsequent epochs to rectify geometric distortions in the image and to alter its coordinate system. Ignoring the threat of misregistration would lead to the analysis of false land attributes at wrong positions and certainly miss real changes on the very locations between different selected satellite data acquisition epochs.

⁵ USGS: Downloading and Formatting Earth images from NASA for GIS use

A geometrically reliable source image helps to remove distortions in the slave image than two input images with geometric distortions. Actually, topographic maps were the main source of Ground Control Points prior to the advent of GPS and it is relatively cheap and efficient (Gao, 2009). Meanwhile, the GCPs including rock outcrops, road junctions, river intersections, and other stable identifiable features were used, while ensuring their balanced spatial distribution for quality rectification. Indeed Gibson and power (2000) concur, that in order to obtain sufficient GCPs whose positions encompass the entire image the analyst may be forced to use points whose positions may not be absolutely guaranteed. They add that ground control points delineated by rivers may yield more accurate georectified image than doing geometric registration without them. The feature-based methods were used through feature matching process, based on advice from Zitova and Flusser (2003:987); invariance, uniqueness, stability and independence. An over-defined 2nd order polynomial transformation was used to coregister one image to another.

Figure 17: Coregistration of 1995 False Colour Image Composite to 1955 Topo-map



Source: Author

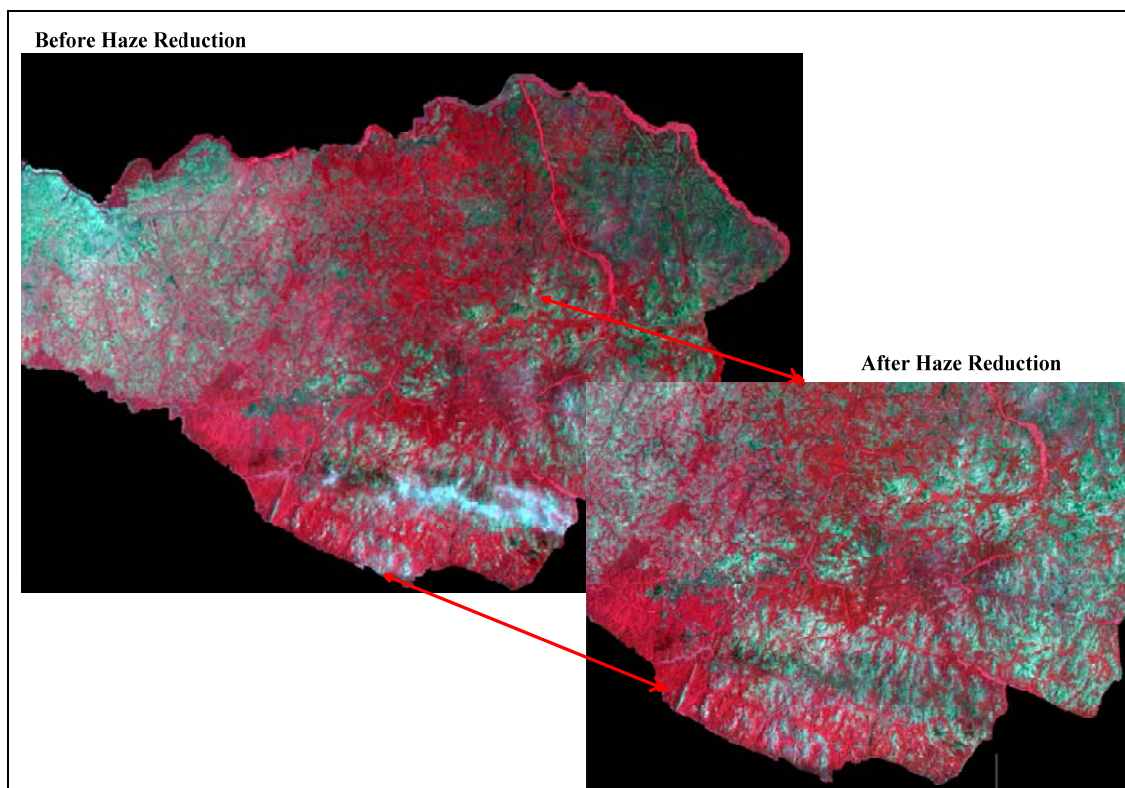
The polynomial equations convert source file coordinates to rectified map coordinates (ERDAS, 2010), and the second-order transformation has the optimal balance between

accuracy and complexity (Gao, 2009). This removes non-linear geometric distortions by rotating and shifting the original image without changing the relative distance and positions of the pixels in the input and output images just as the first order polynomial, but it further removes local scaling (stretching and compression) (ibid:166). In addition, the nearest neighbour resampling method was applied. The method uses the value of the closest pixel to assign to the output pixel value, and transfers the original values without averaging them as other methods do; thus the extremes and subtleties of the data values are not lost (ERDAS, 1999, 2010, Gao, 2009). It may drop some data values and duplicate other data values, but is vital when discriminating between vegetation types (Jensen, 1996 cited by ERDAS, 2010).

4.4.3.2. Radiometric Correction: Haze Reduction

This method effectively eliminated patches of cloud cover in the 1995 image, and isolated patches of haze resulting from wildfire smoke in the study area as shown in Figure 18. Guindon and Zhang (2002) argue that a robust image-based haze reduction can significantly improve inter-scene classification consistency and therefore classification. Thus, haze reduction on selected images for analysis had limited potential to jeopardize information extraction. But as luck would have it, most portions of the satellite images with high cloud cover were outside the area of interest (aoi) and were removed during subsetting

Figure 18: Haze Reduction

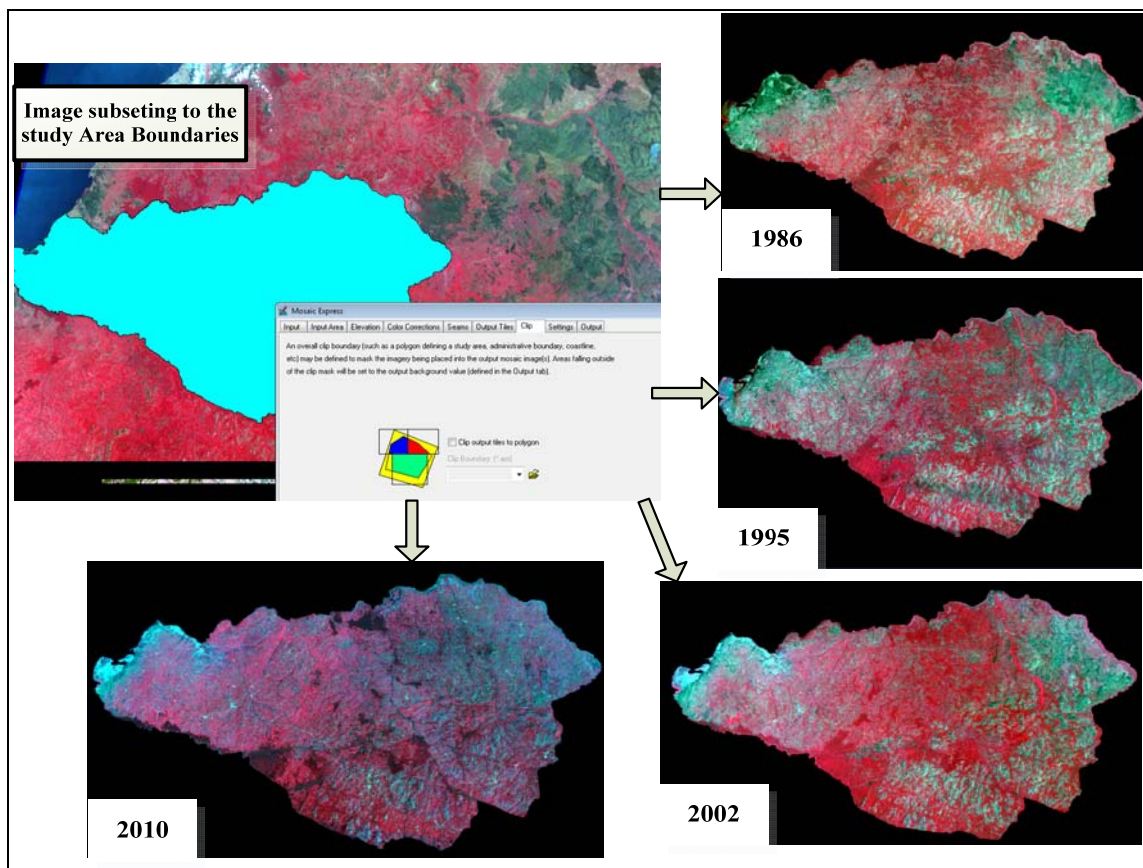


Source: Author

4.4.4. Image Subsetting and Image Mosaicking

Image subsetting and mosaicking operations were carried out. Image subsetting refers to the process of delimiting a small area from an input image covering a ground area larger than is necessary (e.g. full scene image) (Gao, 2009:197). In other words, a portion is cut out of a larger image into one or more smaller files (ERDAS, 2010), which are subsequently subjected to further analyses. An inquire box in ERDAS software was used to delineate rectangular image portions from mosaicked image blocks (identify pairs of coordinates on opposite corners of the box) for further analysis. Subsetting was done for each scene before mosaicking. Subsetting was later done on the mosaic blocks to delineate the study area for further analysis. Figure 19 shows that the study area covered portions of individual scenes, and Gao (2009) recommends a second subsetting to have a final image conform to the boundaries of the study area defined by the Area of Interest (AOI).

Figure 19: Subsetting of Mosaic Image Blocks to the Study Area Boundaries



Source: Author

Unlike subsetting, mosaicking involves stitching multiple images or digital photographs of the same area together to form a larger image (Gao, 2009). Images are pieced together side by side to create a larger image (ERDAS, 2010). The study area spans at least two scenes of satellite images. Through mosaicking, the researcher created a single image for subsequent

assessment procedures. Mosaicking was not required for 2002 where one image scene covered about 99% of the study area, and yet the second scene was not available on the USGS web portal. This did not bear a significant impact on the results. The processes of histogram and colour matching before or after mosaicking resulted in tonal variations replete with alternating brightness and hue. When this was ignored, an acceptable level of unified radiometry for mosaic images was achieved. A district boundary vector file was used to further subset the image mosaics to the boundary of the study area to be used for analysis as in Figure 19.

4.5. Image Processing

4.5.1. Spectral Image Classification

Spectral Image Classification is a process of information extraction, which entails converting satellite data into meaningful data, especially through categorizing pixels in an image into several classes of ground cover, either parametrically or non-parametrically in the multispectral domain (Gao, 2009). Image classification in this study was solely in the spectral domain. Under spectral domain, image classification is known as pattern recognition, where decision rules are primarily based on the spectral values of remote sensing data (ibid). Image classification was done following the three requirements outlined by Gao (2009); the analyst must be familiar with the subject under investigation, must be familiar with geographical area, and must have a sound understanding of the remotely sensed data being used.

The researcher widely consulted the background information about the problem under investigation. Thus, topographic maps, institutional assessment reports, and thematic maps offered an opportunity for accurate and reliable classification results. In addition, the researcher undertook a deliberate process to understand the remotely sensed data used for analysis. Landsat TM images used were studied in line with their characteristic features such as spatial resolution, spectral bands and wavelength ranges, and the time and date of acquisition as in Table 9 and 10 respectively.

4.5.2. Supervised Classification

Among others, supervised classification is appropriate when you want to identify relatively few classes, or when you can identify distinct homogeneous regions that can represent each class (ERDAS, 2009). The researcher formed a classification scheme as a basis of extracting features from the input image. A classification scheme is the “list of all potential land cover types present inside a study area that can be soundly identified from the satellite image” (Gao, 2009:255). The analysis of remotely sensed data seeks to extract homogeneous features, defined based on relevant local, national, regional, or global classification systems (Pal *et al.*, 2001 as cited by Mugisha, 2002).

Conversely GAO (2009) argues that this may not suit the geographic area or theme under study without modification. She asserts that it is actually the analyst to determine the number of classes and their detail level in the modified scheme. The researcher modified the land-cover classification scheme from the National Biomass Study Project 2002 to suit the study theme. To avoid spectral overlap, numerous land-use types with relatively similar pixel values were combined into one information class. For example, the spatial configuration of bare land, rock outcrops, burnt forests and grassland, fresh tilled areas, bare (overgrazed) savannah land, earth road networks and urban centers led to mixed spectral responses that could not be easily differentiated. Thus, road networks and urban areas in the study area are unpaved and they easily mix with spectral signatures for bare land or savannah.

Table 11 shows that for better discrimination between classes, several land use types were amalgamated. Based on the USGS popular Land-Use/Land-Cover Classification System devised by Anderson et al., (1976 as cited by Gao, 2009), the researcher classified land-cover types at the primary level. The abandonment of the secondary level owed to the degree to which primary classes should be further divided into more classes. Thus, in full consideration of the resolution qualities of the input image, the analyst reduced the level of precision to attain a high level of accuracy.

Table 11: Land use/Land Cover classification Scheme

Land-Cover Types	Particulars
Tropical High Forest (THF)	Comprised of the medium altitude-moist-ever-green, and medium altitude-moist-semi-deciduous natural forests ⁶ broadleaf forests (USAID, 2006) with several tree storeys, and canopies.
Secondary Forest	Remnant woody formations due to the human destruction of the natural Tropical High Forests (THF)
Agricultural and Savannah Land	Vegetated crop fields, pasture land, and open savannah grassland with scattered trees, shrubs, scrubs and thickets
Bare Land	Bare Rocks, cultivated bare soils, burnt areas, built up and/or unpaved urban centers, and road networks
Wetland	Areas of permanent or temporary water saturation; i.e. permanent, secondary, tertiary swamps, of papyrus vegetation, and other sedges

Source: Author

⁶ Based on Langdale-Brown, Osman & Wilson (1964) as cited by Obua J, G. Agea, and J. Ogwal: (2010): Status of forests in Uganda. Blackwell Publishing Ltd, African Journal of Ecology

By extension, accuracy and precision in digital image classification are interdependent but quite distinct concepts. According to Gao (2009:498), precision is “the detail level of land cover at which a classification has been performed.” Gao clarifies that for instance, classification for vegetation at the species level (e.g. gorse) is more precise than classification at the family level (e.g. shrubs). Photograph 3 shows secondary and degraded forests underlain by agricultural fields.

Photograph 3: Secondary Forests Interlaced with Agricultural Fields in Ruzaire CFR



Source: Author

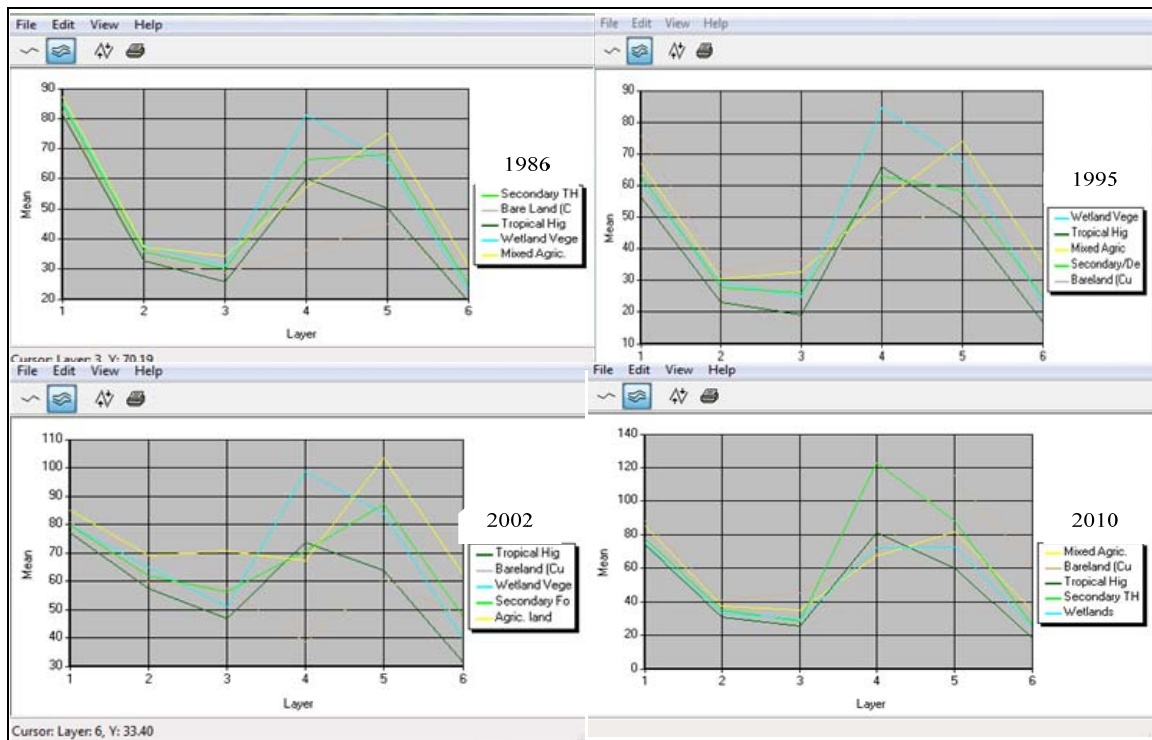
On the other hand, USGS (1990, cited by Gao, 2009) defines accuracy or thematic accuracy of spatial data as “the closeness of results of observation, computations, or estimates to the true values or the values accepted as being true.” It shows a measure of agreement between the classified pixel or map and its genuine identity in the real world (Stehman and Foody 2009). From the available body of literature, accuracy and precision are virtually inversely interrelated in one classification where, for an increase in classification precision is accompanied by a proportional decline in classification accuracy. Table 11 followed Gao (2009) recommendation that the best compromise is to produce a highly accurate result that meets the desired requirements for precision. In addition, the image classification involved another form of spectral signature confusion. For instance, underneath several secondary forests were small-scale agricultural fields. Shugart (2002, cited by Mugisha, 2002) concurs that the sub-grid surface heterogeneity may not represent the same kind of varied surface, savannah and farmed landscapes in case of land cover/land use mapping in Uganda.

Process Description

The analyst selected training samples for every information class defined in the classification scheme. The genuine identity of some training sites was established during the reconnaissance trip to the study area. In the selection of classifiers, the analyst used the maximum likelihood parametric algorithm. The Maximum likelihood decision rule is based on the probability that

a pixel belongs to a particular class (ERDAS, 2009). The basic equation assumes that these probabilities are equal for all classes and that the input bands have a normal distribution. This is one of the commonly used classifiers capable of producing superior results from the same set of training samples (Gao, 2009).

Figure 20: Spectral Signature Curves for Land use/Forest-cover



Source: Author

Training samples were representative of the spectral characteristics of all the information classes in the classification scheme, and they were evenly distributed on the image. For each information class, at least 9 training samples were selected. The classification process was repeated until satisfactory results were achieved based on the understanding of the properties of the ground features on the satellite imagery, and evaluation of spectral signature editors. The quality of the training samples was evaluated against the spectral distance between their means. Where means of one information class are close or overlapping with the mean of another information class, it can cause the analyst to confuse the two classes with each other in the classification results (Gao, 2009). In figure 20 is the separability of spectral curves for land use/cover classes in 1986-2010. In post classification processing, classified data often manifests salt-and-pepper appearance because of the inherent spectral variability encountered by a classifier, when applied on a pixel-by-pixel basis (Nagarajan, 2009). This called for smoothing the classified output. The majority filter was used and the classified data set was examined in a 3 x 3 window.

4.5.3. Post Classification Change Analysis

In post classification change analysis, two independently classified land cover maps are compared with each other after image classification (Gao, 2009). This is the most straightforward (Douglas, 2010) and simple method for separating forest from non-forest by thresholding (Thiel *et al.* 2008). Post classification change analysis can be applied aspatially or spatially (Gao, 2009). This study focuses on spatial change analysis, equally known as per-pixel change analysis that was used. By definition, spatial change analysis is “*a process of comparing land cover in both classified maps at the same spot on a pixel-to-pixel basis*” (Gao, 2009:541). In this procedure, the author used the matrix operation enabled by ERDAS Imagine 2010 and the results were presented numerically in table matrices, and graphically the study shows the spatial distribution of land use and cover change. Change classes which resulted in forest gains from; and losses to, other land use/cover types were identified and numerically recoded. The rest of change classes were recoded as zero.

4.6. Conclusion

The study used a spectrum of the methods and tools in line with the requirement for the rigor of the socio-scientific inquiry with household surveys, interviews, etc., and multitemporal spatial analysis. To gather valid answers for research questions, the study penetrated areas under rapid deforestation; the very hard to reach communities for forestry staff. Meanwhile, the sophisticated process of change detection has unique capabilities of enforcing land use and forest change monitoring and mapping to support forest management and conservation. It is however an essential procedure that operates effectively under good governance conditions. Last but not least, despite cost limitations of access to alternative high resolution remotely sensed data, Landsat images provided a reliable basis for this scientific inquiry.

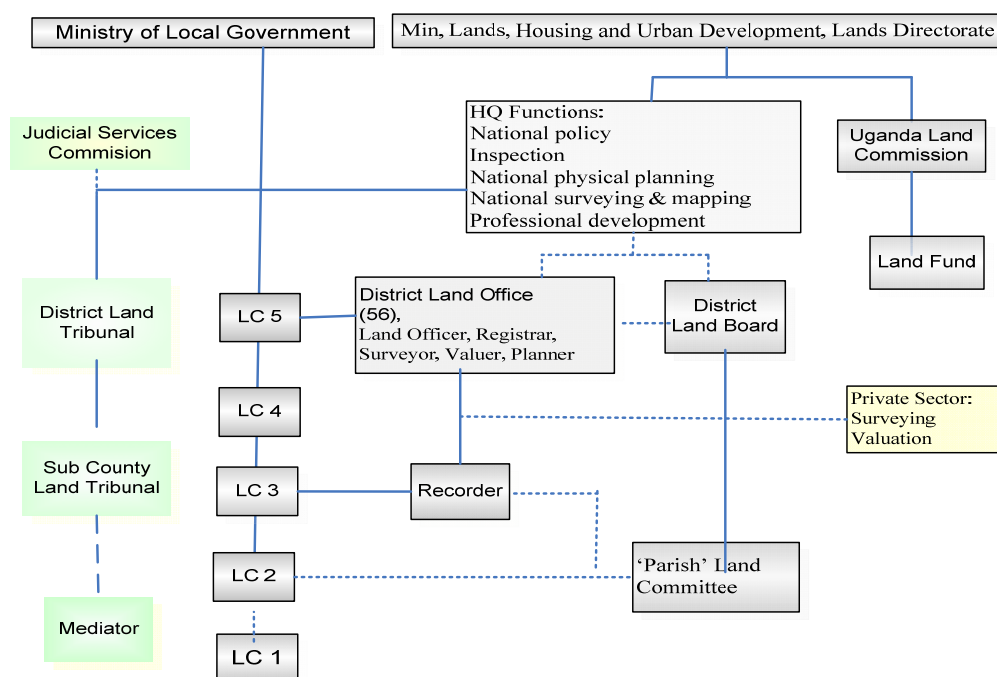
5. Land Governance System: Institutions, Actors, and Instruments

The current set up of land governance in Kibaale District and Uganda in general resulted from sector-wide reforms since 1990s. The government sought to overturn colonial legacy, improve professionalism, effectiveness, subsidiarity and transparency in land and public sector management. A sound legal framework was set to provide for structures to promote good governance. Today, the Ministry of Lands, Housing and Urban Development (MLHUD) and the Ministry of Water and Environment (MWE) are the principal lead agencies, and they too, are comprised of several sub-sectors.

5.1. Land Administration Institutional Framework

5.1.1. Statutory land Administration System

Figure 21: Organogram of Land Administration Institutional Framework



Source: Adapted from the Land Sector Strategic Plan 2001-2011, using the Land Act 1998

The MWE has oversight duties to functional semi-autonomous agencies including the National Forestry Authority and the National Environment Management Authority. In Figure 21, land administration is decentralised to the Local Government under the MLHUD, while the District (LC5) and Sub-County (LC3) levels are part of the Local Government and other lower levels are only local administrative units (Oosterveer and Vliet, 2010). The Uganda Land Commission is in charge of all the land vested in the government. Meanwhile the

ministry plays residual roles while service delivery is a duty of decentralised agencies such as the District Land Board, the Recorder, District Land Office, and Area land Committees. This form of decentralisation projected Uganda as a positive example of decentralisation in Africa for radically shifting responsibilities along with considerable human and financial resources to the local level, and environment and natural resource management is an integral part of this policy (Oosterveer and Vliet, 2010). The system has not been without challenges however. Land Tribunals which were formed for dispute resolution were suspended in 2007 due to issues in implementation and backlog of cases (RoU, 2007). This dealt a blow to dispute settlement, and forced the government to reinstate tribunals under a special division in the magistrates' courts and the High Court to deal with up-surging land disputes courtesy of land grabbing and land evictions (RoU, 2011).

5.1.2. Customary Land Administration System

An ideal Customary Land Administration System (CLAS) enjoys socio-cultural legitimacy in line with traditional rules and norms. Based on the Land Act 1998 (Cap 227) customary land tenure is “*a system of land tenure regulated by customary rules which are limited in their operation to a particular description or class of persons*”. It was formalised by the Constitution 1995 as one of the four formal land tenure systems in the country. Customary tenure covers over 80% of land and avails no formal documentary evidence of ownership to the majority of the country's population (WRI, 2011). Nonetheless, the customary system of land administration is vaguely structured with no legally defined functional roles. Customary authorities are almost inexistent and people often opt for formal courts for dispute resolution⁷. As a result, courts are overstretched, causing delays and tendencies of corruption. The dual system of land administration has ignited conflicts, confusion and overlaps in institutional mandates (RoU, 2011).

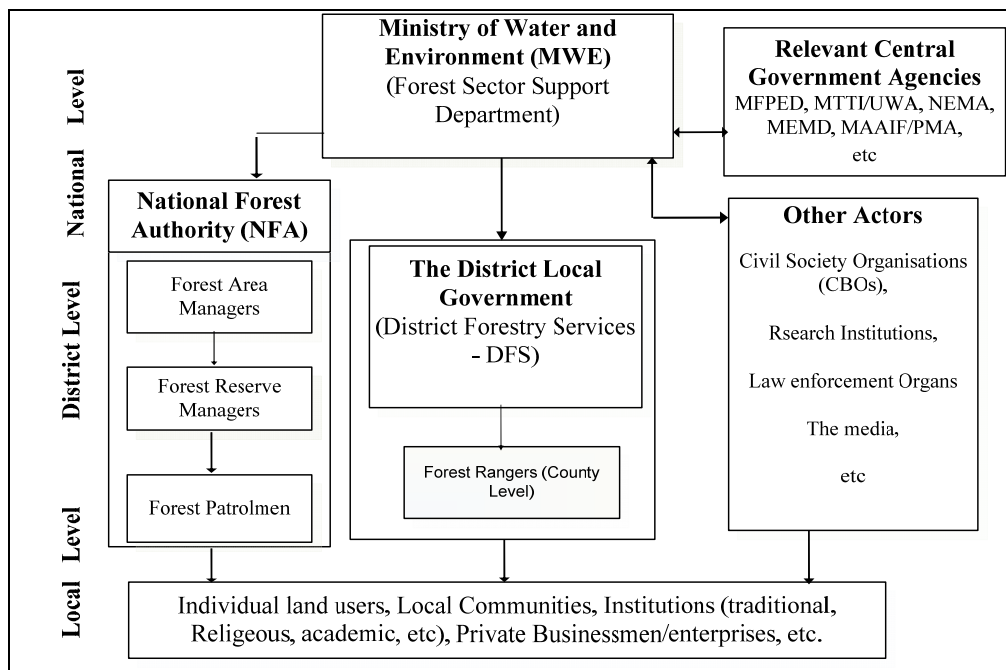
Customary norms and evidences are down-trodden by statutory rules and forms of evidence which frustrates the citizens under the customary system (WRI, 2011). The legitimacy of traditional leaders and institutions governing customary land tenure is weak. The Land Act grants a greater status to Area Land Committees and land tribunals than customary authorities in decision making (Mwebaza, 1999). In Kibaale District, changes in social structure due to immigration has further created unresolved conflicts due to differences in traditional values, rules, norms, and attitudes towards access, use and control of land. The customary system has lost aground, but neither is the statutory system in control of the land administration system.

⁷ LEMU: Why is land administration failing to protect land rights in Uganda: at: <http://www.land-in-uganda.org/assets/Policybrief2-Why-is-land-administration-failing-to-protect-land-rights-26-9-2009.pdf>

5.2. Forestry Institutional Structure

Forestry lies in the docket of the Ministry of Water and Environment (MWE) (see Figure 22). The Forest sector underwent a reform process in 1998-2004, resulting in forward-looking structural changes to promote sustainable forest management. Initially, forests were solely managed by the Forest Department (FD) since 1898 to manage Forest Reserves, carry out extension services, and regulate the sector. However, inadequate resources, corruption, low staff morale, and political meddling undermined efficiency, transparency and professionalism in the sector and eroded public confidence in the department's ability to manage forests responsibly (Kamugisha-Ruhombe, 2007). As a result of the reform, the Uganda Forest Policy (2001), the National Forest Plan 2002, and the National Forest and Tree Planting Act (NFTPA) 2003 were formulated.

Figure 22: Forest Management Administrative Structure



Source: National Forest Plan, 2002, RoU (2001, 2003), and personal experience

The NFTPA divested responsibilities of the former FD to the Local Government. At the district level, forestry and land issues are clustered together under the Department of Natural Resources. The Forestry Inspection Division (FID) was formed in 2003 but was changed to Forest Sector Support Department (FSSD) in the Directorate of Environment Affairs (DEA) as a technical arm of the Ministry of Water and Environment. The National Forestry Authority is a semi-autonomous government body with a performance contract with the Ministry of Water and Environment, and together with Uganda Wildlife Authority, NFA manages the Permanent Forest Estate in the country. With decentralization, forestry services were devolved to local governments under the District Forest Services (DFS). The DFS is a

technical arm of the local government in charge of Local Forest Reserves, and has a mandate to guide the management of private forests in a professional and sustainable manner. The DFS includes the District Forest Office, Natural Resources Office, and service providers such as the NAADS.

5.3. Linkages in Land Administration and Forest Management

5.3.1. An integrated Framework through Legal Frameworks

The Land Act 1998 and the NFTP, 2003 provide for the creation of functional synergies between the forestry and land sectors. Besides the public forests, they mandate DFS and District Land Boards to manage private forests, with numerous interdependent mandates; including the registration of private natural and private plantation forests. The Forest Act mandates the DLB to register contractual arrangements with private land owners for the transaction or management of the forest produce against the title of that owner or occupier in line with the Registration of Titles Act, Cap 230 and the Land Act Cap 277. Vitality, the Act provides for land users without a certificate of land title, by way of registering the contracts as a separate folio on the register book.

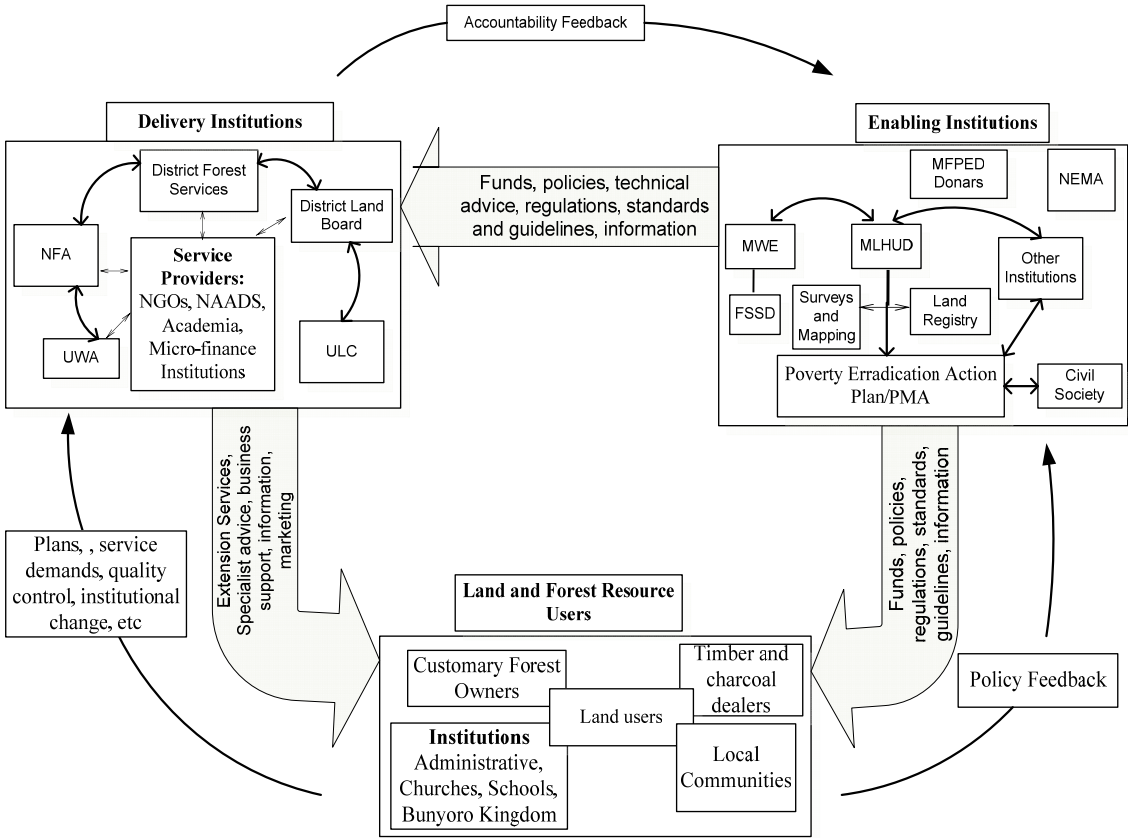
5.3.2. Pragmatic Initiatives for Integrated Land and Forest Management

The realisation of the ineffectiveness of a single sector approach to complex land issues caused the drafting of a Strategic Investment Framework for Sustainable Land Management (SLM SIF). This was under the auspices of TerrAfrica, and the Comprehensive Africa Agricultural Development as a multi-sector initiative to promote key sector cooperation and improve natural-resource-based livelihoods and other ecosystems services. Building on an Inter-Ministerial Cooperation Framework (IMCF) signed in 2007; SLM SIF insists that if land degradation is to be tackled, it needs a coordinated institutional effort from all actors; Ministry of Lands, Housing and Urban Development (MLHUD), Ministry of Agriculture, and Ministry of Water and Environment (MWE), among other ministries, NFA, NEMA, NGOs, CSOs, the private sector, and others (The World Bank, 2012a). The overriding challenge is that these initiatives are not conspicuous on the ground.

In Figure 23, Poverty Eradication Action Programs (PEAP, 1997) with a poverty eradication strategy within the Plan for Modernization of Agriculture (PMA) through multi-sectoral interventions was aligned with forestry programs. The PMA includes forestry as one of the sectors towards improved livelihoods, to be implemented via the National Agricultural Advisory Services and Civil Society Organizations in partnership with the District Forest Office. If enforced the integrated approach could improve synergies among interventions, avoid duplication of effort, and polarisation of knowledge. The challenge is that forestry responsibilities are scattered in government bodies that operate in silos. In theory, FSSD, NFA, and DFS are to operate in a complementary form under the Directorate of

Environmental Affairs with well-defined roles. With relative capacity imbalances, institutional linkages failed to sprout and synergies did not develop (The World Bank, 2012a). Meanwhile complex relationships and tensions abound among a) the technocrats and political elites, b) between different levels of government (district level and national level) and, between environment and natural resource management and other policy domains such as agriculture, education, economic development, and others (Oosterveer and Van Vliet, 2010). It appears however that PMA focuses on agriculture; setting an exploitative path by deforesting.

Figure 23: Interrelated Actors in the Land Governance System



Source: Adapted from the National Forest Plan 2002, based on the Forest Policy, 2001 (RoU, 2001)

5.4. Actors in the Land Governance System

The actors in land governance were identified based on a) degree of influence (direct or indirect influence) b) objectives and scale of operation in a multi-layered system; household, community, district, national or even international levels, c) legitimacy and interests; social or legal legitimacy and identifiable linkages based on particular interests

5.4.1. The Public Sector Institutions (State Actors)

Land management and forestry responsibilities are split among several public institutions including ministries and departments. Responsibilities are defined by the Uganda Forest Policy, 2001, the National Forest Plan, 2002, the National Forest and Tree Planting Act 2003, and the Land Act 1998 among others as discussed hereunder.

5.4.1.1. The Ministry of Water and Environment (MWE)

The FSSD sits in the Directorate of Environmental Affairs in the Ministry of Water and Environment. The National Forest Plan 2002 defines the functions of the FSSD with respective objectives and targets. It has the mandate to; formulate and oversee forestry policies, standards and legislation, monitor NFA using a performance contract, provide technical support, monitor the District Forestry Services, and support forestry advisory services under National Agricultural Advisory Services (NAADS), ensure National Forest Plan coordination and cross-sectoral linkages, and Mobilize funds and other resources for the forest sector. The FSSD however has technical and financial capacity weaknesses that affect its ability to execute its functions (for details see Chapter 7).

5.4.1.2. National Forest Authority (NFA)

NFA was established by the NFTP 2003 as a semi-autonomous government agency and operates in a business-like, self-financing capacity in managing CFRs including 15 CFRs in Kibaale District. NFA is tasked to partner with the private sector and local communities in advisory, research or commercial services on contract, seed supply, national inventory and other technical services.

5.4.1.3. Ministry of Lands Housing and Urban Development

This is the lead agency for land management, charged with policy formulation, standards, resource mobilization, and coordination for matters concerning the land. It functions through numerous departments, of which this study specially focused on the Land Surveys and Mapping and Land Registration departments

a) Land Surveys and Mapping

This is responsible for establishment of survey and geodetic controls, quality checks of cadastral works, and survey of government land and international boundaries, printing and production of cartographic maps⁸. The department has been involved in locating *mailo* land titles in the Land Fund project under Uganda Land Commission (Musunguzi (District Surveyor), Pers. comm. 2010) and also the national Land Reform pilot project in Kakumiro-Kibaale District (Kitaka, Pers. comm., Aug. 2011).

⁸ www.mlhud.go.ug/index.php?option=com_content&view=article&id=5&Itemid=2, visited on 6/10/2011

b) Land Registration Department

The Department plays numerous roles including; issuance of certificate of titles, general conveyance, keeping custody of the national land register, coordination, inspection, monitoring and back-up technical support regarding land registration and acquisition processes to local governments⁹. Land registration services in Kibaale are centralized due to capacity problems in the land management unit. The district sorely depends on the ministry. The Registrar of Titles at the Ministry transfers the ownership of the *mailo* land titles to ULC after the compensation of absentee landlords under the Land Fund project.

5.4.1.4. Uganda Land Commission (ULC)

ULC is at top land management framework, which Article 239 of the Constitution 1995, mandates to hold and manage any land in Uganda vested in or acquired by the government of Uganda (MLHUD, 2010d). By the provisions of the Land Act, ULC began to compensate absentee landlords in Kibaale District, after which land is meant to be distributed to the tenants. While the project has slowed, it still implies that ULC is in charge of *mailo* land covering 70% of the total land the district. In fact the Government can disregard the decentralized structures and exert influence through ULC on land tenure, direction and control of land use through its powers. Thus the Government has powers to limit personal property rights in the interest of public health, safety, security and general welfare; and/or rural land use zoning via conservation, grazing and resource harvesting regulations (RoU, 2007).

5.4.1.5. The Local Government (LG)

Local Governments have planning and legislative powers over land administration, land surveying and land conflict resolution. They make vital decisions where organs such as the District Council, administration at LC5 and LC3 levels, have planning, legislative and executive powers with the right to formulate, approve and execute their own budgets and development plans (Steiner, 2008) while ensuring adherence to national laws, policies and standards. The functional arms of local government engaged in land governance include;

a) District Forest Services (DFS) is charged with the management of Local Forest Reserves in partnership with local communities and the private sector; collect revenues from licenses, and taxes from forest products outside forest reserves; support the management of private and customary forests, build the farmers' capacity to demand and use appropriate forestry advisory services, and increase tree planting, and protection of vulnerable areas and watersheds through a national tree planting fund, among others (MWLE, 2002). The District

⁹ *ibid*

Forest office established by the District Council and backed by the NFTPFA is core to the DFS functioning as the technical arm of the local government.

b) The District Land Boards (DLBs): are mandated by the Land Act to hold and allocate land that is not owned by any person or authority, facilitate the registration and transfer of rights in land, cause surveys, plans, maps, drawings and estimates to be made by or through its officers or its agents, etc. DLBs are also mandated by the NFTPFA to register owners of private natural and private plantation forests, register contractual or other arrangements on private forests against evidence of ownership or separate folio on the register book, and to maintain a register in which all rights and interests of any nature in respect of private forests are kept. Land Boards are supported by the District Land Office with technical land management services, the Cartographer, Recorder and Area Land Committees. Based on the Land Act, Area land Committees should advise the Board on matters of land with respect to ascertaining rights in land. The study found that the capacity of the DLB was inadequate to enable the institution effectively execute its mandate and it had never commenced the process of registering private forest owners. It was revealed that even the Area Land Committees have not been adequately facilitated¹⁰ to efficiently execute their duties – and consequently, some institutional staff members are prone to compromise with financial inducements.

5.4.1.6. Parliament and Politicians

The Constitution 1995 mandates the parliament to “...*protect and preserve the environment from abuse, pollution, and degradation and also provide for measures intended to manage the environment for sustainable development...*” The parliament of Uganda has played a significant role in Kibaale land issue, and especially regarding the Land Fund. The parliamentary debate on whether Kibaale District should be a special case for a grant or a revolving Fund remains inherently inconclusive however due to lack of a common position. Politicians bear huge influence on land management whether formally, informally, legally or illegally. They influence the direction of forest law enforcement and compliance. In fact even if statistical evidence is difficult to adduce, it is abundantly clear that political manipulation is a strong catalyst of many land and forestry problems faced in the district today.

5.4.1.7. Law Enforcement Organs

The judiciary and police maintain law and order and dispense justice with respect to punishing forest crimes and handling land conflicts. The police participate in sporadic forest patrols due to increasing hostilities towards forestry staff during the forest law enforcement. Besides, forest guards do not carry arms and are exceedingly ineffective in the face of patronised forest encroachment. Meanwhile an environmental police unit has been created to

¹⁰ KDLG http://www.kibaale.go.ug/page.php?1=natural_resources&&2=Natural Resources

enforce environmental law (see Daily Monitor July 1st 2011), of which 7 police officers have been deployed in Kibaale District, along with 3 soldiers from the Uganda Peoples Defence Force (Kakeeto, Pers. Comm. May 2012).

5.4.2. Private Sector Initiatives towards Good Land Governance

This involves a plethora of private actors; land surveyors, financial institutions, timber dealers, land users, private forest owners, and others. Meanwhile, the World Bank funded Private Sector Competitiveness Project (PSCP II) seeks to increase the competitiveness of Uganda's private sector, by improving the national Land Information Infrastructure. The remoteness of Kibaale District and poor land tenure security constrain the land market and the existence of real estate dealers and strong financial institutions.

5.4.2.1. Civil Society Organizations (CSOs)

Uganda National NGO Forum has over 400 CSOs seeking to improve service delivery to the public, of which over 100 CSOs work in the ENR sector (The World Bank, 2012a). They form an interface between the government and the public by holding the government institutions accountable, influence policy and public opinions, engage in environmental advocacy, capacity building, awareness raising on land rights, etc. The Anti-Corruption Coalition Uganda (ACCU) opened a "Fame and Shame" book since 2008 to publish public servants indicted of corruption (ACCU, 2009). Some CSOs participated in ENR Sector Performance Review (SPR) and Joint Sector Review (JSR) processes in 2009. They explored mechanisms for better coordination and stakeholder coordination, and contributed to the content of ENR (The World Bank, 2012a). There are about 60% of CSOs under the umbrella group of Forestry Governing Group (ibid) to promote sustainable management of Forest Reserves, support private forest management, protection and restoration. Other examples CSOs are; Uganda Land Alliance, Land Equity Movement in Uganda (LEMU), Uganda Forestry Working Group, ACODE, Environment Alert, and others. Over 30 CSOs operate in Kibaale, dealing with forestry, human rights, education, food security, agricultural extension services, credit extension on simple criteria to land users - a relief as many lack legal titles to land to be used as collateral for credit in big financial institutions.

5.4.2.2. Land and Forest users/Owners

These include farmers, but many double as forest owners, charcoal makers, pitsawyers, artisans, and commercial dealers in forest and agricultural products. Private forest owners are guardians to 70% of the total forest cover in the district. They mainly own forests customarily as tenants by occupancy. Leasehold and freehold land owners are limited to churches and schools. The majority in this category of stakeholders directly depends on natural resources for survival. They physically alter forests or apply marginal restoration practices on individual decisions.

5.4.2.3. Cultural and Traditional Institutions

The main legitimate traditional institution is Bunyoro-Kitara Kingdom which manages 3 Plantation Forest Reserves and several properties in Kibaale District. The Kingdom is supported by Article 246 of the constitution. Under NFTP; the Kingdom may receive technical services on sustainable forestry from the minister, NFA, and local government. In 2011, the Kingdom entered an arrangement with NFA for five thousand tree seedlings specifically meant for Kibaale District.

5.4.2.4. Multilateral Organizations (MOs) and Development Partners

Several MOs promote ENR management through funding, capacity building and public sensitisation. They include; the World Wildlife Fund (WWF), Norwegian Forestry Society, GIZ, World Bank, the Millennium Challenge Corporation, and others. In Kibaale District, WWF has trained farmers and organized them into Kiryanga Private Forest Owners Association in Kiryanga Sub-County. WWF supported joint CFRs boundary opening program which was in its early stages at the time of this study. The WWF donated 2 motorcycles to NFA as facilitation for forest law enforcement and monitoring. Table 12 summaries other relevant land governance actors.

Table 12: Other Major Actors in Land Governance in Uganda

Institutions/Organizations	Main Roles and Responsibilities
National Environment Management Authority	Supervision, coordination, and monitoring, of all activities in the field of environment.
Uganda Wildlife Authority (UWA): Ministry of Tourism and Trade and Industry (MTTI)	Management of the Permanent Forest Estate (covering 15% of the total forest cover in Uganda) on National Parks and Wildlife Reserves. However, UWA operations in Kibaale District are very limited if any.
Ministry of Energy and Mineral Development (MEMD)	Establish, develop and manage sustainable energy exploitation and utilization. Influences utilization of biomass energy, and availability of alternative energy sources to households and institutions.
Ministry of Finance, Planning and Economic Development (MFPED), Donors	Charged with fiscal policy and national budgeting, financial donation and support
Plan for Modernization of Agriculture; Ministry of Agriculture Animal Industry and Fisheries (MAAIF)	Leading framework for transformation via modernization of agriculture. Potential for forestry extension services through its National Agriculture Advisory Services.
District Service Commission	Hire and fire personnel; appoint, confirm, promote and discipline all employees in the district

The Media	Regular reporting by print and electronic media on deforestation and governance shortfalls in forestry and land administration ¹¹ , exposing corruption involving senior government figures, as well as the breakdown of law and order.
The Surveyors Registration Board	Regulates the surveying profession to protect the public from fraudulent surveying practitioners ¹²

The Donor Democracy Governing Group is strong partner that made nine action areas on governance and anti-corruption. It makes financial and technical support to anti-graft agencies. The donor community funds a significant share of the budget for the ENR sector. The World Bank support under a PSCP II contract with International Land Systems (ILS) has supported the construction of the Land Office in Kibaale District. It seeks to improve the land administration system and restore public and investor confidence in security of tenure by building a transparent system with a modern land registry. This is vital but to succeed, several governance issues must be well addressed.

5.4.3. Actors under the National Good Governance Initiatives

These actors charged with fostering good governance in public institutions including land and forestry. The government adopted a national strategy to fight corruption as a wider framework to improve accountability and reduce the levels of corruption (RoU, 2008). It streamlines the critical path towards improving accountability and good governance. Table 13 shows the actors charged with promoting good governance in public administration in Uganda.

Table 13: Actors Fostering Good Governance

Public Governance Agencies	Main Responsibilities
Inspectorate of Government:	Eliminate corruption, abuse of authority and of public office
Directorate of Public Prosecutions, Criminal Investigations Department, Judiciary:	Criminal investigations and prosecutions with regard to public interest administer justice; prevent abuse of the legal process.
Public Procurement and Disposal of Public Assets Authority (PPDA)	Streamline the handling of public business; to regulate and facilitate procurement standards
Directorate of Ethics and Integrity (DEI)	Political leadership, Design, coordinate national anti-corruption policy.
Auditor General	Audits and reports (to parliament) on economy, efficiency, effectiveness, and environmental effects of Government projects

¹¹ Massive Deforestation Fuelling Drought, Famine in Kibaale, The NewVision 19th Jul. 2009

¹² The Institution of the Surveyors of Uganda: at <http://www.surveyorsuganda.com/main/?page=1>.

	and operations. Writes environmental audit reports with focus on forest-cover loss in the country.
Uganda Human Rights Commission	Monitor human rights conditions - investigate human rights abuse, recommend to parliament effective measures to foster human rights, etc
Public Accounts Committee (PAC)	Investigates public officials implicated in corrupt activities.

Source: MWLE, (2002), RoU, (2001, 1997)

5.5. Instruments of Land Governance

Instruments legal and policy frameworks governing land management in Uganda are numerous. Several environment-related laws and policies in-keeping with Forest Law Enforcement and Governance (FLEG) process ultimately reflect the government’s commitment to sustainable utilisation of forest resources (Kamugisha-Ruhombe, 2007). Hence, Uganda is not short of policy and legal frameworks on environment and natural resources (NEMA, 2004/5).

5.5.1. National Policy Responses

Land management has been guided by the scattered parts of the policy pieced together from the Constitution 1995, presidential public pronouncements, and government statements (Rugadya, 1999). This frustrated the implementation the Forest Policy 2001, National Land Use Policy 2007, National Environment Management Policy 1994, among others.

Table 14: The Guiding Policies in Uganda’s Land Governance System

The Policy Framework	Main Important Provisions
Uganda Forestry Policy 2001	Protection and sustainable management of the Permanent Forest Estate, private forests, provides a framework with new institutional relationships for efficiency, accountability, and professionalism for sustainable forestry and economic, social and environmental benefits to Uganda’s poor and vulnerable
The National Land Use Policy 2007	Defines land degradation and effective land utilisation guidelines
National Forest Plan, 2002	Operationalizes the Forest Policy, redefines institutional roles and responsibilities reflecting new policy directions and outlines an investment program for the forest sector development
National Environmental Management Policy,	A framework for harmonising cross-sectoral policy objectives, principles and strategies. Biodiversity conservation, behavioural change, and effective monitoring and evaluation system
National Land Policy (Draft), 2011	Redress for historical injustices, Disentangles multiple overlapping and conflicting rights over registered land, Overhauls existing institutional framework for land administration and management to promote efficient, cost-effective and equitable service delivery

The final national land policy draft 2011 process has been a big step. Table 14 shows some of the key policies and plans guiding land governance.

5.5.2. The Legal Framework Governing Land management

With increasing poor land utilisation and weak management, the national government set legal frameworks as a sustainable path to good land governance. These can be split into; *a) Land specific regulations* that directly address land tenure, use and management, *b) Non-specific regulations* dealing with matters of accountability and transparency in public sector management, *c) Multi-lateral Agreements*, Conventions, Protocols, and treaties Uganda is signatory to.

5.5.2.1. Land Specific Regulations

a) The Constitution of Uganda 1995

The Constitution vests land in the citizens of Uganda in accordance with four land tenure systems namely; Freehold, Leasehold Mailo land and Customary. It further provides for security to land occupants from unlawful evictions. Tenants can obtain certificates of occupancy and can negotiate with registered land owners and acquire freehold titles. Under Article 237 (4), a land mark-step was made by formalising the customary tenure system as one of Uganda's four land tenure systems. This was vital as 70-80%, of Uganda's population subscribes to customary tenure system (WRI, 2011, USAID, n.d). The Constitution (Article 237(1) (b)) further defines the fiduciary relationship between the State and citizens of Uganda, for the management and protection of natural resources. The government or a local government holds forests in trust and for the common good of the citizens of Uganda. In theory, it is a precursor for the judicious conservation of forests, but practice has shown that implementation remains a difficult terrain.

b) The Land Act 1998

The Act operationalizes the constitution with defined institutional responsibilities. It expressly grants land occupants with tenure security and while it restates the acquisition of the certificate of occupancy, it outlaws prejudice to occupants without the certificate of occupancy. The Act (Section 44) further forbids the government or the local government from leasing or alienating natural lakes, rivers, wetland, forest reserves, national parks, and any other land to be reserved for ecological or tourist purposes in state trust, but permits the use of concessions, licenses or permits (RoU, 2011). In what can be perceived as the regulation of land use on private land, the Act provides that a person who owns or occupies any piece of land should manage it in line with the Forest Act, the Wildlife Act, and the National Environment Act.

Of even greater importance, the Land Fund under as provided for by the Land Act, to be established with effect from 2nd Jan. 1999 (Rugadya, 1999) offered an opportunity to resolve

Kibaale Land equation. It was to facilitate land purchase from absentee landlords and redistribute it to the inhabitants in Kibaale District, rehabilitate the environment through resettlement of the persons (encroachers), and facilitate land readjustment on mailo land areas to enhance productivity (GoU, 2001). But the dramatic mismatch between the theoretical needs of the Land Fund and the resources likely to be available (RoU, 2011) is a huge problem. Musinguzi (Pers. Comm. 2010) the District Surveyor notes that since the Land Act was enacted, the situation on the ground has “technically remained the same.” Even though the Land Sector Strategic Plan 2001-2011 was scaled back to retain the sight of the historical and political context, implementation has failed.

c) The Land (Amendment) Bill 2007

The Bill was passed in 2009 to against forced eviction of the bona fide and lawful occupants. The instrument expressly outlaws eviction of occupants on customary land except by court order, and only conditions evictions on the registered land to non-rental payment. The Bill is however publicly perceived as a squalid instrument only justified on political grounds. It is controversial and was hurriedly passed with resistance from the parliament, landlords, Buganda Kingdom, financial institutions real estate dealers ethnic groups, CSOs, and others. While not denying its relevance, the Bill undermines access to credit, land development, environmental stewardship, and functioning of land markets.

d) The National Forest and Tree Planting Act (NFTPA) 2003 repeals the Forests Act of 1964, Cap 246, and restructures the forestry institutions. It provides for the establishment of NFA, and the declaration of FRs to protect forests. The Act divests duties of the FD to local governments and provides for the conservation and sustainable management of all types of forests on all forms of land tenure. This way, the Act creates the synergy between land and forestry agencies in forest management.

Vitality, the Act prohibits forest crimes, and states that except for forestry purposes and in accordance with the management plan or license granted, in a FR or community forest, no person should; a) cut, take, work or remove forest produce; b) Clear, use or occupy any land for: i) grazing; ii) camping; iii) livestock farming; iv) Planting or cultivating of crops; v) erecting a building or enclosure; or vi) recreational, commercial, residential, industrial or hunting purposes; c) collecting biotic and abiotic specimens; or constructing or d) re-opening a road, track, bridge, airstrip, or landing site.

e) Registration of Titles Act 1924 (Cap 230) is an old legal instrument governing the land registration processes in Uganda. The Act is not at par with the current conditions including the land reforms especially the recognition of the customary tenure system.

f) The Land Acquisition Act, 1964 provides for procedures and methods of exercising compulsory land acquisition for short and long term use. WRI (2011) holds that the Act

strikes a balance between private land rights and compulsory land acquisition for public purposes and is against the abuse of indiscriminate use of state authority by addressing four issues; recognized and established uses of compulsory land acquisition; the procedures for exercising this authority, compensation for expropriated property, and, the rights for redress.

g) Other Land-Specific Regulations critical in regulating land management include; the National Environmental Management Act, 1998 (Cap.53); The Uganda Wildlife Act, 2000 (Cap. 200); The Local Government Act, 1997(Cap.227), and The Traditional Rulers (Restitution of Assets and Properties) Statute (Cap. 247).

5.5.2.2. Non-Land-Specific Governance Legislation

In Table 15, the government has set laws to streamline transparency and accountability in the public sector which includes land and forestry institutions. This portrays the commitment under the National Program and Action Plan on Democratic Governance (NPAPDG) to strengthen mechanisms of accountability and fight corruption. According to APRM (2009) Uganda ranks the best in Africa in terms of setting the legal framework to fight corruption.

Table 15: Non-Specific Legal Instruments in Land Governance

Legal Instrument	The main Features
Inspectorate of Government Act, 2002	Provides for establishment of the Inspectorate of Government defines and punishes corruption (abuse of public office, bribery, embezzlement, etc). The Act institutionalizes efforts for adherence to the rule of law
Anti-Corruption Act, 2009	Provides for accountability of public officials. It prosecutes public officials who are unable to explain the sources of their wealth, and punishes all forms of corruption.
Whistle-blowers Protection Act, 2010	Legally protects persons who disclose corrupt officials from reprisals, and rewards them with 5% of the money recovered from the disclosure. It punishes who ever reveals the identity of the whistle-blower.
The Leadership Code Act, 2002	Obligates leaders in public resources managing institutions to declare their incomes, assets, and liabilities; and those of their spouses, children and dependants to the IGG, once in every 2 years. Seeks to limit corruption and misuse of public offices for individualistic gains.
Other regulations are: The Public Procurement and Disposal of Public Assets Act, 2003, Access to Information Act, 2005, The Audit Act, 2008, etc	

5.5.2.3. Multi-Lateral Agreements

Uganda is signatory to multilateral Conventions and treaties both; i) Governance based, ii) Forest/environment related.

a) ***Governance based Agreements*** foster anti-corruption initiatives and provide for concerted multinational efforts to combat graft. Uganda ratified the United Nations Convention against Transnational Organized Crime in 2005 which requires member states to among others, criminalize corruption and adopt adequate measures to combat it, freeze, forfeit and confiscate assets, and extradite offenders. Other agreements are; The United Nations Convention against Corruption, 2003, African Union Convention on Preventing and Combating Corruption, 2003, East and Southern African Anti-Money Laundering Group (ESAAMLG).

b) ***Forest Related Agreements*** expressly provide for forest or environmental management principles and strategies for member states. In this category, Uganda is a signatory to; UN Forum on Forests (UNFF), the Intergovernmental Forum on Forests (IFF), the Earth Summit 1992, Agenda 21, the Millennium Summit, 2000, the Convention on Biological Diversity, 1993, the Framework Convention on Climate Change 1994, among others. Seeking to promote the management, conservation and sustainable development of forests, multilateral agreements have components of financial, scientific, technical and information support to developing countries. Uganda has benefited from the Official Development Assistance, an opportunity through the Paris Declaration for sustainable forest management (Kamugisha-Ruhombe, 2010).

The overarching challenge is that treaties are seldom binding except if a state gives her consent to comply (*pacta sunt servanda*) as an act of good faith as provided under Article 18 of the Vienna Convention. It states that; “A state is obliged to refrain from acts which would defeat the object and purpose of a treaty...” Besides, Uganda’s adherence to the provisions of multilateral treaties is fraught with many challenges including inadequate domestication of the treaties in national policies and laws.

5.6. Land Reform: Understanding Inherent Challenges

In actually sense, Kibaale land issue should have been resolved by the 1964 Referendum on the Counties of Buyaga and Bugangaizi. It has persisted and turned a complex issue which evaded the Constituent Assembly debate and proved resistant to the Land Act 1998. With the lethargic response of successive political regimes, the population resettlement schemes (1972, and 1992) and subsequent influx of immigrant settlers have complicated the land question. The impact of land reform has been scant, at least for Kibaale District. By 2003, 8 out of the original 984.3 square miles were given back to Banyoro, representing only 0.8% of the total land (Shelnberger, 2008).

5.6.1. Why has Kibaale Land Question Defied the National Land Reforms?

In the reform process, new alliances between the National Resistance Movement (NRM) Government and Baganda landlords were born. The government’s willpower waned for some

state agents and government elites turned into some of the largest land owners that used state power to access loans to purchase and acquire leases to large tracts of land they are eligible to transform into freehold (Okuku, 2005). Subsequently, NRM and landlords' representatives in parliament walked together, hand in hand, out of common interests against the enactment of a Land Act to resolve conflicts over the fraudulently acquired land (Ibid). Resolving Kibaale land question would therefore cause demand for reforms elsewhere only to suppress vested interests. Okuku (2005) notes that instead, concerns for justice, equity, and social change in land relations were sacrificed at the altar of power politics and narrow class interests.

The government's legal obligation to compensate registered landlords under the Land Act, 1998 was liable to failure from the start. To be compensated are those whose land was resettled under a government scheme in 2003, and all absentee landlords via the Land Fund. While mailo land tenure should be surveyed and registered, most land owners in the district are absentee landlords, of which a majority has never accessed their land. Besides for some landlords, the land was never surveyed and titles issued. Notably, about 700 of the original mailo land titles are still kept with the Fort Portal Land Office because the owners have never collected them. Moreover most of the uncollected titles lack proper addresses of the owners (Nsamba-Ngayiyya, 2003) and it is possible that most of the absentee landlords are already dead.

During the Constituency Assembly (1993-1995), it was argued that Kibaale land question could not be dealt with in isolation as similar situations including Nyabushozi, the president's home Sub-County merited similar attention. Kibaale inhabitants argue that their case lost priority attention in favour of Nyabushozi although the Fund was ordinarily created for their cause (Okuku, 2005:30). Admittedly, ethnic differences over who benefits from the Fund abound, but this is not the main issue. The government paid off some absentee landlords but a bigger portion of the *mailo* was not purchased due to limited budget allocations (RoU, 2011).

In 1994, the president vowed to eliminate the "*mailo land*" tenure system that robbed the Baganda and non Baganda, lands of their birth, that he "will not rest until this injustice is resolved" (The *NewVision*, 12/7/1994 cited by Green 2006). However, in 1995, the problematic land tenure systems that had been outlawed by the 1975 Land Reform Decree were restored by the new Constitution. Subsequently, the Land Act 1998 defined the relationship between occupants and the absentee landlords requiring the occupants to pay nominal ground rent for the land they were unfairly dispossessed of, or acquire registrable interests from landlords at will. Much as the occupants' refused to pay rent, they still would not have access to absentee landlords if they wished to. The reforms clearly betrayed the genuine public expectations.

With lack of local ownership, reforms are often viewed as a plot of the government and elites to grab land (Green, 2006) and during the Constituent Assembly, the debate on the land

question was greeted with suspicion and mistrust (Okuku, 2005). Today, uncoordinated land reform projects (Systematic adjudication and Demarcation of land rights (SD), the Land Fund Project, and Uganda Land Inventory (ULI) project with different terms of reference have caused considerable confusion. The ULI project seeks to rescue the land held by government institutions including district and Sub-County headquarters, and farm institutes (Kitaka, Pers. Comm. Aug. 2011), but almost all projects are incomplete.

5.7. Conclusion

Uganda has taken bold steps to design the legal and policy instruments that provide for strong institutional structures for effective land management. Additional provisions have been made to streamline transparency and accountability in the supportive legislation aimed at promoting good governance. Uganda has embraced a land management paradigm shift, with impressive progress since 1990s. The computerisation of the Land Registry and Systematic Adjudication of land rights being piloted point towards effective land management. An in-depth analysis however reveals that the integrity of land governance has continued to decline. Admittedly, laws and structures to fight corruption exist but the problem is that the decisions of anticorruption agencies are not respected (The World Bank, 2012a). In addition, many concur that while the policy and legal frameworks are clear, weaknesses lie in governance conditions related to implementation (Kaggwa *et al.*, 2009, RoU, 2007). Rapid forest destruction and land tenure insecurity in Kibaale District are some of the real-world symptoms of land governance problems.

6. Presentation of Results

6.1. Land-Use and Forest-Cover of Kibaale District in 1986

The study found a considerable gap between administrative records on the extent of forest-cover and the actual tree-cover in Kibaale District. This owes to lack of routine spatial analysis of land cover change patterns. The study presents the spatial patterns of forest-cover change and links them to the land use change processes. The study notes that in 1986, Tropical High Forests covered approximately 36% (152342 ha) of the total district land surface area. Agriculture and Savanna covered about 37% (156609 ha), which was the largest portion of the district total land area. Secondary forests covered about 15%, bare land 10%, and (mainly riverine) wetlands 3%, of the total land area (see Table 16).

Table 16: Area size of Land-Use/Land-Cover Classes in 1986

Type of Land-Use	Area Size (ha)	Percentage
Mixed Agric. and Savanna Land	156609.0	36.8
Wetland Vegetation	11942.6	2.8
Tropical High Forest (THF)	152342.4	35.8
Secondary THF	64148.4	15.1
Bare Land	40583.9	9.5
Total	425626.4	100.0

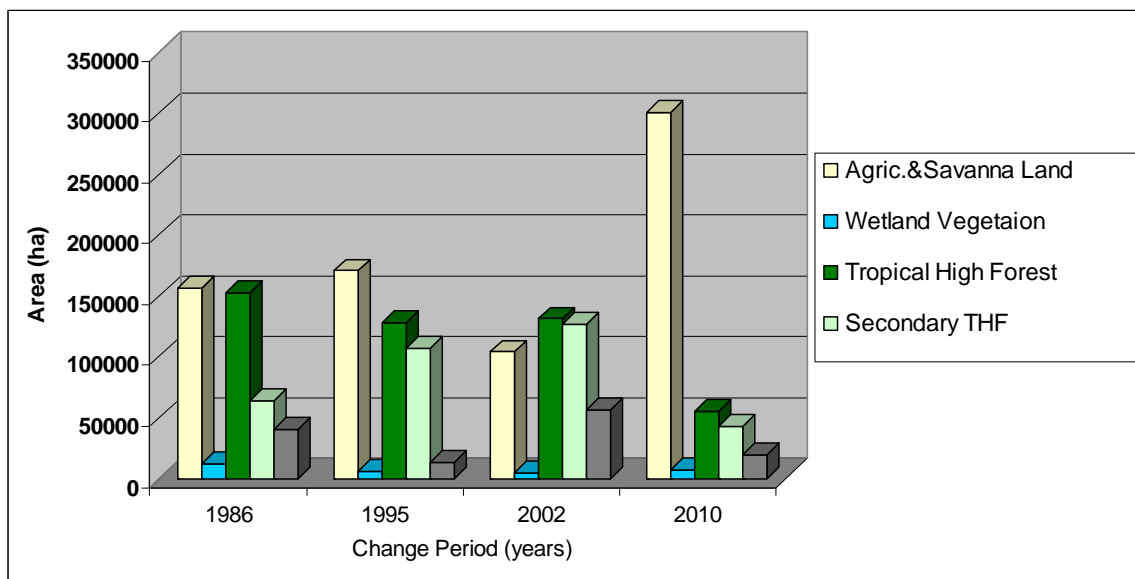
Source: Author

The wetlands data however suffers numerous uncertainties. Wetlands interlace with agriculture and Savannah, and even THF, and thus, much of the wetland recorded was largely of the riverine category. More importantly the 152,342 ha of THF in 1986 is the vestiges of the past expanses of THF-cover. The scattered trees in the savannah are likely to be the surviving relics of the past tropical forest-cover. NEIC (1995) notes that the moist acacia savannah in Kibaale District, replete with *Acacia-Albizi* and *Combretum molle* interspersed with grass layers results from long persistent cutting, cultivation and burning in areas that once supported forest and evergreen thickets. Hamilton (1984 cited by Obua *et al.*, 2010), concurs that many places in Uganda supported a large number of trees in the last 40 years but are almost treeless today due to the effects of agriculture introduced nearly 2500 years ago.

6.2. Presentation of the Land-Use and Forest-Cover Change Patterns between 1986 and 2010

Kibaale District is an instructive example of rapid forest loss in Uganda. Land changes both subtle (land-parcel level) and wide-scale (cumulative) underline the precipitous fall in the spatial extent of forest-cover. In other words, deforestation is a cumulative product of fine scale losses by individual subsistence farmers' land-use decisions. In a 24 year period (1986-2010) about 63% (96,596 ha) of the forest-cover was lost. From 1986 to 1995, the yearly average rate of THF loss was about 1.8% (2,744 ha), which reduced to 0.9% (1330.6 ha) by 2002, (i.e. 1986-2002), and then accelerated to 2.6% (4,024.8 ha) by 2010. Of particular note, between 2002 and 2010 alone, the annual average rate of deforestation increased to 7.2 % (9413.4 ha). This is higher than national rate of deforestation in 2005-10 estimated at 2.72% (FAO, 2010 as cited by World Bank, 2012a). The trends of forest losses 1986-2010 in the district are summarized in figure 24.

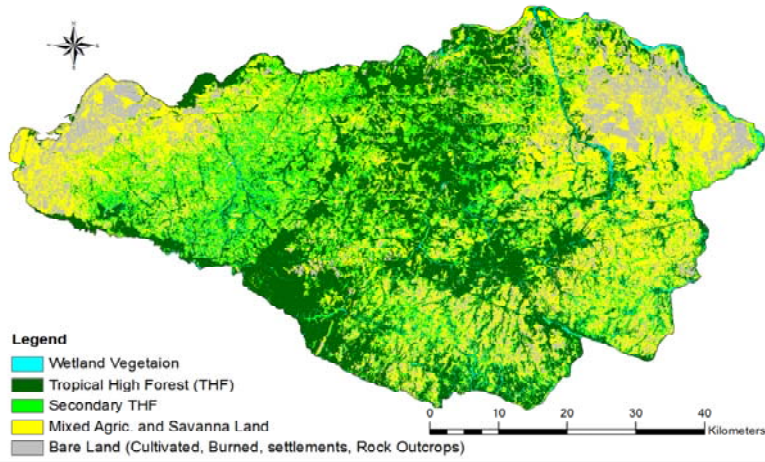
Figure 24: Land-use and Land-Cover Changes in Kibaale District 1986-2010



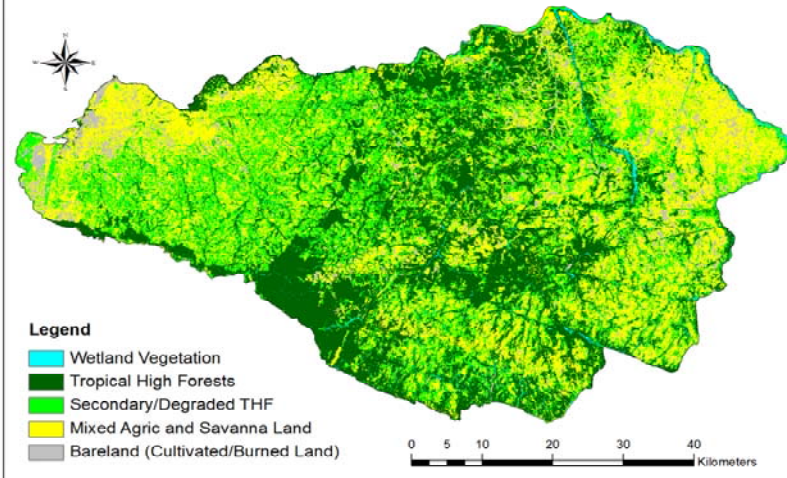
Source: Author

Losses in THF and Secondary forests since 2002 coincide with increase in the extent of agriculture and savannah. But reduced secondary forest area means low forest recovery due to human impact. Alternate reduction in agricultural and savannah, and increase in bare land in 2002 reflect expansion of built-up settlements and the extent of bare land (post crop-harvests, wild fires etc). On her web page, Kibaale District local government notes that the first of the two annual rainfall peaks occur from March to May. The year 2002 satellite data acquired in June perhaps coincides with low rainfall, a time for crop harvesting, intermittent wildfires that create bare land. Maps 5, 6, 7, and 8: show forest-cover changes in 1986-2010.

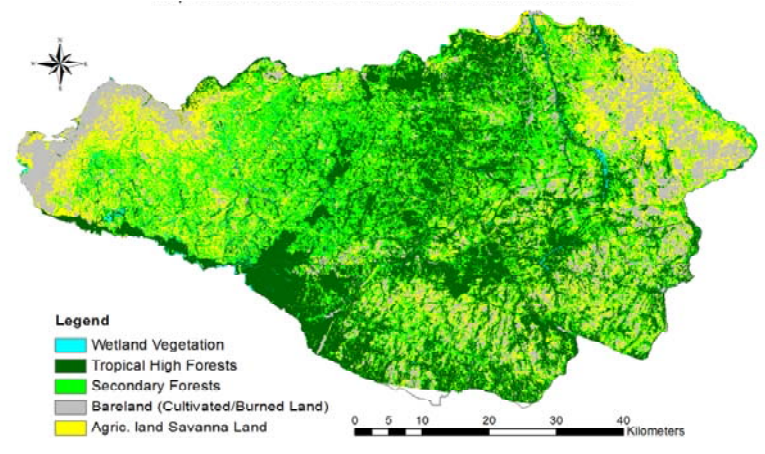
Map 5: Land-Use and Land Cover in Kibaale District 1986



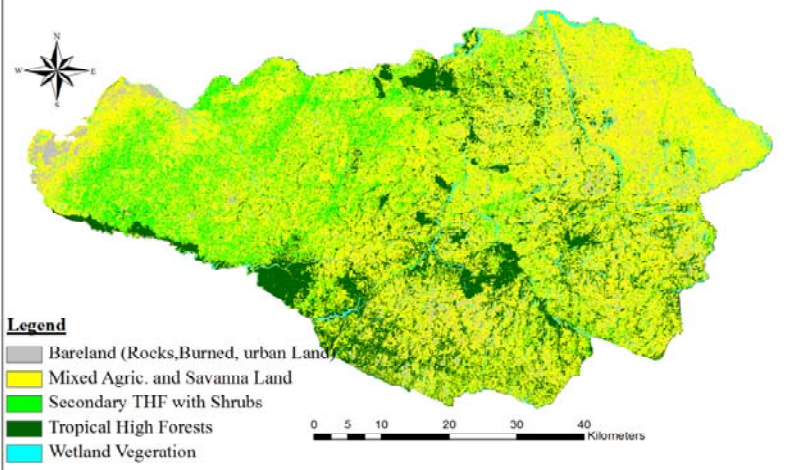
Map 6: Land-Use and Land Cover in Kibaale District 1995



Map 7: Land-Use and Land Cover in Kibaale District 2002



Map 8: Land-Use and Land Cover in Kibaale District 2010



6.3. Disentangling Spatial Patterns of Land-Use and Forest Cover Change

Forest-cover changes are an integral component of the land change continuum. For the purpose of interpreting the change data, Tables 14-16 summarize the total land cover changes (as source and destination) 1986-2010. The figures in the main diagonal (in grey) show no change areas, while all the figures off the diagonal represent change; either as the source (change from) or the destination (change to). Thus, except for the main diagonal in all the 3 tables, all the figures in columns indicate changes to land covers, and all the figures in the rows except those in the main diagonal indicate changes from the land covers. The results indicated in “row sum” show the total changes from land cover while “column sum” indicates the total changes to land covers (except figures in the main diagonal). The “sum total” sums up all the column figures including the main diagonals to define the total area of land cover types per assessment period (epoch).

6.3.1. Land Use and Land Cover Changes 1986-1995

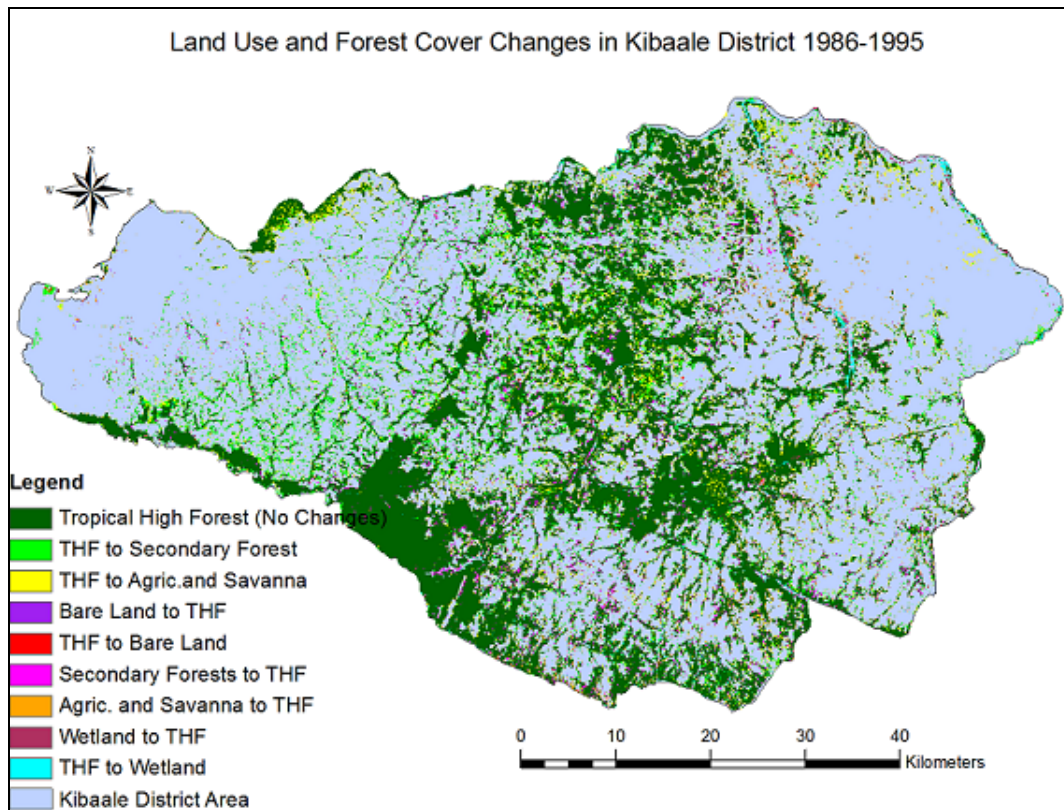
Table 17: Land Use/Land Cover Change Patterns in 1986-1995

Land use/ Land Cover		Tropical High Forest	Secondary Forest	Mixed Agric. & savannah	Bare land	Wetland Vegetation	Row Sum
Tropical High Forest	ha	111969.2	21123.7	16411.0	246.1	2542.9	40324
	%	74	13.9	10.8	0.2	1.7	26
Secondary Forest	ha	7378.6	34596.1	20292.9	625.5	1247.2	29544
	%	11.5	53.9	31.6	1.0	1.9	46
Mixed Agric. And savannah	ha	5022.7	41911.7	100660.2	8292.6	693.1	55920
	%	3.2	26.8	64.3	5.3	0.4	36
Bare land	ha	342.6	5316.0	30393.6	4478.5	37.2	36089
	%	0.8	13.1	74.9	11.0	0.1	89
Wetland	ha	2933.1	4209.8	2815.2	130.05	1827.2	10088
	%	24.6	35.3	23.6	1.1	15.3	85
Column Sum (ha)		15677.1	72561.2	69912.7	9294.2	4520.4	
Sum Total	ha	127646.3	107157.3	170572.9	13772.7	6347.6	
	As % of 1986 area	83.7	167.0	108.9	33.9	53.2	

From Table 17, the THF-cover plummeted from 152342.4 ha in 1986 to about 127646.3ha (83%) in 1995. About 74% (34596 ha) the THF was not converted to other land-use/land-cover types 1995. The THF gains (15677 ha) were outweighed by the total losses (40324 ha) to other land use types. Most of the forest changes occurred along the forest boundaries (Maps 8, 9, 10).The highest loss from THF was conversion to secondary forests with about 13% (21124 ha), followed by the

change to agricultural land and savannah with 10% (16411 ha). Secondary forest-cover lost about 46% (29544 ha) to other land uses types, but also gained about 72561 ha (Table 17).

Map 9: Spatial Distribution of Land-Use and Forest-Cover Changes in 1986-1995



Source: Author

6.3.2. Land-Use/Land-Cover Changes 1986-2002

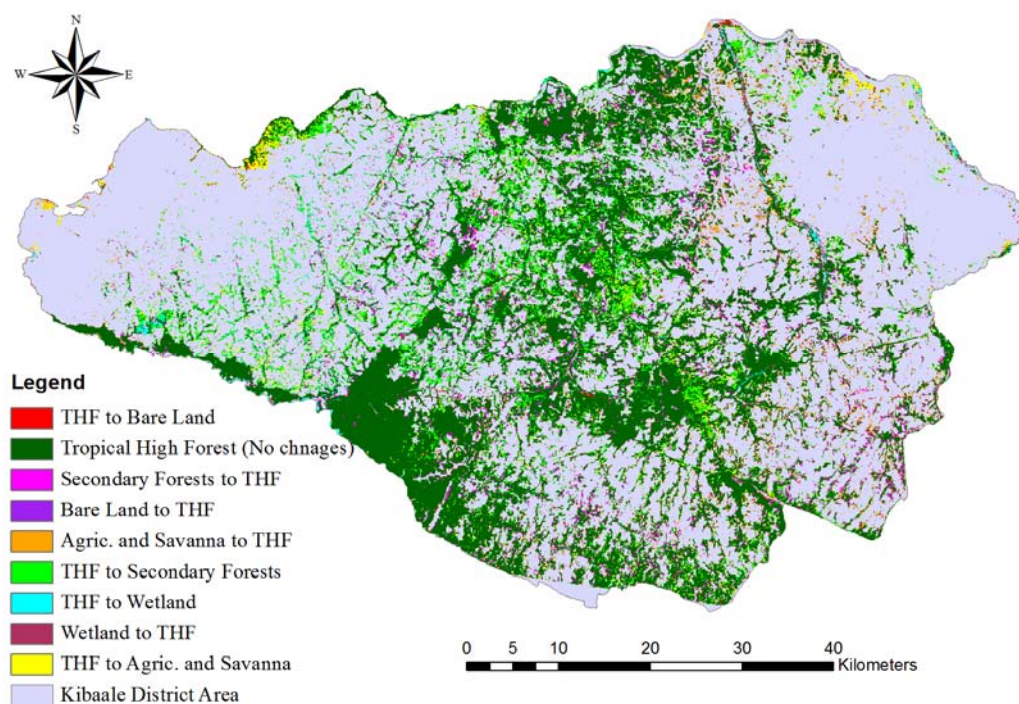
Unlike the 1986-95, the land use/land cover changes show slight reduction in forest loss with simultaneous marginal gains from other types of land-cover (see Table 18). By 2002, THF reduced to 131053 ha, but was a 3% improvement since 1995 (127646 ha). Secondary forests rose from 107,157 ha in 1986 to 126,974 ha in 2002. In fact the THF gains in 2002 (24,471 ha) were higher than the gains of 1995 (15677 ha). By 2002, THF covered the largest portion of the total land area of the district. Results show that total losses in THF (44869 ha) exceeded total gains (24471 ha). Besides, agriculture and savanna land reduced as bare land area rose. This may be due to cultivation, crop harvesting, and fires, among others, explained in the subsequent subsections.

Table 18: Land Use and Land-Cover Change Patterns in 1986-2002

Land use/ Land Cover		Tropical High Forest	Secondary Forest	Mixed Agric. & savanna	Bare land	Wetland	Row Sum
Tropical High Forest	ha	106581.7	30793.9	9987.3	1777.5	2310.1	44868.8
	%	70.0	20.2	6.6	1.2	1.5	30
Secondary Forest	ha	11569.7	36283.8	12881.8	2160.1	1111.7	64007.1
	%	18.0	57.0	20.1	3.4	1.4	43
Mixed Agric. and savanna	ha	8561.9	50602.8	61693.9	34555.7	719.0	156133.3
	%	5.5	32.3	39.4	22.1	0.5	61
Bare land	ha	631.3	4967.6	17138.6	17635.9	83.7	40457.0
	%	1.6	12.2	42.2	43.4	0.2	57
Wetland vegetation	ha	3707.9	4326.0	2261.7	641.0	857.1	11793.9
	%	31.0	36.2	18.9	5.4	7.2	92
Column Sum (ha)		24470.9	90690.3	42269.4	39134.4	4224.4	
Total Sum	ha	131052.5	126974.1	103963.3	56770.3	5081.6	
	As % of 1986 Area	86	118	66	140	43	

Source: Author

Map 10: Spatial Distribution of Land-Use and Forest-Cover Changes 1986-2002



Source: Author

6.3.3. Land-Use/Land-Cover Changes 1986-2010

This is perhaps a period with the highest rate of deforestation in absolute and relative terms. By 2010, only 30% (46084 ha) of the total Tropical High Forests and 18% (11472 ha) of the secondary forests in 1986 was not converted to other land cover types (see Table 19, also the Spatial distribution of land-use changes in Map 11). Major losses from THF included the changes to (mixed) agriculture and savanna land which claimed about 56% (85752.832 ha) followed by the change to secondary forests of about 11% (16270 ha). However, the district was exposed to the highest rate of deforestation from 2002, peaking with rapid expansion of agricultural land. Secondary forests also reduced by about 64156 ha (82%) of which losses agriculture and Savanna were about 73% (46702). Agriculture expansion is thus the biggest primary source of deforestation.

Table 19: Land Use and Land-Cover Change Patterns 1986-2010

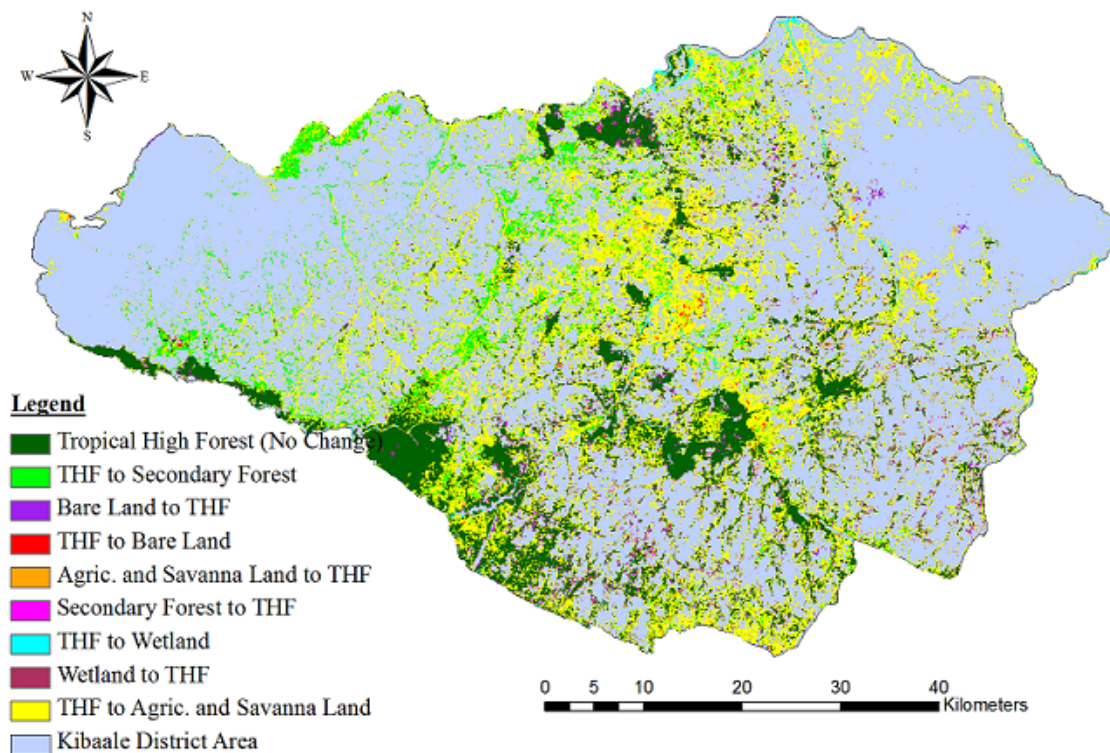
Land use/ Land Cover	Land	Tropical High Forest	Secondary Forest	Mixed Agric. & savanna	Bare land	Wetland Vegetation	Row Sum
Tropical High Forest	ha	46084.3	16269.8	85752.8	2277.8	1911.6	106212.0
	%	30.3	10.7	56.3	1.5	1.3	70
Secondary Forest	ha	3363.7	11472.2	46702.1	1897.1	720.8	64155.9
	%	5.2	17.9	72.8	3.0	1.1	82
Mixed Agric. & savanna	ha	4355.7	12262.4	126284.8	11456.4	2177.4	156536.7
	%	2.8	7.8	80.7	7.2	1.4	19
Bare land	ha	646.9	1808.3	34078.8	3248.0	767.2	40549.2
	%	1.6	4.5	84.0	8.0	1.9	92
Wetland Vegetation	ha	1295.0	957.2	8073.9	397.7	1179.4	11903.3
	%	10.8	8.0	67.6	3.3	9.9	90
Column Sum	ha	9661.2	31297.7	174,607.6	16029	5577	
Total Sum	ha	55745.5	42769.9	300892.5	19277.0	6756.5	
	As % of 1986 area	37	67	192	47	57	

Source: Author

By 2010, wetlands areas gained about 6,757 ha and lost about 11,903 ha (90%), while only 10% was not converted to other land-cover types. Results show agriculture and savannah claimed about 68 % (8074 ha) of changes from the wetland area. The acute destruction of wetlands is neatly linked with forest loss. As wetlands were found to interlace with natural forests by 2010 where anecdotal evidence of agriculture (yams, ground nuts, Irish potatoes etc), plantation of woodlots, and logging abound, wetland loss is almost certainly an adjunct of forest cover change.

This notion may not apply to seasonal wetlands that spectrally identify with savannah in dry seasons. With the effects of wildfires and cultivation, even secondary wetlands may identify with the bare land. The drivers of wetland conversion and forest destruction (both proximate and underlying) are closely interrelated and nearly similar.

Map 11: Spatial Distribution of Land-Use Forest-Cover Changes in 1986-2010



Source: Author

6.4. Forest Conversion and Forest Degradation

Forest fluxes involve forest degradation, forest fragmentation, and forest depletion defined along the generic lines of land-cover conversion and land cover modification. Lambin *et al.* (2003) recommends that land cover modification and land cover conversion be taken into account in land change studies. The spatial analysis placed more emphasis on forest land use conversion for which more repetitive and spatially explicit remotely sensed data was available for analysis.

6.4.1. The Context of Forest Land-Use Conversion

The study found that forest loss in Kibaale District manifests through outright clearance with simple hand tools, burning, pitsawing, and extraction of woodfuel. However, agriculture remains the dominant source of forest conversion. Land users' decisions to trade-off forest land-use with other land-use types are premised on complex socio-economic factors that interact with predisposing environmental conditions (soil fertility, drainage, and climate) for land use change.

Biophysical influences are perhaps mostly manifested via the soil quality. Tropical forest soils exhaust quickly despite the abundant organic matter content from litter-fall. Under the influence of soil conditions; a) some natural private forests were sustained due to the farmers' bias in favor of the fertile savanna land, b) Others directly convert forests to savanna to improve soil fertility. Moreover “*when the forestland is cultivated and abandoned, it is almost immediately colonized by the Napier grass*” noted a respondent in Bujogoro Parish. NEIC (1995) confirms that much of the vegetation cover in the district has been modified by human activities, and savanna vegetation mainly napia grass (*Pennisetum purpureum*) is a dominant replacement of the original forest vegetation. Photograph 4 shows fresh rice field in Ruzaire FR and a forest modification to Savanna on Kangombe FR in Bujogoro Parish.

Photograph 4: Agriculture on Ruzaire FR and Part of Kangombe FR converting to Savanna, Respectively



Source: Author

6.4.2. Forest Degradation

While forest conversion is conspicuous, natural forests are severely impoverished by incessant degradation. Also known as “cryptic deforestation” (Nepstad *et al.*, 1999 as cited by Lambin and Geist, 2006), forest degradation manifests through indiscriminate logging, excessive fuel wood harvesting and forest fires. The root causes of forest degradation and forest conversion are similar or linked; e.g. migrant workers illegally logging for Kampala based “business men” gradually settle and clear sections of public forests for agriculture and settlements. They invite their cronies, and by the time they are identified, swathes of the forestland will have been cleared. Indiscriminate Pitsawying has reached an alarming rate and in many Central Forest Reserves, natural forest remnants are merely surviving patchworks of shrubs with scattered saplings. Forest degradation was not spatially analysed (because the scale of logging is not easily captured by satellite images), but it is tackled in the discussion of forest-cover loss.

6.5. Processes and Mechanisms of Land-Use and Forest-Cover Change

If we are to understand and hopefully mitigate human impact on the environment, it is essential that we integrate the patterns of land cover change with the processes of land use change (Nagendra *et al.*, 2004). Forest loss mainly involved proximate mechanisms/drivers such as agriculture, human settlement, and wood exploitation. In some cases the mechanisms either operated concurrently or sequentially in the same area. For instance, through slash and burn for small scale subsistence agriculture, fires are used to reduce the biomass which was initially cleared with simple hand tools. However, the study found that agriculture (cropland and pasture) would drive wood exploitation (logging, firewood collection, and charcoal burning), a case of chain logical causation. In many instances, these mechanisms existed independently or simultaneously on the same plot in a non-uniform sequence.

Table 20: The Area Size (acres) for Different Land Use Types for Households

Type of Land-Use	N	Minimum	Maximum	Mean	Std. Deviation
Natural Forest-cover	160	0.5	200.0	4.0	16.1
Plantation forest	46	0.3	50.0	2.2	7.3
Idle/Abandoned/fallowed land	195	0.5	24.0	2.9	3.6
Agriculture (Crop field & Pastures)	312	0.3	116.0	6.9	11.1
Marsh/wetland	69	0.1	30.0	2.0	3.6

Source: Author

From Table 20, the average area size of natural forests was 4 acres, owned by 160 respondents, while plantation forests (woodlots) are limited to 46 households. In fact when the outlier (maximum = 50 acres) was removed, the average area size for plantation forests dropped from 2.2 to 1 acre.

Table 21: Major Land-Use Activities the Respondent Changed since the last 5 Years

Major land-use changes	Frequency	Percent	Valid Percent
Lumbering	24	6.1	20.2
Tobacco growing	23	5.9	19.3
Alcohol brewing	60	15.3	50.4
Rice growing	2	0.5	1.7
Brick-making	5	1.3	4.2
Coffee plantation	3	0.8	2.5
Cattle (Livestock) Keeping	2	0.5	1.7
Total	119	30.4	100.0

Source: Author

Agriculture had the highest mean acreage (7 acres) for all the respondents sampled (N=312) but still land-use change remains unpredictable due to the complex socio-economic conditions. From the analysis, it was observed that since the past 5 years from the time of data collection, 50% of respondents changed from growing bananas due to the banana-wilt attack, as well as market forces that increased demand for alternative crops. Therefore, the choice of the crops grown and scale underwent changes in response to economic pressure. In Table 21, the shift from lumbering was found to involve land users who logged private natural forests and those who had worked as loggers before they settled for sedentary agriculture.

6.5.1. Agricultural Expansion

6.5.1.1. Crop Production

Agriculture is the economic mainstay of the district. From the field responses, it was realised that several crops were grown for subsistence reasons and the surplus sold, while other crops were mainly commercial purposes. Traditional cash crops including tobacco, tea, cocoa and coffee were supplemented by food crops; beans, maize, upland rice, bananas, groundnuts, cassava, vegetables and others (NEIC, 1995) as key sources of income. Fruit trees such as jackfruits, avocados, mangoes, and paw paws grew around homesteads. Except for maize, the crops grown vary from one part of the district to another. For instance, large scale upland rice was a dominant source of forest destruction in Kiryanga S/County, while tobacco was dominant in Matare and Mugarma S/counties. Such variations could also be traced at the parish level.

Table 22: Scale of Maize Production (Frequencies)

The Sub County of the respondent	Maize growing			Total
	Small scale	Medium scale	Large scale	
Kiryanga	16	16	16	48
Kisiita	12	17	15	44
Nkooko	8	4	11	23
Matare	4	25	17	46
Mugarama	15	16	17	48
Bwamiramira	8	13	28	49
Kyanaisoke	14	15	17	46
Total	77	106	121	304

Source: Author

Deforestation in Kibaale District was found to have accumulated through fine scale subsistence farming activities, but for easy argumentation, farming was categorised into; small scale, medium scale, and large scale. Table 22 shows frequencies for scales of maize growing where; small scale; <1acre, medium is 1-3 acres, and large scale; >3 acres. In the order of magnitude, maize was the most grown crop, followed by beans, groundnuts, bananas, upland rice, and tobacco. Meanwhile agriculture was predominantly nature dependent; mainly rain-fed with very limited or

no use of agro-chemical fertilizers, organic manure, or soil and water conservation technologies. After exhaustion, farmers fallow the land and opt for virgin areas. They convert portions of natural private forests or they access land through the land rental market. On public forests, small-scale farmers undertook wasteful destruction through wasteful burning of timber trees.

6.5.1.2. Creation of Pastures/Livestock Keeping

Pasture land is the area set aside for animal husbandry such as cattle keeping. The distinction between natural pasture and natural savanna is always not clear (Lambin *et al.*, 2003) and they were grouped under agriculture and savanna. Extensive livestock keeping was scattered parts of the district. It was noted that the majority of survey respondents kept poultry; goats, and pigs. NEIC (1995) also confirms that from the 1991 livestock census, there is low livestock production in the district, with about 21,013 heads of cattle, 43,500 goats, 17,000 sheep, and 19,000 pigs.

Photograph 5: Charcoal Burning of *Combretum molle* spp for Pastures



Source: Author

This study categorized livestock keeping into small scale (poultry, pigs, and goats), medium scale (1-5 heads of cattle or less but 1-2 acres reserved), and large scale (about 5+ acres for cattle keeping). About 82% (N=186) of the respondents kept livestock on small scale, 8% (N=17) on medium scale and 10% (N=22) on large scale. Medium to large scale cattle keeping were mostly found in Bugangaizi County. For cattle keeping, several acres of land converted to pastures are supplemented by open range grazing and tethering most especially in more populated areas. To create pastures, land owners sold out standing trees in most cases *Combretum Spp.* to charcoal burners or simultaneously grant short leases to crop farmer (to ease land preparation for pastures), after which land is fallowed for natural pastures to generate.

6.5.2. Wood Exploitation

6.5.2.1. Logging/Pitsawying

Pitsawying was found to be carried out by licensed pitsawyers, corrupt public officials, law enforcement officers, undercover operators. Logging is outlawed on CFRs because natural forests are generally young (Masaba, Pers. comm.2011). NEIC (1995) concurs that natural forests in Kibaale are probably only 50 years old emerging from reduced pressure from cultivation and grazing. But logging on private forests with no regard for long term sustainability of forests products piled pressure on public forests. The amount of illegal timber logged annually was hard to estimate for lack of records, but it certainly was more than that which is legally logged from the private natural forests (Kakeeto, Per. Comm. 2010). While patrolling about 200 sq. ha of the 1500 ha Kangombe FR with the forestry staff, about 35 fresh pits of logging were counted and more than 3,500 pieces of timber were impounded. Excessive logging permits the desiccation of the forests and soils (Godammer, 2005), and from observation and respondents accounts, it had reduced much of the surviving tracts of CFRs to fire prone scrub and thickets.

According to Masaba (Pers. comm., 2011) “*pitsawying was initially selective targeting high value timber species such as *Blidgia unijugata*, *Funtumia elastica*, and *lovoa spp...*but today logging is indiscriminate, much of private natural forests have been exhausted, and poor timber species like *Antiaris toxicaria*, are now excessively logged*”. In fact Musiime (Pers. Comm. 2011) argues that high value species have been depleted to the extent that “*even mango trees*” (*Mangifera indica*) “*are logged*”.

6.5.2.2. Poles/Construction

Increase in construction activities, was an important driver of forest destruction. From the findings, 99% (N=311) of the households extracted poles for domestic use, while only 2.4% engaged in commercial pole exploitation. In areas where forest-cover had long been depleted - including most of Kisiita S/County; shortage of high quality poles and other forest products was observed.

6.5.2.3. Charcoal Burning and Firewood Exploitation

Forests are primary sources of firewood and charcoal, and as a result, the trees that produce high density charcoal such as *Combretum spp.*, *Accacia spp.* were under immense pressure. In some parts of KyanaISOKE and Mwitanzigye, respondents revealed the extent of shortage of forest products such as firewood, poles, while wasteful wood consumption was high in areas many that still underwent the forest depletion process. From the analysis, 100% (N=312) of the survey respondents used firewood, 4% (N=13) used charcoal, and only 3.5% (N=11) used solar energy. Charcoal was mainly produced for outside markets, and indeed the kingpins of charcoal trade were found to operate from Kampala. Photograph 6, shows charcoal burning for the Kampala

market, whereby even the casual workers were also hired from Kampala. Meanwhile rural access to hydropower or any affordable alternative source of energy was limited, except for a few urbanizing centres with access to the national grid for hydro power.

Photograph 6: The Researcher with Charcoal Burners in Rubumbo Cell, Mwitanzigye



Source: Author

6.5.3. Human Induced Wildfires

Use of fire as a land management tool is neatly embedded in the culture and traditions of many societies in the developing world (Goldammer, 2005) yet most tropical rainforests are fire sensitive (Brodie *et al.* 2012). The occurrence of human-lit fires in Kibaale District was not uncommon and neither is it recent. Through slash-and-burn, biomass is cleared with simple hand tools and when it dries up, it is burnt to create room for agricultural. Besides, sporadic seasonal wildfires coincide with dry seasons when herders move to stimulate fresh grass growth for livestock. The ubiquity of fire climax wooded savanna with dominant fire resistant *Combretum spp*, *Acacia spp*, etc, is evident of the extent to which wildfires replaced tropical rainforests in areas such as Bugangaizi County. From the respondents' accounts, fires in the 1980s and 90s pillaged large chunks of forests in the present savanna areas. In fact for the indigenous Banyoro population pleaded to authorities to bring migrant settlers to shield them from wild animals and vermin (Nsamba-Ngayiyya 2003), then fire may have been an alternative tool for protection.

From the survey, 10% (N=31) of the respondents attributed fires to traditional habits, 56%, (N=176) to slash and burning, 5.4% (N=17) hunting and 5% (N=14) to stimulation of fresh pastures growth for livestock. Admittedly, the intensity and scale of wildfires has reduced, and 21% (N=65) of the respondents blamed wildfires on accidental fires escaping from agricultural fields (slash-and-burning, or burning of straw on farm lands). According to local accounts, rapid population growth and desperate collective efforts to protect life and property from devastation has reduced the occurrence of large-scale human-lit fires by an order of magnitude. Nonetheless,

forest fragmentation and excessive logging still exposed remnant forests to canopy desiccation whereby small human induced fire accidents could bear severe impact.

Photograph 7: Slush and Burn Method in Nyamuguhya Cell

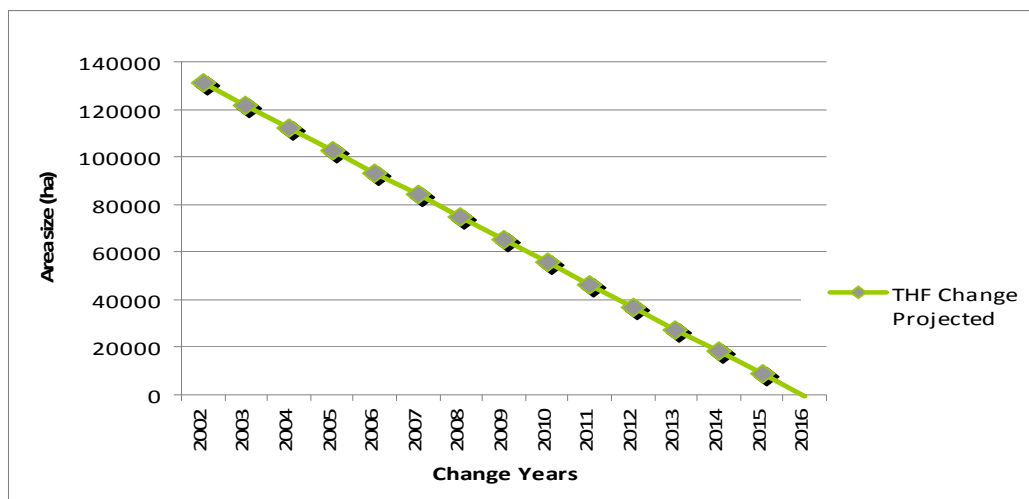


Source: Author

6.6. Future Outlook of Forest-Cover in Kibaale District

To project the future forest-cover dynamics, the study used the average annual rate of deforestation (7.2%) observed between 2002 and 2010. At this rate of forest loss, the district is likely to lose all the natural forest-cover by 2015 (Figure 25).

Figure 25; Projected Trends of Forest Loss based on 2002-2010 Rate of Deforestation



Source: Author

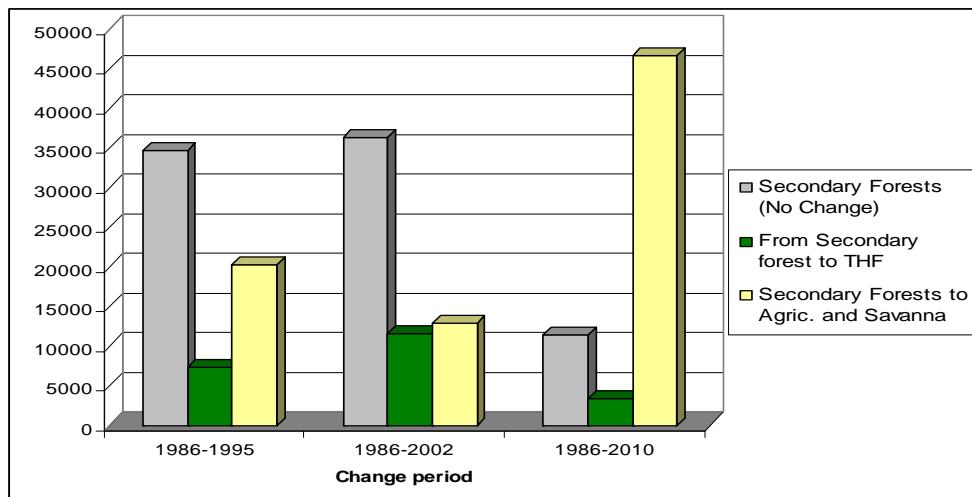
However, this assumption must be taken with precaution, given that forest loss on CFRs is likely to be countered by policy feedback mechanisms. For instance, NFA has already deployed seven officers from environmental police unit, and 3 officers of the Uganda Peoples Defence Forces

(UPDF) to reinforce forest monitoring, and law enforcement efforts. In addition, NFA has improved staff remuneration, cleared the 11 month earliers for patrolmen in 2011, and awarded Kibaale District a vehicle to improve forest monitoring (Kakeeto, Pers. Comm. 2012). The key challenge however is the effectiveness of these interventions in the face of the 2006 executive order and tendencies of corruption (for details see the discussion of findings in Chapter 7)

6.6.1. Scant Forest Regrowth: Declining Secondary Forest-Cover

Some forest-change analysts argue (Lugo & Brown, 1982 as cited by Myers, 1994) and rightly so, that most deforestation is quickly compensated for by forest regrowth, and that areas that have been cleared and abandoned are soon covered by secondary forests. This was perhaps the case in Kibaale District up until the year 2002 after which a lot of secondary forest-cover was lost as shown in Figure 26. Secondary forests are a transition stage in forest regeneration process. The extent of secondary forests increased to about 107,157 ha (by 167%) in 1995, up from approximately 64,148 ha in 1986.

Figure 26: Transition from Secondary Forests to THF and Savannah/Agricultural Land



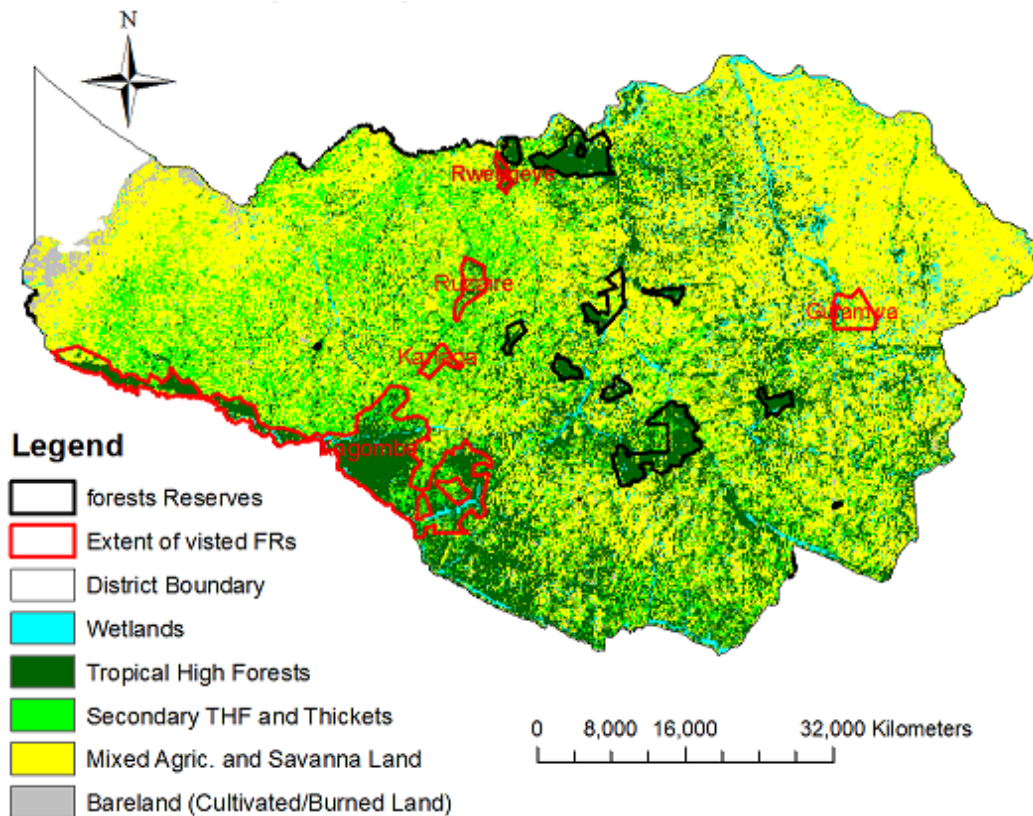
Source: Author

By the 2002, about 126,974 ha of secondary forests was registered, which was a 198% increment, but it precipitously reduced to 42,770 ha in 2010. In fact, secondary forests reduced by 66% between 2002 and 2010. About 82% (64156 ha) were total losses from secondary forests in 1986-2010 of which 73% (46702 ha) was lost to agriculture and savannah. The extent of changes from secondary forests to THF sharply reduced. About 7,379 ha (12%) of secondary forests changed to THF in 1995, and rose to 11570 ha (18%) by 2002, and reduced to about 3,364 ha (5%) in 2010. The forest recovery outlook by 2010 is complicated by limited rest given to land due to population pressure and fear of tenure insecurity.

6.6.2. Loss of the Permanent Forest Estate

The Permanent Forest Estate as defined by the Uganda Forest Policy (2002) is “*land that is set aside for forestry activities in perpetuity for Ugandans.*” In Kibaale District this is comprised of 15 natural CFRs. The spatial land use patterns show the severity of forest loss on the CFRs, with Guramwa, and Kangombe being one of the most affected. Map 12 shows the extent of encroachment on several CFRs. In Annex 1, the study observes that the extent of forest loss and degradation on the CFRs was underestimated by the forestry institutions

Map12: The Status of Central Forest-Reserves based on the 2010 Classification



Source: Author

As a result of severe degradation, many CFRs are severely degraded and do not reflect the typical structure and natural character of tropical forest ecosystems. Forest encroachment through the expansion of agricultural frontier involves tree cutting, burning, and peeling off tree barks (see Photograph 8) to reduce or eradicate crop-tree competition for water, light, and soil nutrients. This way, front-line communities cleared marginal forests with limited labour. Implicitly, many years will be required for the natural forest recovery, especially where land abandonment after colonisation is almost impossible in the prevailing circumstances, and land use extensification (due to lack of soil conservation technologies) was predominant through deforesting.

Photograph 8: Bananas and Beans Grown on Kahendu and Ruzaire CFRs



Source: Author:

The difficulty for natural forest regeneration was further complicated by negative perceptions towards forest ecosystems values by land users as shown in Table 23.

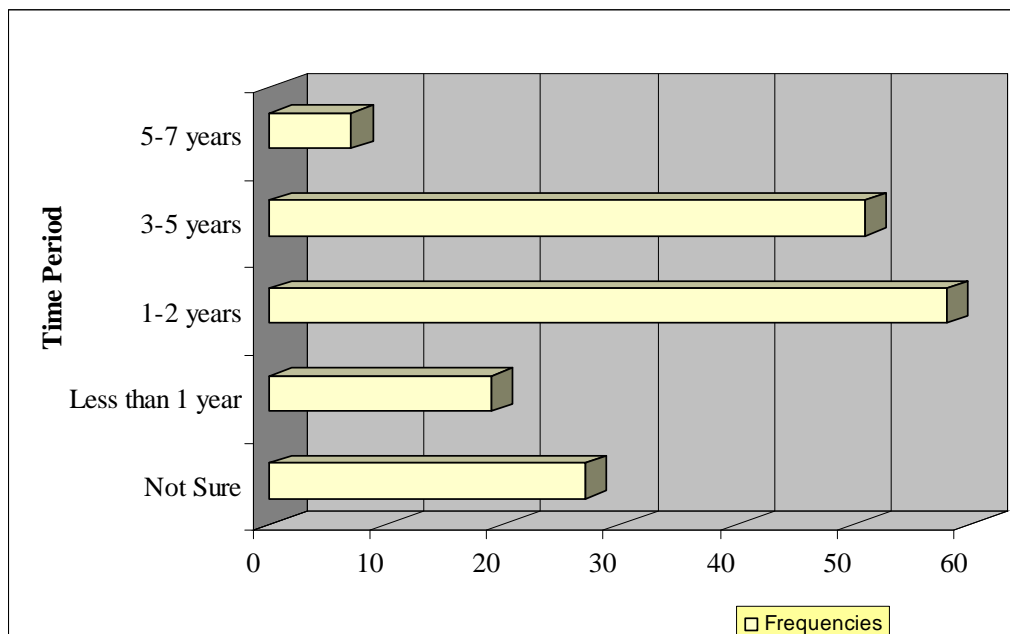
Table 23: Respondents' Understanding of the Natural Forests Values

Forest uses	Responses (N)	Percentage of Cases
Areas for Agric. production	187	60.1
Woodfuel	290	93.2
Environmental Services	278	89.4
Timber	236	75.9
Medicinal and Other Traditional values	142	45.7
Others (e.g. poles, employment, etc)	86	27.7
Total	1219	392.0

In Table 23, 60% of the survey respondents valued forests as fertile areas for agricultural production. This implied the high possibility of destroying the surviving tracts of forest, even though 89% of respondents recognised the forests ecosystems services. This questions the impact of public radio sensitization campaigns by environmental and forestry agencies. On the other hand, a small number of the survey respondents indicated their willingness to sustain private natural forests for some years. About 36% (N=58) of the private natural forest owners affirmed they would sustain forests for 1-2 years, 31% (N=51) for 3-5 years, and 4% (N=7) for 5-7 years. Furthermore, 12% of the survey respondents noted that they would not sustain forests beyond the following rainy season (Less than 1 year from the period of data collection) which stretched from February to May 2011.

In figure 27, the category of “not sure” (12% - N=19) included respondents that had joined conservation groups especially Kiryanga Private Forest Owners Association, and those who had not decided on the alternative land-use type. The study observes therefore that the rate of deforestation was most likely to accelerate in the near future. Moreover 60% of survey respondents noted that they sustained forests to reserve the land for crop production when the alternative land exhausted. It was only 4% of the respondents who indicated to have sustained forests as grazing land, and 13% (N=22) for inadequate capital, and 9% (N=15) for forest products. Private natural forests was sustained by 3% (N=5) of the survey respondents due to biophysical factors (poor drainage, poor soil fertility) and attendant labour shortage and 5% indicated that market prices for agricultural produce were too poor to compel them to increase agricultural production by deforesting. Only 2% (N=4) of the respondents noted conservation as the reason for sustaining private natural forests. Based on the findings therefore, should the land-users access to adequate capital, sufficient labour force and rising market prices for agricultural practices, they would clear many surviving forest fragments; irrespective of whether these fragments were located on private or public land.

Figure 27: Estimated Time Range for the Survival of Private Natural Forests



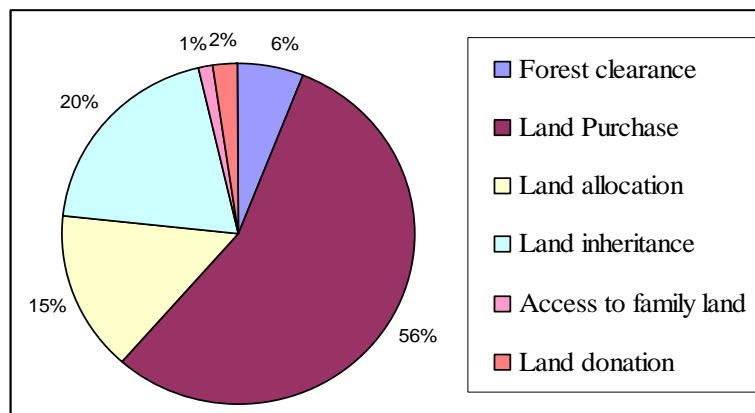
6.7. Land Tenure and Land-Use in Kibaale District

Land tenure has been extensively addressed in literature as one of the key factors that define patterns and changes in land-use (see Futeemma and Brondízio, 2003). This subsection shows the real-world land tenure relations and particularly regarding access to land and land ownership in Kibaale District.

6.7.1. Modes of Access to Land

The study identified key modes of access to land as; land offer/allocation, land purchase, land inheritance, land donation, family land, forest clearance, and renting. Figure 28 shows that at the time of this study, the vast majority (56%, N=224) of respondents had accessed land through purchase and 6% (N=25) by clearing forests; as a form of land invasion. Only 15% of the respondents were found to have accessed land via land allocation. Land allocation involved the land offered free through government sanctioned Population Resettlement Schemes, government agents (S/County administrators, Local Council (LC) leaders, etc.) and local individuals.

Figure 28: Modes of Land Access (%)



Source: Author

With increasing artificial population growth, the study observed that access to land through forest invasion and land allocation had significantly reduced. Instead, a remarkable growth of the informal land market (including land rental market) was observed. Nevertheless, almost all land transactions (even on CFRs) took place outside formal procedures. Only 20% of the survey respondents accessed land via inheritance, thus showing a probable declining trend in the traditional system of access to land.

From Table 24, access to protected forests has been increasing while access to private natural forests reduced – and the plausible explanation could be quasi-open access conditions on public forests. The increase in access to abandoned land could also have been a result of reduction in the extent of natural forest-cover. The term abandoned land was used to mean land which is left to regain soil fertility after a given period of agricultural production.

Table 24: The Main State of Land-Use at the Time of Access to Land

Modes of access to land	Year of access to land	The primary state of land at the time of purchase by the household					Total
		Tropical forest (private)	Tropical Forest (Protected)	Cultivated Land	Abandoned Land	Savanna grassland	
Land Purchase,	Pre-1986	35	7	6	12	2	62
Land Allocation,	1987-1990	17	3	4	7	1	32
Forest Clearance,	1991-1996	30	12	9	13	13	77
Land Inheritance	1997-2000	33	26	6	21	3	89
Land Donation	2001-2006	28	28	27	19	1	103
	2007-2010	18	34	1	29	2	84
Total		161	110	53	101	22	447

Source: Author

6.7.2. Land Distribution and Forest Destruction

Lack of or ill defined land tenure systems had contributed to increased deforestation in several regions throughout the world (see Banana and Gombya-Ssembajwe, 2000). The case of land distribution in Kibaale District however further invalidates scholarly assumptions shown by Nafziger (1988:120) that Africa contains low rural inequality with land abundance and widespread customary tenure system. Ideally, customary tenure prevails, but land tenure inequality which is normally associated with absentee landlords extends to customary land occupants. Only 12% of the respondents affirmed that their land was sufficient to satisfy their needs, and to the 88%, it was not. From Table 25, the average land size was 11 acres (or 9 acres when the outlier value of 400 acres) which is perhaps comparatively higher than other more populated but less forested parts of the district.

Table 25: Approximate Land Distribution Figures Selected Study Areas

Particulars	N	Minimum	Maximum	Mean
The size of land owned by households	312	.00	400.00	11

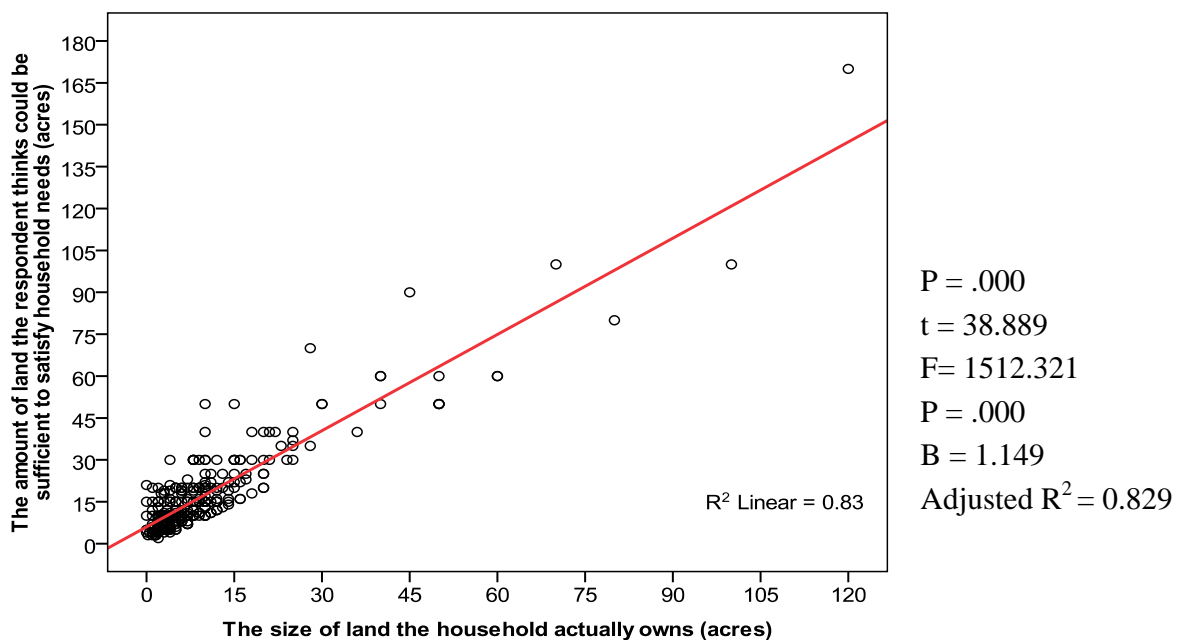
Despite any possible deviations of the sample mean from the population mean at the district level, it was a good representation of the situation at least in the forested parts of study area. Land users strive to overcome land shortage problems by exploiting the opportunities available in the expanding land rental market. As a result, land users caused forest alteration beyond the limits of their property endowments. It was found that 70% of households used non-private land at varying levels of intensity, of which 31% used non-private land for agriculture, 3.4% charcoal burning, 38% firewood extraction, 23%, grazing, and 0.9% others (e.g. medicine and bee keeping). Access

to non-private land was based on share-cropping and rental fees, determined by the amount of agricultural output, commodity prices, and the land rental market value. However, where survey respondents accessed non-private land for grazing, collection firewood, raw materials for handicrafts (and in some cases) poles and reeds, it was normally cost free. About 9% of the survey respondents had rented private natural forestland, 22% rented in Forest Reserves, while 43% rented abandoned land mainly for agricultural production.

6.7.3. Association of Predictor Variables in Household Land Necessity

The analysis shows a strong positive linear relationship ($R^2=0.83$) between the size of the land owned and that which households perceive sufficient to satisfy their needs. That is; the variability of the land needed to satisfy household needs is 83% explained by the variability of the size of land that households already own. Therefore figure 29 shows that for every increase in 1 acre of land, there is corresponding average increase of 1.149 acre in the size of land needed for the household.

Figure 29: The Linear Relationship between Land Size and Required by Respondents



The study further analysed the household size, also as an important predictor variable of the size of land that survey respondents assumed could satisfy household needs. The study observed a weak but significant positive linear relationship ($R^2=0.140$) between household size and the amount of land sufficient to satisfy household needs (see Tables 26). Therefore, the variability of the household size explains only 14 % of the variability of the size of land households assumed they would require to satisfy their needs.

Table 26: Linear Relationship between Household Size and Land Size

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.374 ^a	.140	.137	15.86095

a. Predictors: (Constant), The size of household for the respondent

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	4.599	2.009		2.289	.023
The size of household	1.870	.263	.374	7.109	.000

a. Dependent Variable: How much land is perceived to be sufficient to satisfy household needs

Through a multiple regression analysis, the study found that the two explanatory variables (household size and the amount of land households) explained 85% of the increase in the amount of land perceived sufficient to satisfy the households' needs (see Tables 27). There strong positive linear relationship between the two explanatory variables and the dependent variable must be treated with caution, because there is little, if any, proof to explain the explanatory variables as causal factors.

Table 27: Multiple Regressions; Land Size and Household Size with Land size

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.922 ^a	.851	.850	6.62037

a. Predictors: (Constant), The size of household for the respondent, The size of land the household actually owns

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.368	0.843		1.623	.106
The size of land the household actually owns	1.100	0.029	.872	38.345	.000
The size of household	0.745	0.114	.149	6.560	.000

a. Dependent Variable: Amount of land the respondent thinks would be sufficient to satisfy household needs

6.7.3.1. Possible Implications

From Figure 29, the fact that the more land households owned, the more land they perceived sufficient to support their needs had numerous implications in the context of in forest-cover

dynamics. This perception was further augmented by increasing land value and declining resource flows and services from land due to forest loss, and rapid population growth. Nevertheless, Tables 26 and 27 show a scenario where; a) the land poor/landless seek to access some land for survival, and b) the relatively land rich seek to expand on their land holdings for self-enrichment. This implies that should there be a vacuum in law enforcement or where the quality of land governance creates open access conditions, most land users would actively engage forest destruction to claim more land.

Indeed this explains the case of Kibaale District where forest crimes were high as, the land-poor struggle to survive, and the land rich to satisfy greed. In Kahunde Parish, KyanaISOKE Sub-County, respondents confirmed that it was mainly the land rich including local leaders who curved-out huge chunks of land on Kanaga CFR. As their activities are not checked by forestry agencies, they gained confidence to establish settlements, perennial crops, and some had begun to sell off their land holdings outside CFRs in the hope to permanently assert full ownership rights on public forests. An even more challenge ahead is that improvement in forest law enforcement in future is likely to create an even more desperate class of the landless population.

6.7.4. Land Tenure Systems and Security of Land Tenure

Land tenure systems in Kibaale District include; *Mailo*, Leasehold, Freehold, and Customary systems (NEIC, 1995), but they are dominated by overlapping rights. Over 90% of the land holdings are under customary tenure, which covers the former public land and overlaps *mailo* (ibid: 20). From this study, 97.4% of the survey respondents were customary land holders (with or without informal documentary evidence of tenure/occupancy). From the results, 1.6% of the household respondents was landless and therefore used land on the basis of rent or borrowing from family members. Freehold and *Mailo* land comprised of (0.6%) and (0.3%) of the respondents respectively.

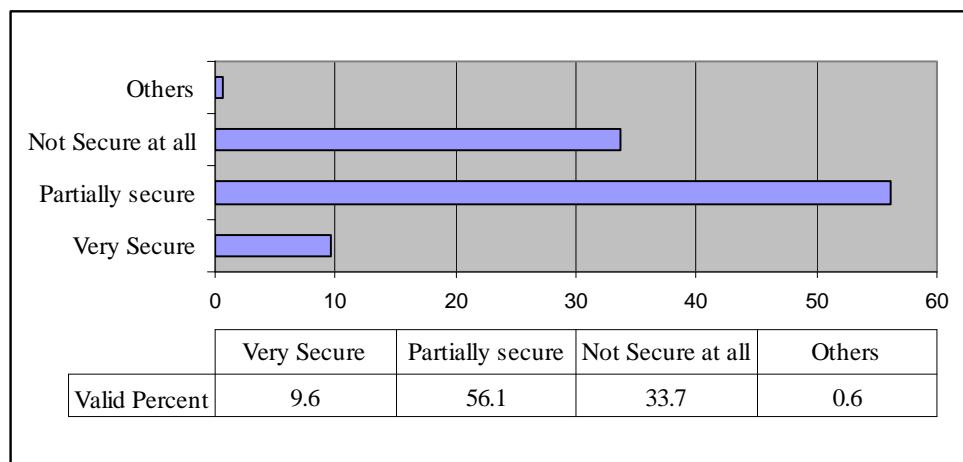
6.7.5. Land Tenure Security

From the assessment, a small number of respondents perceived their land ownership rights to be secure. From Figure 30, the study found that 10% of the survey respondents felt secure tenure, 56% partially secure, 34% were (very) insecure, while 0.6% (others) respondents were not sure. These responses were mainly gathered from land occupants because very few absentee landlords were simply inaccessible. However, the study observed that here is a thin line between partial tenure security and lack of tenure security. For instance, what some respondents perceived as their sources of absolute or partial tenure security could be perceived as far inadequate to guarantee tenure security by others.

For instance, 213 of the survey respondents possessed informal land purchase agreements, of which 25 felt secure, 137 partially secure, and were 51 insecure. But those “partially secure”

hardly imagined they could plant trees and harvest timber before they could be forcefully evicted. The key sources of tenure security were shown to include; certificate of land title (0.3%), community recognition (77%), informal agreement (72%), duration of use (59%), legal certainty (1.4%), formal evidence (land offer letters, payment receipts, executive order) (7.4%), Land Fund (5%) and Others (graveyards, family support, testament, etc) (21%). The formal evidence meant the documentary evidence (e.g. receipts) of land allocation, letters of (land) offer by the DLB, and copies of print-media with of the presidential directive on evictions.

Figure 30: The State of Land Tenure Security among the Survey Respondents



Source: Author

6.8. Conclusion

The study observes that the coupled human-land system is characterised by the rapid expansion of agricultural land against tropical forests and other land use types, and excessive wood exploitation. Land tenure relations are constrained with skewed land distribution systems, land tenure insecurity, and quasi open access conditions on forestland (both private and public). Forest cover had rapidly decreased and spatial patterns of land use did not show signs of forest-recovery. Yet we must not uncritically assume that forests will recover by default. The study found that more private forest owners were most likely to clear the forest vestiges for agriculture, while forest crimes such as illegal pitsawing, illegal occupation and cultivation were abundant on Central Forest Reserves. Away from the local human practices however are macro-scale processes that are the ultimate causes of forest depletion. They are well-knit with the features of land governance and have been further discussed in chapter seven.

7. Discussion of Findings

7.1. Introduction

The study found that unsustainable human activities are likely to deprive the Kibaale District of natural forest-cover very fast unless sufficient remedial measures are sought. Chapter 6 has shown that land users consciously or unconsciously deplete forest-ecosystems including those gazetted by law for strict protection. However, the spatial patterns of deforestation observed in the classified Satellite images are linked to identifiable proximate drivers of which excessive wood exploitation, expansion of agricultural land and to some extent, the human-lit fires are more prominent in the study area.

Nonetheless, forest loss contrasts sector-wide reforms since mid-1990s, which should have prompted sustainable land management. Therefore, while the identifiable proximate drivers of forest loss intimately linked to the small-scale farmers are clear, the actual governance based root causes are very complex. The study observes that land-use change processes are bound with social disharmony, rapid artificial population growth and macro-economic influences. These are underlain by features of governance problems mainly; a) chronic corruption, b) political interference and patronage, and c) institutional capacity deficiencies. They are the bedrock for the insecure land tenure, forest crimes, lack of stakeholder participation in decision important making processes, inadequate law enforcement and poor budget allocation to land management agencies.

7.1.1. Context of Land-Use and Forest-Cover Change Processes

As earlier noted, the study found that forests are being depleted through agriculture, wood exploitation, and human-lit fires. The nature of deforestation for crop production is known, but once forests are cleared, chances for natural forest regeneration are very limited. The adverse impact of forest loss for agricultural production is exacerbated by indiscriminate logging and charcoal burning where large trees and saplings are cleared. Given that parent trees are influential for forest regeneration as seed sources, the removal of these trees through logging impairs forest regeneration due to lack of fruit and seed sources (Sheil and van Heist, 2000). The primary sources of deforestation are mutually reinforcing; as either sequential in pattern e.g. “cryptic” deforestation through excessive logging followed by “clear-cutting” for agriculture on the same plot of land or concomitant, simultaneously occurring at the same time.

7.1.2. Empty-Forest Syndrome

While deforestation threatens habitats in tropical forests (Bennet *et al.*, 2002), tropical forests in Kibaale have, for some time now, suffered one of the most under-looked yet severe threat commonly referred to as the “empty forest syndrome” (see Sheil and van Heist, 2000, Bennet *et*

al., 2002, Roldan and Simonetti, 2000). Kibaale's once intact natural forests harboured diverse species of mammals and birds including baboons, elephants, chimpanzees, black-and-white colobus monkeys, etc, but most of which have since disappeared (The NewVision July 19th 2009). Plumptre (2002) found that bush meat hunting was a big problem on Kagombe, among other CFRs in the Albertine Rift due to lack of enforcement of anti-poaching laws. Besides, the so-called "elephant corridor" that once exposed the Banyoro to vermin and wild animals (Shelnberger, 2005, 2008, Nsamba-Gayiiya, 2003) is no more. Some wildlife is vulnerable to habitat fragmentation and will not cross open areas even avoiding forest margins (Sheil and van Heist, 2000). This portends serious consequences to the range restricted endemics – since forests in Kibaale are located in the Albertine Rift, where they provide linkages for species dispersal and gene flow, and permit the survival of endemic species (Plumptre *et al.*, 2002, 2003). Even though Newmark (1991 as cited by Sheil and van Heist, 2000) opines that corridors need to be at least 200m wide to allow free movement of sensitive East African forest birds, the situation in Kibaale requires that land tenure and complex governance shortfalls are first consciously addressed.

Despite the severe impact of over-hunting, limited research, if any at all, has been conducted. Nyesigye a hunter in Bujogoro revealed that "wild animals have been effectively exterminated and nowadays we must travel long distances outside the district to hunt." The influx of Congolese refugees was noted to have increased the demand for monkeys, which are not locally edible. Hunting is believed to pose a greater threat to forest fauna than does logging (Sheil and van Heist, 2000) and tropical forests, in contrast to savannas are susceptible to over hunting because they support less wildlife - by at least an order of magnitude (Bennet *et al.*, 2002). Wild animals would have created the potential for tourism (The NewVision July 19th 2009), and further maintain forest vegetation through pollination and seed dispersal (Sheil and van Heist, 2000).

7.2. Rural Livelihoods and Forests: Situation Analysis

A cursory analysis of livelihoods found that land is the single biggest asset endowment sustaining over 98% of the respondents. The study notes that 88% of the respondents had no sufficient land to satisfy needs, and yet with little education and lack of sufficient alternative sources of revenue streams, many households directly depend on ecosystems services and products (see Table 28). The study shows that 22% of the respondents attained no education, 59 %, the primary, and 17% secondary education, while 3.2% attained tertiary education. Access to education is even lower among forest communities. One respondent in Kalangala, Nkooko S/county noted "*Ask any child of up to 15 years of age in this area who can write his/her name, where they learn it from*". Livelihood strategies are a spectrum of activities and decisions that people undertake to achieve their livelihood goals or outcomes (Wilson and Nolan, 2001). Alternative livelihood strategy

combinations cushion households from shocks such as volatile weather, price changes, pest and diseases (e.g. banana wilt), albeit their limit in scope.

Social Capital; in some areas, households routinely build social networks via reciprocal labour exchange in making energy saving stoves, under EMESCO, an area NGO. The social terrain is however congested with ethnic rivalry with diverse opinions and priorities. Networks are limited to rival ethnic camps; immigrants and indigenous Banyoro that subscribe to the Bafuruki Committee and Mubende Banyoro Committee (MBC) respectively, to protect their interests. This has also contributed to patronized encroachment.

Table 28: Livelihood Strategies for Survey Respondents

Types of Livelihood strategies	Responses (N)	Percent of Cases
Agric. Production	312	100.0%
Paid Employment (formal or informal)	22	7.1%
Remittances	01	0.3%
Lumbering/Pitsawying	37	11.9%
Brick making	39	12.5%
Alcohol Brewing	30	9.6%
Petty trading in general merchandise, agro-products, etc	51	16.3%
Total	492	157.7%

Source: Author

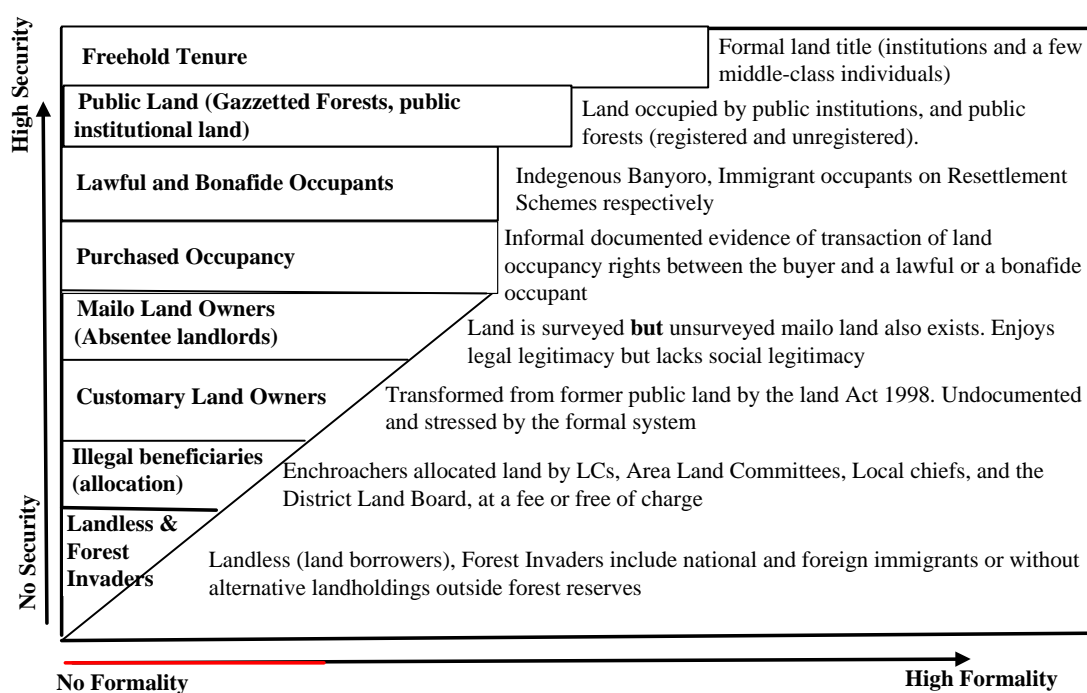
Access to **financial capital** is tedious, because most households were employed in agriculture yet they are unable to use land as collateral for credit due to the state of land tenure insecurity. To 69% of the survey respondents, it was “impossible” to use land for credit, while 24% noted that it “may be” possible and 4.8% had no idea. Only 1.9% noted that it was possible to use land as collateral for credit mainly from the small-scale savings credit groups and NGOs. The inability to meet the requirements for collateral aside; the respondents were risk averse that non-payment could cause the transfer of their land, their sole source of survival, to others. Even if all land users accessed titles, the ability for the majority to service loans based on their livelihood strategies automatically excludes them from the market for loanable funds. Moreover, an economic crisis pushed prime lending rates up to 30% in 2011-2012¹³ and this further demoralised potential land users from accessing credit, which could also cause a crowding-out effect on forest resources.

¹³ Daily Monitor, Feb. 28th 2012: Fixing an Ailing Economy to Save Ugandans, available on Feb. 28th 2012, at <http://www.monitor.co.ug/Business/Prosper/-/688616/1354886/-/bnwp1g/-/index.html>

7.2.1. Access to Land and Tenure Security

Based on the research by MISR, (as cited by Nsamba-Gayiiya, 2003) the study defines the status of land users along different modes of access to land, as the; i) Original Banyoro occupants as lawful occupants protected by the Land Act 1998, ii) Occupants resettled by the government on Kagadi and Bugangaizi Resettlement Schemes, iii) Persons who purchased the land rights of the lawful or bona fide occupants prior to the enactment of the Land Act 1998, iv) Persons who bought the land rights of occupants after the enactment of the Land Act 1998 without the consent of registered land owners, v) Persons who were illegally allocated land by government agents; vii) Persons who invaded public forests, viii) Persons allocated land by the MBC. These have practical reflections on the state of land tenure security enjoyed by land users.

Figure 31: The Degree of Land Tenure Security on Different Systems of Land Tenure



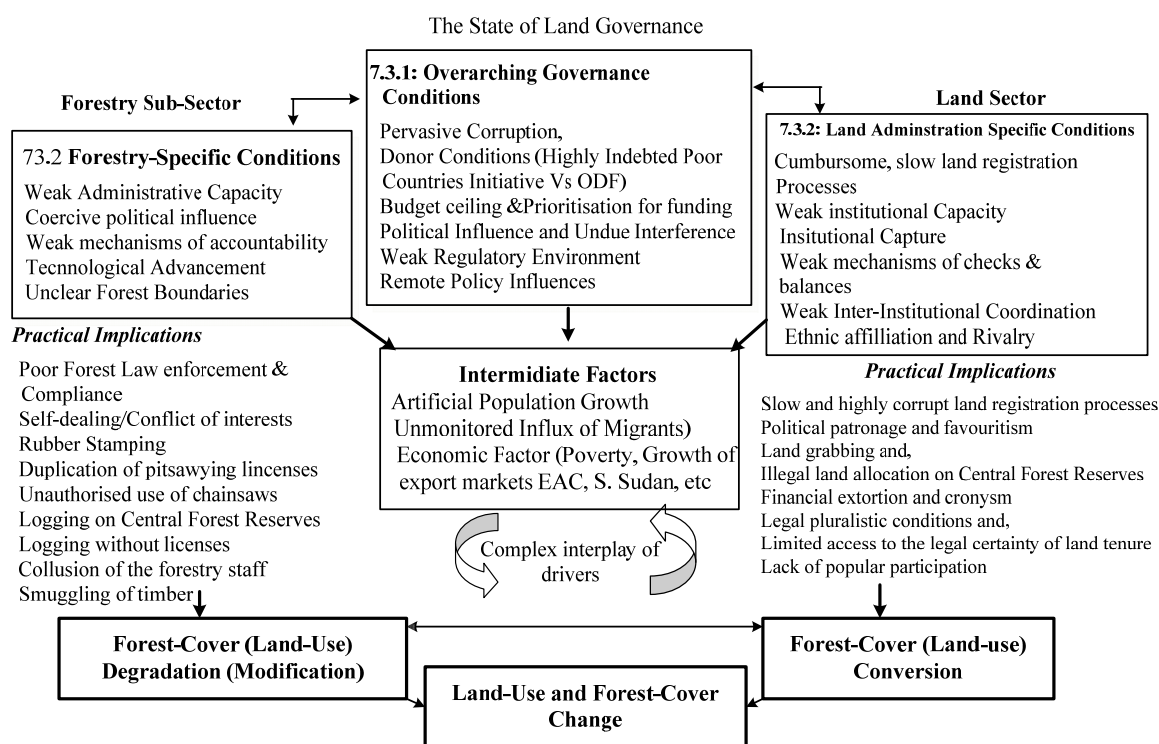
Source: Author

Figure 31 shows that land tenure security is perceptual and relative, to the extent that even registered *mailo* land face the simmering threat of insecure ownership. A survey on the sources of land tenure insecurity observed that community members (33%), government agencies (43%), family members (8%), local leaders (12%), absentee landlords (4%), and others (0.8%) as major. Mostly, government agencies that some respondents treated as sources of tenure insecurity were NFA, the DLB, and Area Land Committees.

It is abundantly clear that many people even outside forest reserves have lost hope in the government’s ability to protect them from arbitrary eviction. This constant threat of forced eviction has compelled land users to deplete forests at an unprecedented rate. The Banyoro live in fear of losing their land to absentee landlords and domination by immigrant settlers. Migrant settlers too seek to access some documentary proof as security to their occupancy against threats of eviction from the absentee landlords and the indigenous Banyoro. Given that land market is highly informal, land on public forests has been easily transacted illegally and this persists because of the ineffectiveness in forest law enforcement. On privately owned land, overlapping land rights have raised uncertainty and unconcern for forest conservation. Kyamuhondeire (Pers. Comm. 12/11/2009) notes that “*whenever we try to sensitize Private Forest Owners to conserve forests, they emphasise that they cannot sustain forests on the land from which they may be evicted at any time of the day*”

7.3. Land Governance: Assessing the Underlying Drivers of Land-Use and Forest-Cover Change Processes

Figure 32: Land Governance Features in Forestland-Use Change



Source: Author

The direct influence of governance on forest-cover change is hard to quantify (Kishor and Belle, 2004), but is highly recognized as a macro-level variable or underlying driver (Kaimowitz and

Angelsen, 1999). Uganda's land governance has transformed to the extent that the very system that was highly credited for sector-wide reforms to revitalize land management in the 90s has come under criticism for undermining the implementation of important reform outcomes.

In Figure 32, the drivers of land use change are divided into three main interrelated categories; i) overarching generic factors, and ii) specific sub-sectoral shortfalls, and iii) intermediate factors. Generic factors are cross-cutting, and are exogenic to individual sectors or even the district where land-use alterations occur. Desired solutions require concerted efforts at the national level with support at the global level, and especially the development partners. Excessive forest loss as a governance problem signals the need for broader policy measures, rather than technological, or economic measures that warrant ad hoc interventions.

7.3.1. Overarching Governance Influences

7.3.1.1. Pervasive Corruption

Despite Uganda's impressively institutionalised anti-corruption agenda, increasing tendencies of petty corruption, a growing perceived culture of impunity for grand corruption and pervasive quiet corruption (VLR-UOS, 2011) have persisted. Corruption has pervaded the social fabric including prominent members of government and is now institutionalized (APRM, 2009), but the will to fight corruption at the highest levels of government is questionable (Uganda Debt Network, n.d). Moreover, Uganda's anti-graft paradigm is perceived a joke, where even the Anti-Corruption Court is "*incapacitated*" and tries only the "*wretched of the earth*" but not those with "*powerful godfathers in the government*" (Daily Monitor Sep. 14th 2011). The IG (2010b) concedes that corruption is rampant at all levels through fraud, embezzlement, false accounting and influence peddling, conflict of interests, bribery, nepotism, and financial leakages. Corruption is a cause of forest crimes and cuts across all levels of society including forest managers, politicians, law enforcement agencies, investors and local people (Kamugisha-Ruhombe, 2007). It is identifiable in all land management processes. In Kibaale District, corruption is rampant in land adjudication, immigration, resettlement, courts of law, LC officials, land and law enforcement officials, politicians, urban development officials and the general public (see GoU, 2006:166).

The Land Act Implementation Study estimated that full implementation of the Land Fund requires Ushs 700bn, a figure above the resources available (Nsamba-Ngayiyya, 2003). But over Ushs 500bn is estimated to be lost to corruption annually (The World Bank, 2005, as cited by ACCU, 2012). In fact the Corruption Perception Index shows that Uganda scored 2.5 in 2010 and 2.4 in 2011, ranking 127 out of 178 countries, and 143 of 182 countries in corruption respectively (TI, 2010, 2011b). The perception of deteriorating governance has tarnished Uganda's image as a

development model (The World Bank, 2010). The problem is soluble although lack of political will continues to be a huge challenge.

7.3.1.2. Donor Conditionalities and Resource Allocation Problems

Uganda's economy is heavily dependent on donor support. Donor aid is attached with conditions, of which some do not favour the ENR sector. The Highly Indebted Poor Countries (HIPC) Initiative launched in 1996 by the International Monetary Fund and the World Bank to ensure broad and fast debt relief and contribute towards poverty reduction and debt sustainability has a strong impact on the allocation of financial resources in Uganda (Kamugisha-Ruhombe, 2010). Attached conditions stringently limit the funding available for the sectors such as ENR preferred as sectors of low priority. As a result, the National Development Plan 2010-2015 focuses national development priorities on human resource development, infrastructure development, critical production input and science, technology and innovation. In so doing, the government fails to secure Official Development Assistance (ODA) through the Paris Declaration availed for sustainable forestry, as it requires that forestry is included as a national development priority. While the Environment and Natural Resources (ENR) (excl. lands) was allocated 0.06 to 0.11 % of the budget for 2006/2007 and 2009/2010 under the Poverty Action Fund that uses the money saved under HIPC Initiative, the entire allocation went to wetlands and nothing was allocated to forestry (Kamugisha-Ruhombe, 2010). Poor budget allocation has dealt a blow to sustainable land management processes with pronounced suboptimal policy outcomes.

7.3.1.3. Poor Prioritization of Land and Forestry: Budget Ceiling

a) Budget Ceiling in Environment and Natural Resources (ENR)

It was initially assumed that the government considers environment and forestry as one of its Priority Programs Areas (PPA) (FD, 2002:3). This is contrasted by available evidence that ENR is not a priority sector for funding in national budget allocations. Budget allocations for ENR have declined since FY2004/5 when its budget share was 2.5% of the total government expenditure. Subsequently, it reduced to 0.56% in FY2008/9, and 0.6% in FY2009/10 (The World Bank, 2012a). Forestry shares on the 46% of the Sector Investment Plan for ENR (excl. land) budget (Kamugisha-Ruhombe, 2010) which does not reflect high prioritization.

Budget ceilings are the main determinants concerning the actual finances allocated to a sector by the Ministry of finance, Planning and Economic Development (MFPED) on the basis of resource envelopes made available for macro-economic stability to qualify for debt relief (Kamugisha-Ruhombe, 2009, 2010). The rating of forestry for funding is, and must be perceived as a political issue. While forestry has lion's share in the Sector Investment Plan budget and could mobilize funds from the donor community, the MFPED ceiling hinders it from accessing all the funding (ibid). The government therefore sets avenues to achieve sustainable forestry, but ironically

establishes complex mechanisms that again make sustainability very hard to achieve. The Forest Governance Learning Group (FLG) 2008 posits that the budget ceiling was raised from 26.03 billion Uganda Shillings in 2007/2008 to 45.36 billion in 2008/09 after a protracted advocacy campaign¹⁴. Nevertheless, the forestry subsector which is clustered under ENR suffers the lowest budget ceiling (see Table 29) that severely impacts on institutional capacity.

The budget ceiling extends down to the local government via conditional grants and there is a chronic shortage of resources available for policy implementation. Conditional grants are separate from the local government revenue, and are provided to finance specific programs (Kamugisha-Ruhombe, 2010). In addition, apart from the forest projects supported by CSOs, projects funded under ODA are still required to remain within MTEF ceiling (ibid).

Table 29: Budget Ceilings in the MTEF 2007/08 - 2009/10 (billion UGX)

Sector	2006/07 (Approved)			2007/08 (projected)			2008/09 (projected)			2009/10 (projected)		
	Donor Projects	GoU	Total (Ceiling)	Donor Projects	GoU	Total (Ceiling)	Donor Projects	GoU	Total (Ceiling)	Donor Projects	GoU	Total (Ceiling)
Agriculture	56	91	147	82	103	185	88	120	208	56	219	275
ENR (Excl Lands)	18	5	23	23	7	30	38	11	49	40	15	55
Security	1	377	377	0	397	397	0	407	407	0	455	455
Works & Transport	286	179	465	323	241	564	477	242	719	189	400	589
Education	37	684	721	37	715	752	37	743	780	1	865	866
Health	139	243	382	135	251	386	150	275	426	101	459	560
Water	33	66	99	42	87	128	13	100	113	1	123	124
Justice, Law & Order	6	190	196	10	192	202	8	222	230	0	241	241
Accountability	109	88	197	92	124	217	98	132	230	62	148	210
Economic Functions & social Services	314	356	671	334	386	720	384	391	775	209	450	660
Public Sector Management	22	236	258	39	249	288	57	253	311	28	321	349
Public Administration	17	301	318	7	301	308	8	251	259	7	284	291
Interest payment due	0	254	254	0	300	300	0	300	300	0	288	288
Total	1,039	3,068	4,107	1,124	3,353	4,477	1,358	3,449	4,807	695	4,268	4,964
% Share of ENR			0.5			0.7			1.0			1.1

Source: Adopted from Kamugisha-Ruhombe (2009)

Conditional grants account for 95.2% of Kibaale District resource envelope (KDLG, 2010) due to limited alternative sources of local revenue. Forestry is the main source of local revenues, generating about Ushs 425 million annually but this too, is expected to reduce due to rapid deforestation. In fact the ENR to which land administration unit and forestry is bundled, was projected to be allocated only 0.7% of the total district budget for the financial years 2010/11, 2011/2012, and 2012/2013 (KDLG, 2010). The ENR does not access conditional grants, meaning

¹⁴ The Forest Governance Learning Group – Uganda. Work-Plan for January-December 2008, <http://pubs.iied.org/pdfs/G02213.pdf>

that it only accesses part of the 1.9% of the local revenues (as unconditional grants) and the 2.9% donor support. Despite the rhetoric, the ENR sector is not given a corresponding priority in national and sub-national budget allocations (Kamugisha-Ruhombe, 2010).

b) Budget Ceiling Effects on the Land Sector

The government financial resources are insufficient to facilitate all the land reforms (USAID, n.d), but the government goes further to place the land sector under budget ceiling. As a result, the ministry responsible for land is relatively incapacitated in amidst; land disputes and conflicts, forgery of land records, enhancement of the Land Fund, encroachment on the road reserves, etc (RoU, 2011) that require urgent solutions. Table 30 shows the budget ceiling which has reduced the sector's ability to execute its mandate. The budget ceiling for FY 2010/2011 was 3.0bn higher than that of FY 2009/2010. The non-wage ceiling was 2.7bn only as compared to 4.0bn for the FY 2010/11 and FY 2011/12 (MLHUD, 2010b). The solution is sought in additional funds outside the ceiling to support computerization of the land registry, surveying and demarcation of international borders, and production of a National Atlas, development of a National Land Use Plan (ibid) but still MTEF ceiling limits the scope for manoeuvre in national policy implementation processes.

Table 30: Budget Ceiling on the Land Sector

Ceiling Particulars	FY 2009/2010 (bn)	FY 2010/2011 (bn)
MLHUD	Approved	
Wage Ceiling	2.133	2.133
Non-Wage Recurrent Ceiling	8.99	8.99
Domestic Development	5.036	5.036
Total	16.159	16.159
Uganda Land Commission		
Wage Ceiling	0.270	0.270
Non-Wage Recurrent	0.226	0.226
Domestic Development	3.680	3.680
Total	4.176	4.176
Total Budget Ceiling for LHUD Sector	20.33	20.33

Source: MLHUD (2010b)

7.3.1.4. Cumbersome and Slow Land Registration Process

The World Bank (2012b) holds that Uganda has improved efficiency of property registration and transfers by establishing performance standards and recruitment of more officials. Recent estimates reveal that it takes 13 procedures to register property, over an average of 48 days and at a cost of 2.9% of the property value. However, property registration procedures are generally relatively inefficient, non-transparent and expensive (GIM International, 2010). Besides, the

Ministry of Lands allocated 20% of its budget to systematic demarcation, and estimates that at its current capacity, it would take about 1,000 years to complete the whole country; even if resurveying due to land subdivision is ignored (LEMU, 2009).

In reality, the situation is complex. Sarah, the Commissioner Land Registration (Pers. Comm. 2010) notes that land registration process could take about 6 months, but Paul and Kaije, both private surveyors (Per. Comm. Oct. and Nov. 2010 respectively) note that unless unofficial payments are made, registering a property can even take up to 5 years or completely fail due to chronic corruption in the civil service. Access to land registration services is hard for the poor without the ability to navigate through the land registration process. Private surveyors carry the task to cut through the red-tape for land owners to meet title conditions via the sporadic land registration process, making the variable costs of land registration prohibitively high.

7.3.1.5. Political Influence on Public Sector Agencies

Accountability demands that civil servants are accountable to elected representatives, and elected representatives are accountable to the public (Steiner, 2008). The problem is that this undermines mechanisms of accountability through undue influence. The ministry of lands is under political leadership of a cabinet minister, supported by three state ministers appointed by the president with the approval of the parliament. But, under the provisions of the Land Act, politicians appoint the land institutional staff from Uganda Land Commission (ULC) to the Area Land Committees. The staff members of the ULC are appointed by the president with the approval of parliament (see Land Act (S.47) (1)); the staff members of District Land Boards are appointed by the responsible minister on the recommendation of the District Council. Area Land Committees are appointed by the District Council on the recommendation of the Sub-County Council (S.64) (1). In fact Okuku (2005:34) agrees that for a patronage-based political economy like Uganda, the Commission or other agencies are likely to reflect political-ethnic bias, power holders with lack of representativeness and meritocracy as their hallmark.

This issue has already reared its head in Kibaale District where an Ex Minister of State for land has notably exerted undue influence on the DLB and Land Committees to facilitate grabbing of people's land. Political influence is exceedingly high with adverse practical implications. Negative political will and manipulation have overtly sustained encroachment on FRs in contravention of the laws. Forestry officers do not enjoy political support from leaders at all levels and politicians have emboldened hostility from communities against the forestry staff.

7.3.1.6. Political Interference: Political Corruption

Politicians coercively influence institutions to ignore or override established laws. They cause suspicion, mistrust and hostility among communities towards land reforms and this delayed piloting the Systematic Adjudication in Kibaale District for 4 years (Kitaka, Pers. Comm. Aug.

2011). By 2006-7, a strong NFA Board, the Executive Director and several other top and middle level managers resigned for refusing to agree to an unlawful presidential order to convert some CFRs. NFA leadership was restructured with a compliant Board appointed, which degazetted forest reserves, lost public confidence and broke-down the sector (The World Bank, 2012a).

The 2006 presidential order against the eviction of encroachers on all FRs (see Annex 2) has dealt a serious blow to the forestry sub sector. At the local level, people perceive the order to be stronger than the Constitution (Katongore, Pers. Comm. 2011) and to the frontline communities it is an unconditional offer to convert public forests at will. Chapter 6 shows that encroachers use copies of the local print media with the “order” like land titles as sources of land tenure security. It has curtailed the operations of NFA. About 80% of encroachment on forests in Uganda has the backing of politicians at the grass-root and national level, trading CFRs for electoral benefits (NFA, n.d). But as politicians manipulate people for political success, so do people manipulate vote seekers using the power of the vote (Kamugisha-Ruhombe, 2009). Supporting encroachers is taken as “responsiveness” to the electorates’ needs and hence consolidating political capital.

During election times, the government often oscillates its position to protect forests as politicians offer cover for people to alter forest boundaries, settle in CFRs and conduct illegal activities (Kamugisha-Ruhombe, 2009). The successful eviction of encroachers on Guramwa FR in 2009 failed because Mr. Moses Byaruhanga; the Senior Presidential Assistant on Political Affairs, came into the area and convinced encroachers to re-occupy the forest (Kakeeto, Pers. Comm. 2010). Some local leaders are encroachers too. Encroachment on Ruzaire and other FRs by the indigenous Banyoro is sanctioned by local politicians and MBC in response to the president’s perceived support for migrant settlers’ encroachment on Guramwa CFR.

7.3.1.7. The Decentralization Hinderances

Decentralization in Uganda contrasts the concept’s theoretical basis “as a means to achieve good governance” (Steiner, 2008). Built on the Constitution 1995 and the Local Government Act 1997, decentralization aimed at promoting good governance by strengthening local institutions and service delivery (Okidi and Guloba, 2006), but has become a tool to undermine good governance. It is a tool for central-level political motives, via the creation of unviable districts in the guise of creating jobs or fulfilling political promises (ibid). In Table 31 are the trends of creating new districts. ARD (2005 cited in Singiza, 2011) notes that “*the creation of the districts did not follow any established parameters, neither was the process informed by administrative necessity or economic rationale. Instead, the President announced their creation via presidential decrees, often to reward politicians threatening to withdraw support for the NRM, or to punish those who had.*” It involves splitting existing districts and has increased the cost of public administration at the expense of service delivery. As already noted, two more districts have been carved out of Kibaale District with effect from 1st July 2012. This means that the same area now requires three times the cost of administration it had at the

time of data collection. Agencies like FSSD and IG are unable to fully establish operational structures in districts including Kibaale. In a similar case, there is no High Court despite the overwhelming incidence of land conflicts.

Table 31: The Rate of Increment in the Number of Districts 1962-2010

Year	No of Districts	% of growth of Districts
1962	17	-
1968	18	6%
1971	19	6%
1974	37	95%
1979	33	-11%
1990	34	3%
1991	38	12%
1994	39	2.6%
1997	45	15%
2000	56	24%
2005	70	25%
2006	79	13%
2010	112	42%
2012	136	21%

Source: ACODE Policy Research Series No. 27 (2009) cited by Singiza (2011), The NewVision July 19th 2012.

Kibaale is served by Masindi District High Court. In fact most of the crime cases in the district are associated with land (Kyaligonza, Pers. Comm. 2010). Public agencies are weakly funded and overstretched to match fast administrative changes. On the other hand, District Surveyors were initially under the Commissioner of Surveys, paid by the Department of Surveys and Mapping. Following decentralization, District Surveyors “are their own bosses” under the Local Government and as the Commissioner stopped field survey inspections, cases of fraud increased (Kitaka, Pers. Comm. Aug. 2010)

7.3.1.8. Regulatory Quality

Many scholars argue that Uganda’s policy framework is fairly adequate to support sustainable forestry (Turyahabwe and Banana, 2008), but it is exposed to regulatory setbacks. Firstly, the Forest Act of 1947 did not make provision for the management of forests on private land (Makumbi and Manyindo, 2000) which constitutes about 70% of the total forest-cover at the national and district level. In addition, NFTP was passed in 2003 with Sub-Section 92 providing for the development of regulations to operationalize it, but these are not yet in place. Regulations would have addressed the certification of forests and labelling of forest products to verify their origin, and whether from a sustainable source of origin, the tree species to harvest, their movement, the basis of determining fees, manner of sale of forest products, prohibition, control and management of forest fires, etc (OAGU, 2010). This has made the forest law

enforcement and compliance very difficult. In the land sector, land reforms have technically been unsuccessful (see Chapter 5). Legal reforms re-defined the rights of land occupants which inhabitants of Kibaale had fought to eliminate. Subsequently, the Land Act Amendment Bill 2010 was hurriedly passed amidst public opposition, and besides the fact that its implementation is debatable, it is generally clear that Kibaale District gains little from the existing land laws.

7.3.1.9. Remote Policy Influences

Forest management responsibilities are scattered in different public sectors where they are often ignored. The DLB has ignored the provisions of the Forest Act concerning the management of private forests and loosely focused on the Land Act. There exist some policy inconsistencies that adversely affect forest management. Mpabulungi (Pers. Comm. 2010) notes that environmental concerns are not given priority in designing policies such as the Universal Primary Education (UPE) and Universal Secondary Education (USE) which have a huge ecological foot-print. They have increased the demand for wood intensive infrastructure e.g. furniture, buildings and woodfuel. The Ministry of Local Government survey 2005/2006 shows that the UPE enrolment rose from 5.6 million in 1998 to 7.6 million in 2003, and the total number of primary schools doubled to 14,000 in 1990-2004 (Okidi and Guloba, 2006).

The government and donor community have pursued populist policies and do not avail adequate funding for forest law enforcement (Kamugisha-Rukombe, 2007). More attention is paid to agriculture via the NAADS programs and the Plan for Modernization of Agriculture with limited input to forestry. Policy failures in the energy sector imply that Ugandans depend on biomass (firewood, charcoal, crop residues) energy for most of household chores in urban and rural areas. Biomass constitutes 90-95% of energy supplies in Uganda (MWLE, 2002) where 70% of the urban households depend on charcoal and 86% of the rural households depend on firewood. Based on the World Bank databases, 9% of Ugandan households have access to electricity as compared to 27% for the average Sub-Saharan country (Okidi and Guloba, 2006). The study found that 100% of the survey respondents in Kibaale District depend on biomass energy for cooking (see 6.5.2 (iii)) but charcoal was mainly produced for distant urban markets. About 75% of households in Kampala depend on charcoal and only 3.4% depends on electricity for cooking (UBOS, 2010). Even with the systemic increase in charcoal prices and the highest electricity tariffs in E. Africa (The Observer, 29th Jan. 2012) poor adoption of energy saving technologies, or access to cheap and efficient alternative energy supplies, have not prompted a time-bound policy in Uganda to reduce pressure on forests.

7.3.1.10. The Challenge of Technological Advancement

Technology is a blessing and a curse to land management. In the loci of land administration, technological growth in the surveying industry has increased accuracy and performance speed.

This inherently implies the opportunity for improved land registration processes and therefore security of land tenure, and better access to credit. Technology further means better information for decision makers through integration of remote sensing, GIS, and other technologies into decision-support systems (Sayer *et al.* 2005:264). In the agricultural sector, the study found that farmers have taken up the growing of upland rice, due to improved agricultural technologies to optimize productivity and economic returns. In other cases, technology has been used to promote land fraud (see 7.3.3 (vi)) while improved crop varieties such as rice-technology have been sources of deforestation and forest encroachment. The rise of chainsaws in the 1980s increased performance but exacerbated illegal and wasteful pitsawing (Kamugisha-Ruhombe, 2007) and while technical guidelines exist on the use of chainsaws in felling, snedding and bucking (*ibid*), they are often ignored. Under the Public Notice of Nov. 2004, the Minister declared chain-saw timber contraband to be “...confiscated at sight together with the power saw and any other vehicles used for transportation...in addition to heavy fines and prosecution.” This ban effectively applies both on the public and private forests (Kamugisha-Ruhombe, 2007:2). In the communications sector, improved telecommunication technology has helped forest law offenders to evade the law enforcement.

7.3.2. Specific Governance Shortfalls in the Forestry Sector

Deforestation signals that institutional efficiency and effectiveness are at issue. Forest sector reforms sought to stem corruption, incapacity, and inefficiency (see 5.2) that eroded the public confidence in the Forest Department. In fact six months after NFA became operational in 2004, it overturned the forestry sector it had inherited in a sorry state regarding law enforcement, in what was known as “Uganda miracle” (Kamugisha-Ruhombe, 2007). The success was short-lived as corruption resurfaced, political interference dug-in, and administrative capacity plummeted. The study found that the image of NFA has deteriorated to the extent that the former FD is comparatively considered to have been more effective.

7.3.2.1. Problems Concerning Forest Management Plans

Forest management plans are the first and critical component of a forest law enforcement system (Kishor and Belle, 2004). The NFTP 2003 provides for all forest reserves to have approved management plans. Section 28 of the Act provides for procedures for the preparation of management plans, and private forest owners are obliged to harvest forest produce in accordance with management plans. However, the National Forest Plan 2002 meant to guide forestry has never been implemented. According to the OAGU (2010), one out of 506 CFRs in Uganda had an approved forest management plan, 51 had draft plans (generic documents) and 18 had been submitted for approval by the minister. Although generic management plans were set for some CFRs in Kibaale, no funds were made available for implementation.

7.3.2.2. Capacity: Forestry Sector Support Department and District Forest Services

The Forestry Sector Support Department (FSSD) was found to fall short of adequate capacity; staffing, funding and equipment to execute its mandate. According to Adata (Pers. Comm. Sept. 2010), FSSD was run by 1 Commissioner, 2 Asst. Commissioners and 8 Support staff (drivers, secretaries, etc.) including a handful of the field staff. She notes that the small under resourced staff of FSSD was overwhelmed with tasks, and efforts to outsource the personnel have failed for lack of sufficient funds. The efforts to secure conditional grants from the government like other sectors do, to recruit at least one forest supervisor and one forest ranger for each district failed.

Even then, FSSD has a duty to build the capacity of the DFS. More importantly, the Department has never executed its oversight duties on the performance of the DFS in Kibaale District which it has failed to facilitate. In fact Adata notes that *“many DFOs do not provide performance reports to FSSD and instead they produce mandatory quarterly reports to the Chief Administrative Officer and District Council...”* The problem therefore is not limited to Kibaale District alone. Kyamuhundeire (Pers. Comm. Nov. 2009) the Ag DFO confirms that FSSD *“does not meet or monitor us ... they are always at the centre and do not know what we do. They are supposed to give us timber movement permits, forest produce declaration forms, and pitsawing licenses. For 2 years now, we submit the list of pitsawyers but we do not hear from them, and we have decided to let pitsawyers operate on the basis of the receipts we give them.”* This has granted too much discretionary powers to the DFO and limited the avenues for answerability and transparency.

Due to weak capacity, the DFO employs a forest ranger per County, although some of them were found to work in capacities of volunteers. According to Kyamuhundire (Pers. Comm. Nov. 2010) *“given sufficient resources, each County could be served by at least 3 forest rangers and 3 forest guards.”* As already noted, the problem is partly attributed to lack of support from the center (FSSD) or NFA as per the NFP 2002. Inadequate managerial capacity has frustrated law enforcement and created room for illicit activities. Meanwhile with limited alternative sources of local revenues, Kibaale District Local Government has put pressure to the DFS, and reduced its activities to revenue collection from logging licenses, charcoal production and timber movement permits.

7.3.2.3. Capacity and Law Enforcement: National Forest Authority

a) Financial Capacity: From the start, NFA was dependant on donor support and funding from the national government. Based on NFTP 2003, NFA was to attain financial sustainability in its fourth year of operation - June 2008 (OAGU, 2010). By 2004/5, good organizational capacity and integrity, strong legal and policy environment resulted in effective performance with high revenue collections from timber sales and other sources, opening of forest boundaries, and

recovery of encroached areas, etc. Since 2006, political interference and corruption intensified, and NFA steadily registered revenue shortfalls over the subsequent years. The increase in the tendencies of corruption forced donors to withdraw financial support to NFA. About \$2.4Mn of donor funds for Farm Income Enhancement and Forest Conservation Project (FIEFCP) was frozen pending the outcome of investigations into its contractual irregularities.

By far, external revenues come from donor funds through projects; such as Sow Log Production Grant Scheme (SPGS), Environmental Management Capacity Building Project II (EMCBP II), Reducing Emissions from Deforestation and Forest Degradation Plus (REDD+), etc and government subvention (The World Bank, 2012a) but none of the projects was in Kibaale District. Donor support has reduced from UGX 6.6 billion to 2.9 billion. Moreover timber stocks to generate revenues are exhausted, with only 1,000 ha of mature and semi-mature timber in NFA's plantations nationwide. The age distribution of the plantation stock means there will be low revenues for NFA for at least another decade (ibid). On her website, NFA confirms lack of financial sustainability with limited revenues to facilitate all its activities and secure funding to assist small scale tree farmers. Although Kagadi Sector collects funds through fines from forest offenders, they are wired to the centre. As a result, there are no imprest funds available for forest law enforcement and rehabilitation of the degraded forest areas.

b) Managerial Capacity: Forest law enforcement is personnel intensive which is lacking. As a result, forest crime goes undetected or punished. It was noted that 5 forest supervisors were employed in 2009, but only 3 were available by 2010. Therefore, some CFRs such as Ruzaire, Kijuna, Nyabiku and Kangombe were unsupervised. In addition, the number of patrolmen was below capacity. All 16 natural CFRs were manned by only five unarmed patrolmen. Ssemwalo who guarded 5 CFRs in two Sub-Counties of Kiryanga and Kyebando noted that was difficult to patrol all CFRs with maximum efficiency. Besides, the patrolmen are not decently paid. Kakeeto (Pers. Comm. Oct. 2010) notes he submitted *“a requisition for 20 forest guards and the increment of their remuneration in the last financial year, but only 5 were approved for reemployment and their remuneration remained at Ugx 60,000/ (about €16) monthly...In fact the total number of forest guards was reduced from the 13 we had the previous financial year”*. The resultant low morale has patrolmen had compromised some to overlook illegal activities.

c) Logistical Capacity: Despite the low motivation among the forestry staff, Kagadi Sector lacks office space and equipment such as computers and furniture. Reports and budgets were prepared from secretarial bureaus at the private costs of the sector manager. While a handheld Geographical Positioning System (GPS) is used to located forest boundaries, there is generally no access to GIS and Remote Sensing technologies. The National Biomass Study (BS) Project processes data on the biomass resource, but the information is not disseminated to the district level. Consequently, forest managers estimate the extent of forest encroachment on the basis of

sheer guess work (see Annex 1). In forest monitoring, one field vehicle available was shared with Masindi District. In fact during the 3 months of data collection, the vehicle was used for only one day, where less than ¼ of Kangombe CFR was patrolled. Otherwise the sector had 4 operational motorcycles facilitated with 30-36 litres of fuel monthly that “*would last for 1½ weeks*” (Kakeeto Pers. Comm. 2010).

During one of the forest patrol, about 12 illegal pitsawyers arrested; equipments (hand-saws, axes, and pangas) and over 3000 pieces of timber impounded. With one vehicle, the transportation of the impounded timber, equipments, forest offenders, and patrol staff was difficult; leading to the deliberate destruction of timber. Normally, patrols were carried out with two motorcycles, two policemen, and at least 1 patrolman, leaving culprits to get away scot-free (Kaketo, Pers. Comm, 2010).

7.3.2.4. Institutional Effectiveness and Efficiency

The study observed that FSSD has been fairly ineffective in Kibaale District. As a result the DFS has never commenced the process of guiding Private Forest Owners in sustainable forestry. It has instead focused on sporadic forest patrols and revenue collection. The records of DFS seen by the researcher do not capture the timber by *spp.* to guard against extinctions. On the other hand, the DFS started to distribute free tree seedlings to land users, but supply is still very low. The case of inefficiency in forest law enforcement can be attributed to the fact that forest guards are few and unarmed. They are often overwhelmed by forest offenders and as such, their operations shifted from spot arrests to detection and reporting strategy.

Forest law is selectively enforced. It is aimed at curbing illegal logging and cannot halt the illegal expansion of agriculture and settlement, especially due to the standing executive order since 2006. Besides, law enforcement rarely brings the real perpetrators of illegal logging to book. It the poor immigrants employed by the “big men” that suffer the impact of law enforcement.

7.3.2.5. Unclear Forest Boundaries

Almost all CFRs in the district are surveyed, but their boundaries are not clearly defined. It was found that forest boundary re-opening by slashing ceased when the Forest Department was replaced with NFA. NFA has set boundary demarcation standards such as mounds, trenches, live markers and corner cairns to preserve forest reserves (OAGU, 2010), but they have not been implemented. Adjoining communities used lack of clear boundaries as an excuse to encroach on the forests. In some areas such as on Nyakarongo FR, boundary positions were altered with involvement of some forest patrolmen who are encroachers themselves (Katongore, Pers. Comm. 2011). Katongore however reveals that some forest boundaries were routinely inaccurately defined by the forestry staff, where and two or three distinct and far apart boundary lines were identified on different occasions. This exposed adjacent communities to land tenure insecurity,

which triggered hostility, undermined local participation in forest law enforcement, and forest clearance to deliberately assert their land ownership rights

7.3.2.6. Civil Instability and Lawlessness

The 1971-1979 Idi Amin's turbulent regime is a widely recorded era of political instability (Vogt *et al.*, 2006, NFA, n.d, Kamugisha-Ruhombe, 2009) that led to lawlessness. Forest patrols were reduced and at far apart intervals while encroachers entered the forest hinterland and some corrupt staff in forestry connived with land administrators and sold land on Forest Reserves (NFA, n.d). However it was the post 1986 civil wars and especially the Allied Democratic Forces rebellion in 1999-2006 that impacted on the CFRs in Kibaale District. In the focus group interview with some communities occupying Guramwa CFR, they noted that "*we were instructed by the President when he visited this area at the peak of the insurgency in 2002 to occupy the forest to deny rebels sanctuary*" (FGI in Rutooma, Oct. 15th 2010).

7.3.2.7. Tendencies of Corruption

Quantifying corruption is a big challenge. In agreement, Tanzi (1998:56, as cited by Callister, 1999) argues that "*if corruption could be measured, it could probably be eliminated.*" Corruption at the local level was analysed from the respondents' point of view. However, measuring corruption was still difficult for two reasons. Firstly, identifying bribery in logging and timber supply chain is complex. Dealers in illegal logging are mostly big business men operating from Kampala through local agents, using cheap labour imported mainly from S. Western Uganda. Secondly, bribery is covertly conducted, and agents do not reveal the extent of the problem from which they eke out a living. While data on illegal timber is poor, volumes of illegal timber are certainly higher than legal timber. The forms of infractions reported include double standards, illegal pitsawing on unauthorised areas (CFRs), rubber-stamping, fraud, and use of outlawed power saws.

a) Double Standards/Conflict of Interest

The involvement of civil servants in timber business is a serious cause of concern. Some of the staff members of the DFS were directly involved in logging and trade, which they are mandated to regulate. This created the tendencies of self-dealing and the resultant loss of local government revenue through non-payment of royalties. Ideally, illegal logging on forest reserves involves some senior government officials empowered to enforce law and order. For instance, a chainsaw belonging to the District Police Commander (DPC) was impounded. This adversely affected forest law enforcement and monitoring because the police involvement was temporarily halted. Some senior government officials at the district level including some corrupt staff of forestry bodies were directly involved in timber business (logging and trade). The survey respondents privy to the issue noted that forestry officials are some of the biggest timber dealers in the area.

Local farmers adjoining public forests confirmed that illicit activities on forest reserves were sanctioned by corrupt elements in forestry agencies (FGI in Bujogoro A, and B, Kabale cells, Sept. 2010).

b) Inadequate Transparency and Weak Mechanisms of Accountability

On the one hand, the study found that there is a degree of transparency especially with some local government departments, regarding access to information. This is however an exception than a rule. Moreover, access to information increases transparency depending on the genuinness of the information revealed. Transparency was reported to be absent in staff recruitment, timber clearance, issuance of Forest Produce Movement Permits, etc. Some respondents emphasised that the District Forest Officer was an instructive example of corruption. To one respondent in Kagadi *“while many jobless degree holders in forestry languish on the street, a senior four certificate holder is the DFO here... actually who ever questions his academic qualifications, the DFO swiftly bribes him with millions and now everybody is silent.”* Other key informants confirmed the substance of the patronised methods of staff recruitment and pointed out extravagant lifestyles of some forestry officials well beyond their official remuneration thresholds.

With limited involvement of the FSSD in forestry programs, the DFO has assumed more discretionary powers to bypass the procedures of licensing pitsawyers. The DFO submits compulsory monthly reports to the District Council and the CAO, but this insufficient without the direct involvement of FSSD. The system of internal auditing does not involve field evaluation of institution’s performance. The symbiotic relationship between the Council and the DFS also handicaps the system of checks and balances. The councillors approve the funding for DFS, but they *“divert forest revenues ordinarily ploughed back to the S/Counties by the DFO for reinvestment in forestry as their allowances”* (Kyamuhundire, Pers. Comm. Nov. 2010) with impunity.

The decision by the DFO to print Forest Produce Movement Permits (Annex 4) due to lack of services from the FSSD is illegal and undermines accountability and transparency. Already, nocturnal clearance of timber was reported to be a serious challenge to the integrity of the DFS. According to a key informant in Kakumiro, *“...the sound of hammers clearing timber can be heard as late as 4:00 am in the night”*. Poor information sharing between DFS with NFA to cause the arrest, persecution, or revoking the licenses of offenders has created suspicion of collusion, rubberstamping, bribery and cronyism. After all, *“private forests have been severely depleted of many valuable timber species, but such timber spp. known to be left on CFRs are officially cleared by the DFS without question”* (Masaba, Pers. Comm. 2011). This reduced compliance to the law, as many locals learn that they too can evade the risks of forest crimes.

c) Fraud: Duplication of Timber Licenses

Fraud was on a soaring increase, but like in the land sector, fraud in forestry was uneasy to quantify. Unlike other forms of governance shortfalls, fraud occurrence did not necessarily involve forestry officials. According to the NFA staff, the main form of fraud entailed the “duplication of timber harvesting licenses” where several pitsawyers operate with one license. This trims the local government revenues through license fees. Kakeeto (Pers. Comm. Sep. 2010) avers that such cases are difficult to follow and penalize the culprits whose political networks protect them from the consequences for forest crimes.

7.3.3. Land Sector Specific Governance Conditions:

While the formal land administration system is under-resourced, fraught with corruption and performs below expected standards (RoU, 2011), customary institutions are either dysfunctional or non-existent. The customary system was subordinated to the formal system which is also thin on the ground. In fact the 2nd annual progress report on the implementation of African Peer Review Mechanism (APRM) plan pushes for the overhaul of the land administration machinery at all levels in the country¹⁵.

7.3.3.1. Fraud and Forgery in Land Registration

Land registration services for Kibaale District are still centralized to the MLHUD due to capacity gaps. The registry is responsible for registering land, issuing title deeds, and maintaining records of land transactions. The department is fraught with low transparency with high tendencies of corruption, with increasing cases of land title fraud. Major governance issues in the land registry are; land title forgeries, unauthorized land transfers, lifting of caveats, bribery and extortion. In fact the ministry seized about 8 forged land titles in 2007, 63 in 2009, and 55 in 2010 from the public (MLHUD, 2010a), but about 8000 fake title deeds were in circulation in Kampala city alone by 2006¹⁶. In fact, the department of land registration received the highest complaints (44%) in 2010, where acts of forgeries accounted for 35% of the complaints (Table 32).

The East African Bribery Index 2011 shows that 90% of the corruption cases in Uganda go unreported. The problem is perhaps worse than shown in Table 32. Major forms of forgery include signatures of registered proprietors and land management institutions, letters of administration, court orders, release of mortgages, false affidavits even by advocates, advocates witnessing signatures of deceased proprietors and forged extensions (MLHUD, 2010a). The office of titles observed that fraudsters had penetrated the system and tampered with the original

¹⁵ The NewVision 13th Jan. 2011: Overhaul Land Administration, Experts tell Government.

¹⁶ The Daily Monitor, May 20th 2006: Kampala has over 8000 fake land titles

certificate of title and the system was often abused through certified photocopies (MLHUD, 2010a). The study observed that some farmers in the district that attempted to process title deeds actually ended in a more complex state of insecurity than that which they had sought to solve.

Table 32: Complaints Received by the MLHUD

Completed Reported	Percentage (%)
Reporting acts of fraud and forgeries	35
Reporting delayed registration of transactions, missing white pages, unavailability of land forms, and unauthorized removal of caveats	33
Reporting rudeness of Ministry staff and soliciting of unofficial fees	10
Reporting untraceable brokers and land agents	9
Reporting lack of assistance due to expired district land boards	8
Others (misleading procedures, succession issues, lack of Police intervention etc.)	5

Source: Office of the Spokesperson, MLHUD, (2010a)

To overcome this problem, the ministry partnered with Uganda police to establish a Land Fraud Unit to fight fraud (MLHUD, 2010c) but the Bribery Index Report 2011 ranks Uganda police No. 1 in bribery of all East African institutions.

7.3.3.2. Impersonation and Forgery of Court Documentation

Cases of impersonation are high against the estates of persons in the diaspora and estates of the absentee landlords. Fraud stars apply for a special certificate of title and conduct multiple transfers to “beat the principle of bona fide third party value” (MLHUD, 2010a). Impersonation further includes forging letters of administration, using the right procedure by impostors. Here, letters of administration have been granted to the estates of the people who are still alive. However, some cases involve forging certified copies of the letters of administration. These documents are processed with the help of unscrupulous advocates and end up with financial institutions (MLHUD, 2010a). With over 700 Mailo land titles never been picked from Fort Portal regional offices, and the sorry state of land information (see Chapter 5), cases of impersonation and fraud may be hard to detect.

7.3.3.3. Administrative Corruption

According to the East African Bribery Index 2011 of the Transparency International (TI), the ministry of lands ranks the 6th most corrupt institution out of 30 institutions in Uganda. The ministry slipped from No.11 in 2010 to Number 1 in bribery, and the average size of the bribes paid at the institution increased tenfold from Ushs 133,055.56 in year 2010, to 1,375,833.3 in 2011 (TI, 2011a). Opening of the Land Policy Conference 2010, President Yoweri Museveni hinted on the collapse of the land administration system by corruption, unethical practices, false

titles and complaints in the land registry¹⁷. The situation clearly puts many people in Kibaale, among other districts, seeking to register their land rights in a dilemma.

7.3.3.4. Poor Participation in Decision-Making Processes

a. Participation in Gazetting Forest Reserves and Land Fund Initiative

Uganda's decentralization process should have streamlined subsidiarity, responsiveness, and popular participation in decision making processes. However, local citizens lack sufficient knowledge and organization, and practice has also shown that local decisions are never implemented, because the local people are easily hoodwinked by unscrupulous political elites that capture the planning and budgeting processes (Kiyaga-Nsubuga and Olum, 2009). For some indigenous Banyoro, Forest Reserves were a creation of the colonialists in total disregard of pre-existing land tenure regimes, and without consulting the governing traditional institutions. Bunyoro-Kitara Kingdom, particularly views CFRs as the resources they painfully preserved for generations but are being carelessly managed by the central government alone (Hon. Kiiza Yabezi Pers. Comm. 11/11/2009). The Land Fund project has been another cause of concern with the limited involvement of area leaders, the civil society, and decentralised land agencies. The criterion to involve local stakeholders is likely to be hard, but it does not excuse the government's failure to buy land title certificate from absentee landlords. The forestry sector too has failed to incite community participation in forest law enforcement. Adjacent communities overlook forest abuse and potential collaborators fear for lack of state guarantee of protection.

b. Poor Participation in Population Resettlement Processes

For some time now, the celebrated view on Kagadi Resettlement Scheme has been that it was negotiated between the Secretary of Kigezi Late Paul Ngorogoza, the King of Bunyoro-Kitara Kingdom and the central government (Schelnberger, 2008:197, Nsamba-Ngayiyya, 2003:7) in 1968. This has been utterly rejected by Eng. Kiiza Yabezi (Pers. Comm. 11/11/2009) the Kingdom's Prime Minister. He argues that "*Kingdoms in Uganda were abolished by President Milton Obote in 1967 before the said settlement was allegedly made. Therefore, there was no King, and Sir Tito Winyi, the would be King at the time - was not even living in the Palace to legitimately represent the Kingdom's interests. We do not find any written evidence to that effect, and we reject the claim as a Kingdom*".

Furthermore, about 75% of Bugangaizi Resettlement Scheme is located on private mailo land, yet the real land owners were never consulted prior and during to the resettlement process. So far, only one of the land owners has been compensated after dragging the Attorney General to court.

¹⁷ New Vision: Wednesday, May 26, 2010

The resettlement process excluded LC officials from the allocation of plots and making important decisions (Nsamba-Ngayiyya, 2003) Once the Resettlement Committee under the central government appointed Rehabilitation Officer became impotent, it was variantly inherited by immigrants settlers who promptly assumed LC positions (ibid) and started a rare spectacle of corrupt and illegal land allocation processes, which continue in some parts of the district to date.

7.3.3.5. Institutional Capture

In 2004, the government privatized land surveying, and the government Surveyors' Registration Board (SRB) was charged with professional registration of Surveyors (USAID, n.d). The Board has been routinely reported to deny qualified surveyors of the registration opportunity using stringent conditions. Moreover, some SRB members either own or are private parishioners in registered firms and in fear of competition, they threaten to deregister companies or individuals acting as referees to new applicants. Based on the petition of over 200 unregistered surveyors to parliament in 2009, conflict of interests, double standards, and an ambiguous Registration of Surveyors Act¹⁸ have effectively left the surveying industry in the hands of the few members of a minority group.

Available data shows that Uganda had over 450 qualified surveyors but only 27 land surveyors were registered in 2008 (Bakama, 2009 cited by USAID, n.d) and 31 by 2009¹⁹. Of about 650 graduate surveyors produced by Makerere University since 1994 (The Observer, Aug. 12th 2009), only 12 were registered by 2009²⁰. Only 71 out of 81 districts lacked registered surveyors by 2009. Besides, of the 37 land surveyors today, 28 are based in Kampala, 3 in Entebbe, and 1 each in the districts of Kabale, Lira, Masindi, Kabarole, and Mukono²¹. The real challenge is that lack of competition has kept the costs of cadastral surveying beyond the reach of the poor.

7.3.3.6. Cadastral Surveying and Abuse of Technological Advancement

The study found that when some middle and high income earners commence the process of registering their land, many connive with private surveyors to enclose their neighbouring customary land. Moreover many registered surveyors do not go for the field work and much of their tasks are done by unregistered, inexperienced surveyors whose work is normally approved without field inspections (Kaije, Pers. comm. Oct. 2010). Private surveyors are no longer closely supervised after the surveying industry was privatised (GoU, 2006:160) and the real challenge is

¹⁸ The Newvision Aug. 13th 2009: Registration Board Frustrating Surveyors

¹⁹ The NewVision, Feb 10th 2009: Unregistered Surveyors Petition Parliament, Kampla

²⁰ The Newvision Aug. 13th 2009

²¹ The NewVision Aug. 8th 2009: Register Surveying Diploma holders

that some corrupt elements connive with surveyors, who without the approval of the district surveyor, deprive the poor of their property (Asiimwe, Pers. Comm. 2010).

With advances in technology, surveyors have shifted from the old methods of using theodolites with light beam to the handheld GPS. During field surveys, locals think they are holding mobile phones while they are stealing or facilitating the theft of other people's land (Kitaka, Pers. Comm. Aug. 2011). Subsequently, surveyors adjust the handheld GPS measurements on the computer into Total Station measurement units to dupe the Department of Surveys and Mapping with high accuracy. The key challenge is that the department checks accuracy of measurements and not the authenticity of the results (Musinguzi M., Pers. Comm. 2011, Kitaka, Pers. Comm. Aug. 2011, Asiimwe, Pers. Comm. Oct. 2010). This problem can only be discovered if the neighbours too, begin to process land titling (Asiimwe Pers. Comm. Oct. 2010) if resources allow, or the culprits (registered persons) attempt to sell-off the land.

7.3.3.7. Institutional Capacity in the Land Sector

The land sector's managerial capacity is undermined by many factors chief of which is the budget ceilings as determined by MFPED. According to MFPED (n.d) the total number of approved establishments is 392, but the total number of filled posts is 213. A total of 179.6 vacancies were cleared by MPS for filling in FY 2010/11, leaving 199 posts to be filled in 2011/12. Filling the vacant posts requires additional costs, as the budget ceiling does not cater for the ministry establishment. For instance, for FY 2010/11, the total wage requirement would be 2.757bn for the ministry structure, meaning that an extra 0.624bn would be required above the wage ceiling of 2.133 if all the posts are filled (ibid). In Kibaale District, the land management unit was understaffed and the positions of land management officer, land valuer and registrar of titles were vacant as at the time of the study. The search of qualified personnel, especially diploma holders for the DLB with knowledge on land matters had often failed (Balikuddembe, Pers. Comm. 2010).

7.3.3.8. Inefficient Decentralized Land Institutions

By 2010, Obbo the Spokesperson for MLHUD (Pers. Comm., Oct. 2009), revealed that Kibaale District delayed to appoint a new DLB. The ministry halted the DLB from issuing land titles, extending leases or carrying out new leases on land. But a key respondent at the district cautioned that *“even if the Board has been stopped from operating, do not be surprised to find the Secretary covertly overseeing land transactions around.”* Obbo also noted that most of the DLB and Land Committees staff lack requisite qualifications and are not trainable. Yet Asiimwe (Pers. Comm, 2010) the Secretary DLB attributes the Board's failures to Land Committees that are *“constituted of ill facilitated, less educated, unmotivated and thus easily compromised staff.”* Even then, the DLB is not free of blame. The performance review by KDLG (2010) confirms that the DLB was

not operational at the time (see Table 33). The Land Office was not fully functional and depends on the regional land office in Fort Portal in the neighbouring Kabarole District. Area Land Committees which seat at the sub-county are supposed to inspect and ascertain the rights in the registration process, but they are ill-facilitated with no means of transportation to ease their mobility. They often end up recommending land for registration without visiting the affected places to ascertain what is on the ground (GoU, 2006).

Table 33: Performance Review (as at 8th February 2010)

No.	Planned outputs	Planned Target 2009/10	Actual Outputs 2009/10	Remarks
01	Board meetings held	06	Nil	No substantive board
02	Sensitisation workshops held	06	02	Inadequate funds
03	Reports submitted	03	01	-
04	Verification visits conducted	08	Nil	No board in place

Source: KDLG (2010)

Besides, the DLB is incapacitated without the resources for verification visits. Where staff members of the DLB or ALC are transported by the applicant, they are vulnerable to compromise. The process for registering Private Forest Owners by the DLB as provided for by the Forest Act has never commenced, and is likely to be difficult in the present conditions. The overarching challenge is that “*unregistered private forests do not have a clear conservation status*” (Animate, Pers. Sep. Comm, 2010).

7.3.3.9. The Capacity of Uganda Land Commission (ULC)

Despite the huge amount of money required for the ULC’s work, very small funding is availed by the government. Besides, the budget ceiling of Ushs 4.176bn put on the Commission by the MFPED shows that the government takes land issues lightly. The Land Act Implementation Study estimated that full implementation of the Land Fund required Ushs 700bn (Nsamba-Ngayiyya, 2003). Officials of the Commission revealed to the inhabitants of Kibaale District, that the Commission has only an annual budget of 3bn yet it requires at least 300bn to handle land compensations. In fact, the Commission requires about Ushs 1.7 trillion to sort out the district of Kibaale, some areas of Isingiro, Buganda, and Kasese (Daily Monitor, April 5th 2012).

The ULC’s lack of adequate funds has rendered it very ineffective. While the actual number of absentee landlords compensated is not clear so far, the government established Commission of Inquiry reveals that of the 3, 636 absentee landlords in Kibaale District, only 360 have been compensated by the government since the operationalisation of the Land Fund in 2003. In contrast, only 181 landlords have been compensated since 1998 when the Fund was established (ibid). Despite the lack of real statistical data, more work is yet to be done. Besides, the Fund was

also meant to cover encroachers on CFRs and other fragile environments whose actual number is not well established.

7.3.3.10. Illegal Allocation of Forest Land and Financial Extortion

For matters of accountability, the DLB submits quarterly reports, minutes of numerous meetings, and annual reports to the District Council, as well as weekly reports to the Chief Administrative Officer (CAO) (Asiimwe, Pers. comm. 2010). This horizontal accountability system however leaves a lot to be desired. For instance, the Inspectorate of Government arrested Asiimwe the Secretary DLB Kibaale District and prosecuted him in court under reference number TS.82.2010 for abuse of office, corruption, and false claim (IG, 2010a). However by October 2010 at the time of interview, Asiimwe had in addition to his duties, been promoted to the Acting deputy CAO. It is little wonder that the IG (2010a) lists *inter alia*, lack of institutional support, among the main challenges in the fight against corruption.

In addition, the Land Act 1998 provides that the DLB shall be independent of the Uganda Land Commission and shall not be subject to the direction or control of any person or authority in its operations. This gives the DLB a lot of discretionary powers and undermines avenues of accountability. Meanwhile, the DLB is in limelight for illegally allocating large swathes of land on Kangombe CFR to encroachers (see Annexure 5, 6). The letters of land offer from the Secretary DLB are used like the legal documentary proof of land ownership claims on public forests today (Katongole, Pers. Comm., 2011). As a result, encroachers in Bujogoro Cell, Nyamarunda Parish have organized themselves into “Bujogoro Free Land Beneficiaries” (Masaba Pers. Comm. 2011) to protect their land rights in Central Forest Reserves.

On a flip-side, cases of financial extortion from legitimate land occupants with a promise of land titles by the Land Committees abound in Nyaisamba LC1, Kiryanga S/C. It was noted that each farmer paid UGX 30,000 to be granted land titles yet later their land was demarcated and reallocated to the indigenous Banyoro under the watchful eye of the District Land Board. People were unhappy with the government’s failure to clamp down on corrupt officials that “still occupy offices.” (Focus Group Interview, Nyaisamba LC1, 12th Oct. 2010). In addition, the Land Board has sanctioned the demarcation of immigrants’ land and reallocated it to the indigenous Banyoro in areas of Kyaterekera, Mpefu Sub County, Kiryanga and Kenga in Kagadi (GoU, 2006: 219).

7.3.3.11. Clientelism and Nepotism

There are strong nepotistic tendencies and clientelism in land institutions. An institutionally sanctioned system of land grabbing has led to deliberate forest destruction via cultivation, charcoal burning and logging to assert their rights on other people’s land. In Nalweyo and Kisiita

S/counties of Bugangaizi County, the Area Land Committee demarcates peoples' land without notice²². Hon. Mabel Bakeine MP for Bugangaizi East (Pers. Comm. Nov. 2010) reveals how Dr. Kasirivu Atwoki the Senior Presidential Advisor on Land Matters controls the decision making powers of DLB, and empowers Land Committees to do what he wants. She adds that the DLB processed land lease documents for Dr. Atwoki to claim other people's land, and made the documents retroactive to 1988. Legitimate land holders were forcefully evicted and many live under constant threats of forced eviction. In fact Ben, the LC1 official wonders how easily "*the DLB grants Letters of Land Offer on Kangombe FRs in Bujogoro, but denies them to legitimate applicants who seek to register their landholdings in Kisiita Sub-county...and yet letters are later corruptly given to false claimants seeking to lay fraudulent claims on their very land holdings*".

In his emphasis that the "*Banyoro do not know the value of land. How could they sell it cheaply to non-indigenous people?*"²³ Dr. Atwoki adversely affects the budding land markets and stirs social stability in some parts of the District. The media²⁴ confirms that the Senior Presidential advisor on matters of land leads the gang that illegally demarcates and surveys other people's land. Masambu the District Internal Security Officer Kibaale (Pers. Comm. Dec. 2010) affirms that fresh land surveys by bureaucrats on other people's land was a clear show of land grabbing through patronage and clientelism. Rather than solving long standing issues, the area born elites serving in the Ministry of Lands access vital land information only to serve selfish interests.

7.3.3.12. Regulatory Transparency: Legal Certainty and Judicial Corruption

By legal certainty, people's rights to land are protected against the unlawful acts of others and the results of legal actions are easy to forecast. Legal uncertainty in the realm of land tenure is precariously anomalous. The legal system is also not transparent to public agencies including forestry bodies. Judicial corruption was reflected in the handling of a case of NFA vs. Encroachers over Guramwa CFR. Kyamuhundire (Pers. Comm. Jul. 2011), the then Forest Ranger revealed of how the "*magistrate handling the case asked me for a bribe to write the judgment in our favour but the institution couldn't raise the funds. He approached the encroachers for the same offer, and they mobilized the money. We lost the case as the judgment was finally passed in their favour.*" A survey respondent in Rutooma Cell confirmed that "*...by the way, it doesn't matter how much money magistrates may ask for...we mobilize it in a matter*

²² The Daily Monitor 6th March 2010, Ms Tinkamalirwe Kiiza, Nalweyo area Land Committee Chairperson uses her office to assist land grabbing.

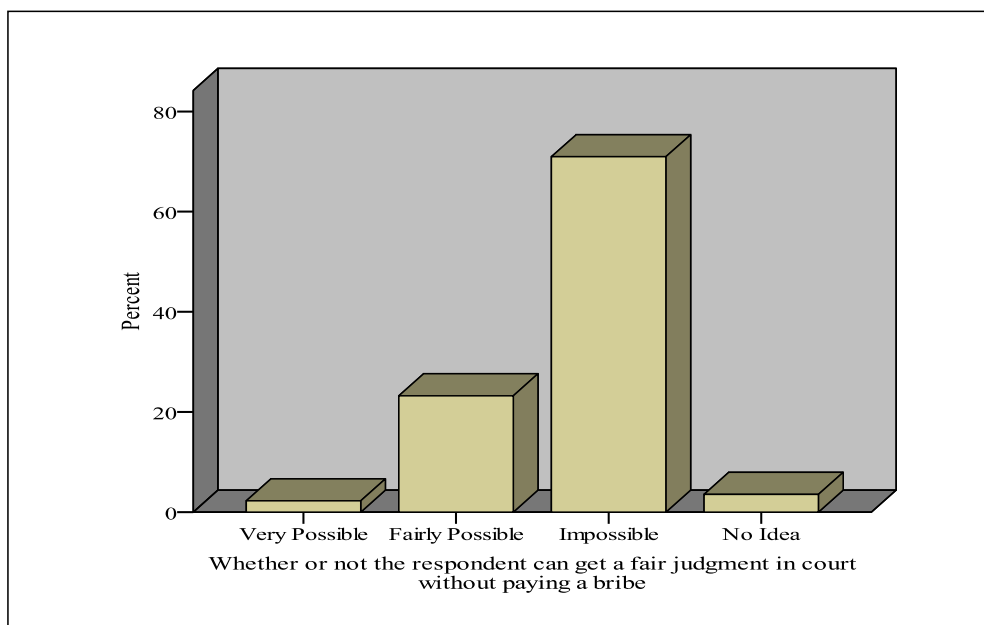
²³ The NewVision 10th Feb. 2009, at <http://www.enteruganda.com/D/8/14/671003> accessed on 26th March 2010

²⁴ Ibid, The Observer, 21/2/2010 at:

www.observer.ug/index.php?option=com_content&task=view&id=7348&Itemid=59, accessed on 20/4/2010

of seconds.” At the same time, patronage and corruption are routinely blamed for light sentences given to illegal pitsawyers arraigned in court. In Figure 33, 71% (n=222) of the respondents noted it was impossible to access fair judgment in court for the arbitration of land cases without paying a bribe. About 23% (n = 72) noted that it (maybe) is fairly possible. The latter includes those who realised that bribery was high but could by luck access fair hearing without paying unofficial charges. Some revealed that bribes are paid right from the level of LC1 upwards. Only 2% thought that they could get fair judgment without bribing while 3.5% had no idea.

Figure 33: Possibility of Fair Judgment in Land Cases without Bribes



Source: Author

Many peoples’ right to fair justice is undercut by limited knowledge of laws, disenfranchisement, and low standards of education. Besides that land users can only access the high court in Masindi District, the legal proceedings are slow and where the rich are involved, hearings can be deliberately adjourned to expose the poor to prohibitive costs of justice. Often, low income earners caught up in this web, drop-out untimely and automatically lose out. Therefore, while about 300 inhabitants in the migrant settler dominated villages of Kijwenge, Irindimula, Ijumangabo and Buhumuriro in the S/counties of Kisiita and in Nalweyo were threatened with forced evictions by government elites²⁵ only 11 farmers could afford to open the case in the High Court in the neighbouring Masindi District High Court.

²⁵ The Monitor, 6th March 2010, The Observer, 21st Feb. 2010

7.3.3.13. Weak Inter-Institutional Coordination

Forest related objectives are captured in complementary sectors such as energy, land and water (Kamugisha-Ruhombe, 2010), but coordination is relatively weak in practice. By custodianship CFRs are under the Uganda Land Commission and managed by NFA but there is no synergy between the two agencies. At the local level, there are no operational linkages between NFA, DFO and DLB. In fact Kakeeto (Pers. Comm. 2010) notes that in illegal allocation of Kiangombe CFR land by the DLB, “*the Board began processing land titles in the FR without even consulting the Land Office – its technical unit - and the cartographer later revealed that the DLB used a general purpose map instead of the cadastral map*”. The level coordination between FSSD, NFA and DFS is inadequate to permit effective policy implementation. During the study for instance, the DFO underrated the extent of illegal pitsawing as “*a minor issue*”, but Masaba (Pers. Comm. Oct. 2010) decried the severity of illegal logging. He added that the DFO and NFA lacked a common voice and NFA could not lead the DFS to revoke licenses of forest offenders in CFRs.

In the Land sector, Asiimwe (Pers. Comm. Oct. 2010) notes that “*the ministry does not care about the DLB; and they do not even induct us*” implying that the MLHUD has overlooked its mentorship role to the DLBs. There exist identifiable linkages between the District Environment Office with most departments in the LG (Animate, Pers. Sep. Comm. 2010) but this alone is not sufficient to counteract prevailing complex problems

7.3.3.14. Expropriation and Access to Fair Compensation

The Constitution 1995 (Article 26 (2)), and the Land Acquisition Act 1965 provide for the government’s compulsory land acquisition of private land in public interest. This addresses prompt payment of fair and adequate compensation prior to the taking of property, the rights for redress, etc. Many families were evicted from Mpokya FR in Kabarole District, of which over 1500 were officially resettled in Bugangaizi County in 1992, and others entered the district voluntarily. Court ordered the State to compensate claimants (Ushs 12 million each) after they sued for brutal eviction and lack of compensation for the lost property. Twenty years later, a few have been paid, many received less than they were entitled to, and others got nothing due to misappropriation of funds²⁶ (Daily Monitor Oct. 25th 2011) and political interference. Some of these settled in Kalangara and Rutooma Cells within Guramwa FR where land was cheap or free. Secondly, some *mailo* land owners voluntarily complied with Hon. Isoke the then minister of

²⁶ Daily Monitor Oct. 25th 2011. Mpokya Forest Evictees get paid 20 years later,. Accessed at website: <http://www.monitor.co.ug/News/National/-/688334/1261132/-/bhhi2dz/-/index.html> on 2/11/2012

state for Lands, to hand over their *mailo* land titles to the Uganda Land Commission for compensation. For over 4 years, they were never compensated nor their titles returned (GoU, 2006) and it is not clear whether their problem has been addressed today.

7.4. Economic and Demographic Factors

7.4.1. Demographic Factor in Deforestation Patterns

It is true that population increase has put immense pressure on tropical forests. However, several writers have, and rightly so, dismissed this notion as historically false and conceptually flawed (see Robbins, 2004). Available information shows that Kibaale District has an abnormal population growth rate, which the 2002 Population and Housing Census put at 5.2% per annum – which is above the national population growth rate of 3.3% per annum. Between 1969 and Sep. 2002, the population increased nearly five times from 83,683 in 1969 to 405,882 in 2002 (KDLG, 2010). Over a 12 year period (Jan.1991- Sep.2002) the district population almost doubled; from 220,261 in 1991 to 402,882 in 2002 (KGLG, 2010). The rapid population growth rate is however artificial due to the unmonitored influx of immigrants. Therefore, behind spontaneous occupation of forests are several governance related factors. It is also abundantly clear that institutions responsible for forest management and conservation are condemned to powerlessness by the executive order halting the eviction of encroachers on CFRs since 2006 (see Annex 2). Hence, quasi open access conditions, and not population pressure, have attracted mass movement into forests, both private and public, by encroachers with impunity.

In addition, population resettlement schemes such as that in Bugangaizi were not preceded with rigorous planning, and there is no comprehensive population resettlement policy in place. Arguing in favour of overpopulation however insinuates that the carrying capacity of the district has been overstretched (albeit with undefined human population size the district can support), which further faults those in decision making positions of failure to regulate artificial population growth and inadequate planning.

7.4.2. The Economic Factor

7.4.2.1. Expansion of Markets

Based on Von Thünen's (1783-1850) model, land is allocated to the use with the highest land rent. Against this notion, deforestation is inevitable if the value of the alternative land use type is higher than the value of keeping trees. Admittedly, land-use in Kibaale District responds to the emerging domestic and regional markets for woodfuel, timber, and agricultural products (e.g. the rise of East African federation and South Sudan markets). In fact the demand for tobacco has rapidly expanded, marked with the increasing presence of tobacco companies including Continental Tobacco Uganda, Leaf Tobacco, etc. By extension, the rise in demand for biomass energy from urban centres has pushed charcoal burning and trade to unsustainable levels.

In Kampala city (the market to which most of charcoal dealers in Kibaale supplied) a lone, charcoal consumption is estimated at 205, 852 tonnes per year with a 6% rate of annual increase, and countrywide, charcoal consumption is estimated at 723,014 tonnes annually (The NewVision, Sep. 10th 2011). Apart from external markets, the study observed that domestic demand for charcoal was growing in tandem with the spontaneous growth of rural trading centres observed in almost every parish. But like forest colonisation, charcoal burning is carried out by the impoverished seeking to derive a livelihood from land in response to the demand from the middle income earners. Besides, heavy reliance on biomass energy is primarily a result of lack of access to affordable alternative sources of energy.

7.4.2.2. Economic Inequalities and Marginalisation

That the landless or otherwise termed as the poor are devastating forests is undisputable, but poverty and deforestation must be linked with precaution. Available data shows that Uganda's economy has boasted of 6-7% growth over the last decade with remarkable reductions in poverty. Poverty level fell from 56% in 1992 to 24.7% in 2010 thereby making the country the regional leader in linking economic growth to poverty reduction (NEMA, 2010:1). If poverty causes deforestation, then the trends and patterns of forest-cover change should reflect an expansion in the extent of forest-cover with economic growth. If poverty is genuinely responsible for forest loss therefore, it is the kind of poverty underpinned by inequality and non-transparent systems that have rendered the masses landless and insecure. Moreover the level of inequality is such that the wealthiest 20% (quantile) of the population holds 49% of total income while the poorest holds only 6% (quantile) (PRB, 2011, cited by NEMA, 2010). This study argues further that the growth of economic opportunities or constraints cannot excuse the incidence of illicit human activities such as illegal logging, corruption, and land grabbing. Besides, while exorbitant prices for charcoal are strongly related to the economic dynamics including inflationary pressures, focus must be put on wider policy failures that underlie lack of efficient alternative sources of energy.

7.5. Conclusion

The ultimate causes of land use and forest-cover change are numerous, highly interactive and therefore, very complex. It is difficult to exhaust these interactions that ultimately underpin immediate drivers of forest destruction. But despite this complexity, the answer to the question of how, where, and why forest-cover change takes place must be answered by the realities of who owns what, where, and how much and why? In the ambit of land governance, the study observes that land use change is not a mere artefact of population growth, or simply a result of economic forces but underlying forces that provide the explanation to the observable proximate processes. Empirical findings reveal that illicit human activities taking place in Kibaale District are merely symptoms of a weak system of governance.

8. Conclusions and Recommendations

8.1. Conclusions

8.1.1. From Theory to Practice

The analysis of land use change is about assessing the relationship between people and land. The study chose a theoretical path against a backdrop that human behaviour in land use and forest-cover change is closely-knit with land governance systems. Theorising land use change at higher levels of governance is more abstract, and getting from theory to the real world is not always simple and straightforward (Briassoulis, 2000). The supportive use of the Systems Theory shows that land management is about the interdependent components of the human-environment systems. The systems theory focuses on the wholes rather than the sum of their components (Von Bertalanffy, 1968). The systems sub-optimization principle however emphasizes that the survival or failure of the “whole” systems derives from the interaction of subsystems and their contribution to the ultimate goal of the entire system; whereby if each system regarded separately is made to function with maximum efficiency, the system as a whole will not operate with utmost efficiency (Skyttner, 2005:100). Hence, the polarised view of land governance along the sectoral lines of forestry, land tenure and administration, water, environment, etc, should be oriented to the ultimate goal of the “whole” sustainable land management. The hierarchy theory (that subsystems are nested within systems (Leitao and Ahern, 2002)) particularly lends credence to the multi-layered land governance structure by which the study of land-use and forest-cover change in Kibaale District extends to the national level.

Sustainable land management is thus a phenomenon of functional synergy with complex relationships and changes. Despite the difficulty to measure the synergy, what matters is that sustainability is about things working together, about integration rather than separation and about synergy being a secret of that (Jurgens, 1994). The real challenge, as a participant at the all 9 Division IUFRO Conference in Sarajevo on 11th May 2012 noted, “Everyone wants integration but nobody wants to be integrated”. As people we have mastered the tendency to deal with separateness and states (de Waard, 1994). Yet, tackling human impact on ecosystems on the traditional basis of sector by sector approaches has led to fragmented actions and institutions and thus; natural and social linkages have been ignored, compromised or insufficiently strengthened (Viswanathan *et al.*, 2005).

To solve this syndrome, land-use planning is a rule. Yet, land use planning as an activity for finding technically sound, ecologically sound, economically sound and socially accepted infrastructure is difficult (Jurgens, 1994). Thus, a view that good governance in land administration is a precondition for sustainable development (Magel and Flanke, 2007) has

gained particular attention. An idealized view is that good land governance enables equitable access to land with strong security of land tenure; as a precursor for environmental sustainability and rural development.

8.1.2. Specific Conclusions with Respect to the Study Area

Uganda successfully enshrined into the Constitution 1995 the provision for the protection of natural resources including forests, for the common good of all Ugandans. The government has invested in sector-wide reforms and restructured natural resources management through a decentralised system of governance to improve effectiveness and good governance. These important milestones have, among others, been overshadowed by the low prioritisation of the ENR sector for budget allocation in line with the Highly Indebted Poor Countries (HIPC) Initiative. Thus, scant resources are available for land management. In forestry, the problem has been severed by the withdrawal of the donor support to NFA citing management irregularities. These mounting problems are not eased by the FSSD, which has failed to effectively execute its mandate due to capacity problems.

The ubiquity of forest crimes in Kibaale District contrasts the legal and policy objectives concerning natural resources management. Whereas the forest sector reform process sought to overturn environmental degradation including deforestation, the study found that about 63% of the total forest-cover was lost between 1986 and 2010. The patterns of forest-cover change show that the average annual rate of deforestation was 1.8% (2,744 ha) between 1986 and 1995, which dropped to 0.9 by 2002 and then increased to about 2.3% by 2010. These trends have devastating ecological and socio-economic impact and undermine the potentials for sustainable development.

From the findings, the majority (89%) of individual decision makers at the household level are informed of the forest ecosystems functions. However, a great majority (60%) still perceive forests as fertile areas for agriculture, which poses a threat to the surviving tracts of forests. In fact while official records show that 70% of the total forest-cover is located on private land, most of it has already been depleted. To sustain forest functions, it requires that where possible, a 3-km wide buffer zone around each reserve is established and establish lower impact land uses near the reserves (Laurence *et al.*, 2012b). This can sustain relative connectivity to other protected areas, but any efforts to achieve this goal especially in Kibaale must first contend with unresolved land tenure problems.

Many agree that policy and legal frameworks are clear, but weaknesses lie in governance related to implementation (Kaggwa *et al.*, 2009). For Kibaale inhabitants, several provisions under the Land Act on the tenant-landlord relationship were void from the beginning. The rights to land as defined by the Land Act are different from the rights that people wish to, or actually hold. Land reforms have not satisfied genuine public expectations. The indigenous Banyoro reject paying

nominal ground rent to absentee landlords on the land they claim belongs to their ancestors. Besides absentee landlords cannot be traced and the land information available is incomplete or at best obsolete to assist in locating who actually owns what? where? and how much? The Land Fund has not been progressive and the legal title to land remains intact with absentee landlords. Hence, both lawful and bona fide occupants live under constant fear of eviction. The district lacks a High Court despite the prevalence of land conflicts, social tensions, and intensifying cases of land grabbing. These and many other problems are soluble, but the required solutions will come from the higher levels of governance.

The study found that forest encroachment is not simply an act of the poor. It broadly involves local and national politicians, some corrupt staff of public agencies, businessmen, among other actors. Hence, forest loss is a product of illegal activities driven by poverty and greed. Moreover, illicit activities including illegal logging, encroachment on private and public forests, are shrouded in patronage politics. Of particular note, political interference with the management of forestry sector is high in Uganda (Otieno *et al.*, 2012) and Kibaale District is an instructive example of this problem. Prosecution and punishment exist but many culprits go undetected due to the thin presence of institutions on the ground and tendencies of corruption in the responsible agencies which undermine efforts to control against forest crime.

8.1.3. Confirmation of the Hypothesis

The study argues that there is sufficient evidence to suggest that land governance is the bedrock of land-use and forest-cover change in Kibaale District. The study did not find satisfactory data to reject the hypothesis given that forest loss has resulted from land management activities, and the state of governance is the secret behind. Forest loss processes neither mirror the land users' ignorance of forest functions nor, poor knowledge of the impact of deforestation. It is not about lack of technical know-how and critical factors such as population growth, advances in technology, expansion of markets etc, do not excuse forest crime. Instead, their impact is amplified by the policy environment.

8.2. Recommendations for Sustainable Forest Management through Sound Land Governance

Since the publication of the Brundtland Report "Our Common Future" in 1980, the concept of limits to growth has gained considerable global attention. It emphasises that limits on ecosystems capacities imply that at some point, exponential growth ultimately reaches its limit. Sustainability implies the capacity of the earth to maintain and support life and to persist as a system (Jongman, 1999, cited by Leitao and Ahern, 2002). In forestry, the basic principle of sustainability means that in its basic form, forest use is adjusted to the carrying capacity of the forest (Bos and Hekhuis, 1994). The study has revealed that forest use in Kibaale District is not aligned with

sustainability due to rapid forest conversion for agriculture and excessive wood exploitation. The study sets a land governance response model to address the rate of unsustainable forest loss with adaptive land management techniques.

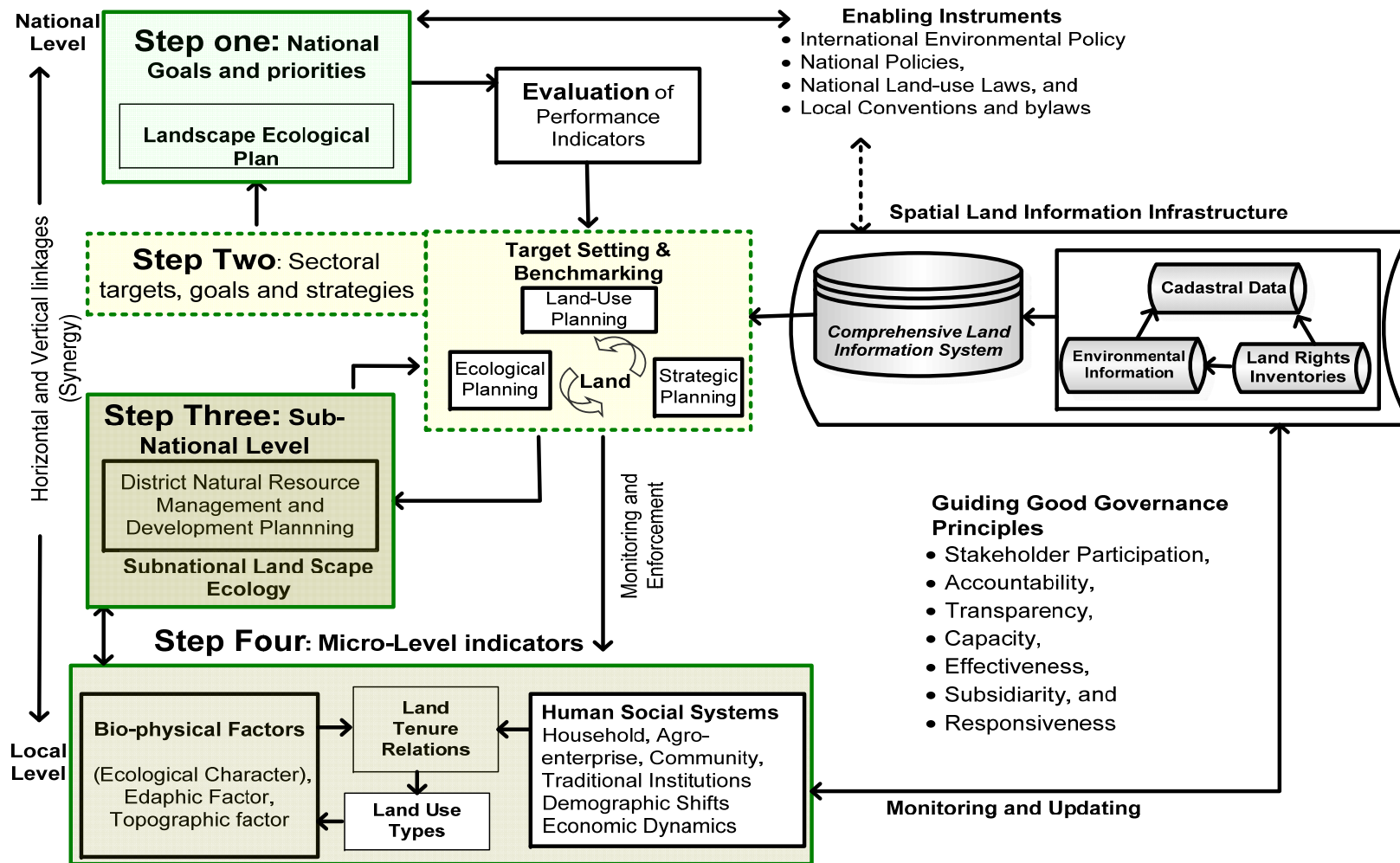
8.2.1. Implementation of Land Governance: A Suggested Framework

Enhancing land governance is a life-long learning process that can be improved to respond to problems including land tenure insecurity, rapid forest loss, etc through goals and performance indicators. Land Governance entails a heterogeneous population of actors; farmers, politicians, police, research bodies, government agencies, CSOs, pitsawyers, traditional institutions, judiciary, donors, and the private sector, among others. These have diverse interests, values, ideologies, and perceptions to land tenure, use and control. Hence, they perceive varying versions of the same problem (Laurence, *et al.*, 2012a) and operate in a hierarchical structure against norms, rules and regulations set to organise their dynamic socio-economic settings. The household level lies at the bottom of the hierarchy, where individuals' decisions to physically alter forest-cover are influenced by decisions (political, technocratic) at higher levels of governance. More so, this is typical of a natural world whose building blocks are relationships and processes where everything is related to everything else, and everything is always changing (de Waard, 1994:244). Sound governance guides the coupled human-land system to ecological, social, and economic sustainability.

Step One: National Landscape: National Goals and Priorities

This reflects the landscape ecology as envisioned at the national level. It involves the generic scale of forest-cover at which ecological sustainability can be realised and land tenure relations within the framework of enabling policies and laws. Land use regulations should be implemented against time bound and spatially defined targets. Uganda has rich eco-systems diversity but has not drawn a clear national sustainable landscape ecological plan. The Convention on Biological Diversity (CBD) had set a target for the protection of the Worlds ecological regions by 2010 (CBD Decision VII/30, target 1.1, cited by Jenkins and Joppa, 2009). This motivated many countries to review and improve their protected area networks (Jenkins and Joppa, 2009) although Uganda is yet to follow this path. However, Uganda has judiciously gazetted a Protected Area System with 506 CFRs, Local Forest Reserves, and 10 National Parks, 10 Wildlife Reserves, 6 Wildlife Sanctuaries, and 10 Community Wildlife Areas (USAID, 2006). By far, this is still an insufficient safeguard of Uganda's rich natural resource base. About 70% of the total forest-cover is known to be located outside gazetted forests on private land from where it is being severely depleted. The national vision for the landscape should be set with robust indicators to evaluate relative successes.

Figure 34: The Land Governance Response Model



Source: Author

Such a vision should be set through a goal driven integrated planning process and as a spatial collection of diverse sub-national landscapes. This will cause continuity, predictability, and sustainability of the human-land system interactions.

Step Two:

a) Sectoral Targets, Goals, and Strategies

Sustainable forestry cannot be achieved by sheer luck, but by rigorous planning with an eye for sustainability. An integrated planning process prioritises national goals and sets the critical path to achieving those objectives. In turn, national goals reconcile competing ecological and socio-economic priorities. After all, integrated planning means “the linking of vision, priorities, people, and the physical institution in a flexible system of evaluation, decision-making, and action” (SCUP Planning Institute, n.d). Its ecological perspective should answer the queries on how much forest cover by type exists? What is the minimum area coverage of forests to guarantee ecological sustainability? What incentives are needed for private forest management? etc. Hence, an up-to-date land information system is vital to empower the integrated process of spatial planning, strategic planning and ecological planning for the sustainable existence of various land-use types in a diversified landscape.

By spatial planning, a system optimises the economic use of land, orderly settlement of land, and permanent safeguarding and maintenance of the basic conditions of life (Schmid, 1994). Synergies must be created to support the land policy for sustainable land allocation and equitable distribution of land and benefits from land. Spatial and ecological planning approaches should serve to balance human use of land and environmental protection. Ecological planning specifies environmental restrictions, responsibilities, and sets incentives for sustainable land use against land use regulations. Through strategic planning, an implementation path must be modelled for affirmative action against set goals and priorities aligned with robust indicators.

For Kibaale District, planning mechanisms should endeavour to divert the public agencies’ dependency on timber revenues to revenues from tourism (thus a shift to the recreational use of natural forests) and taxes on timber from managed forests (afforestation). Planning must be done against the fact that; a) Equitable access to land with strong security of tenure is a big incentive but may not guarantee sustainable forestry, b) Economic incentives e.g. Payment for Ecosystems Services, Carbon Credits for private forest management are vital c) Environmentally adapted afforestation; e.g. substitute conifers with indigenous tree *Spp.*, agro-forestry, etc is essential, d) equitable access to off-farm opportunities, poverty reduction strategies, agricultural technologies, etc reduces pressure on natural forests. Strategic planning ensures that spatial planning firmly emphasises Environmental Impact Assessment (EIAs) processes. Moreover spatial planning possesses a control and coordination function for land-use planning, which in-turn has to

orientate itself to establish a suitable ecological land use pattern (Schmid, 1994). This will form space for technical models of sustainable forestry outlined in forest management plans.

b) Spatial Land Information Infrastructure

Integration of GIS and Remote Sensing and other technologies into decision support systems is vital for decision makers (Sayer *et al.*, 2005) and forest monitoring. Technology relates human activities to land resources. With advances in computer technology and the modern surveying technologies that generate multi-purpose cadastral systems, they support environmental conservation, social harmony, and economic development. A cadastre is a parcel based and up-to-date land information system containing a record of interests in land (e.g. rights, restrictions and responsibilities) (FIG, 1995). A Land Information System (LIS) is core to the land management infrastructure, responsible for land-use control, land tenure, land development, and land valuation. The study argues that a comprehensive LIS in Uganda will reinforce regulations designed for good governance (transparency and accountability) such as the Leadership Code.

Up-to-date accurate land information is relevant if it's readily available and at a reasonable cost for the decision making process (Epstein and Brown, 1989). However advanced cadastral systems are limited to Developed Countries, and in Uganda they are largely undeveloped. Like much of Africa, critical decisions are made on the basis of very limited information (Fourie and Nino-Fluck, 1999) available for scattered urbanized areas. A LIS may include environmental information such as land cover detail, land use, soils, environmentally fragile areas, relief, climatic data, etc, tailored to the needs of the responsible actors.

Step Three: Sub-National Landscape

Different sub-national landscape patterns define the highly diversified national landscape ecology. A sub national level may be a district or any other spatially defined area that transcends the protected area landscape. It is an aggregation of the spatial pattern of land parcels. This level deals with land tenure relations and biophysical factors (area specific ecological character) as well as economic dynamics, demographic factors, etc, in the framework of policy and regulatory systems. Here, the defined goals of sustainability and approaches to achieve those goals are implemented; e.g.; sustenance of forest ecosystems services through strict protection, forest utilisation, or both (economic and environmental objectives). Based on Bos and Hekhuis, (1994), in approaches where the goal is utilisation of the forest, then the condition of the forest is the means to attain this goal. They follow that in approaches where the condition of the forest is the goal, then, the restrictions to the use of the forest are the means to achieve this goal.

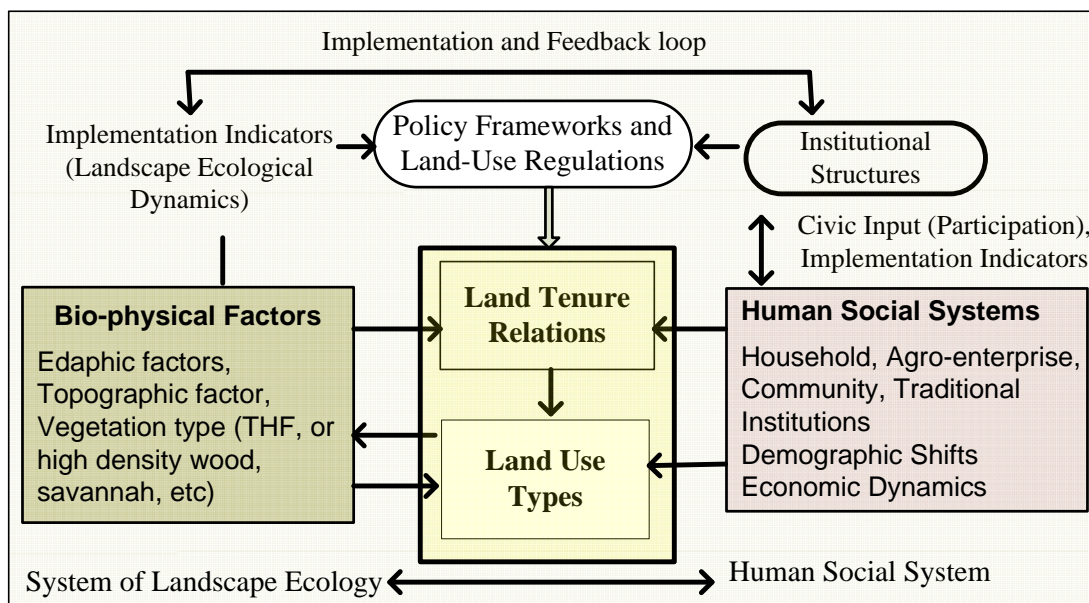
In Kibaale District, forest ecosystems are known to protect watersheds, provide linkages between other forest habitats and allow connectivity for species dispersal and gene flow between larger forests within the Albertine rift. With official records and maps emphasising, albeit rapid

changes, that 70% of the total forest-cover is located outside the CFRs, sustaining forest ecosystems functions merits more than strict protection of gazetted forests. Strict protection of CFRs without effective management of surrounding private natural forests will adversely lead to habitat fragmentation. The failure to control proximate threats to the interior and exterior of the reserves predisposes them to ecological decay including taxonomically and functionally array of sweeping changes in species communities and an erosion of ecosystems processes (Laurence *et al.*, 2012b). The challenge is that land-use on private land is unattainable where land tenure insecurity (shown in Step Four) exposes people to constant threats of eviction.

Step Four: Micro-Level Indicators

Land is a dynamic canvas on which human and natural systems interact (Parker *et al.*, 2003) and therefore land use change at the local level results from the interactions among various components of the coupled human-landscape system (Le *et al.*, 2008). Most particularly, human-environment interactions are characterised by tenure rules which *de facto* and/or *de jure* explicitly regulate the households' access to and usage of land resources (ibid).

Figure 35: Human-Land Relations (an expanded step four in figure 34)



Source: Author

Micro-level indicators involve policy levers, the state of land tenure relations e.g. security of land tenure, and the condition of the forest cover and general environmental conditions of a particular area. Causal explanations of land-use change, in the social science perspective, focus on land managers as “agents” (Brown *et al.*, 2004) and especially those engaged in agriculture (Lynam, 2003 as cited by Brown *et al.*, 2004), or residential development (Bockstael 1996, as cited by Brown *et al.*, 2004). Therefore security of land tenure is vital in promoting sustainable investment in environmentally sound land management activities. The study argues that efforts

to predict of land-use and forest-cover change through statistical simulations become even harder where the state of land tenure security is poor. Reflections are made from the study area with a summary recap of the variables of land tenure security, which is a precondition for projecting land-use changes (see land-use prediction summarised in ii).

i) Reflections from the Study Area

In figure 35, land use is strongly reliant on land tenure relations and both lend themselves to complex underlying factors. Therefore, effective forest conservation is tied to fair and transparent systems where equitable access to land, land tenure security, and land use regulations are enforced. Biophysical factors such as soil quality, drainage, etc, interact with human activities to influence land use change and the feedback mechanisms cause institutional response or spur land use change. For a household unit, tenure security is the strongest influences on land use decisions. In consideration of the study area, the perception of security of land tenure was determined by numerous factors;

$$1). \textit{Land-Tenure Security} = f(H_{\text{profile}}, S_{\text{social-cultural-landscape}}, P_{\text{policy environment}})$$

Where; H_{profile} = the household profile and inherent variables

$S_{\text{social-cultural-landscape}}$ = ethnic structure of the community, adjacent households, institutional staff set-up, etc.

$P_{\text{policy environment}}$ = policy legitimacy, publicity, and external pressures on implementation

For the H_{profile} , there are numerous variables as shown in following equation. Therefore;

$$2) H_{\text{profile}} = f(H_{\text{social}}, H_{\text{Land}}, H_{\text{income}}, H_{\text{Policy}}, H_{\text{Other}})$$

Where; H_{social} aggregates the household's ethnic identity, education level, and social networks. For instance under ethnic identity, land users work in concert to defend individual and group land rights either formally through Court system or informally by physical confrontation often along ethnic lines. The H_{land} , involves physical attributes of land endowments; location, ecological character. Households with land parcel located in or adjacent to CFRs (where inaccurate forest boundaries occur) are exposed to insecurity. Owners of land with wetland complexes can be vulnerable to eviction by the agencies responsible for wetland policy implementation.

By H_{income} ; unlike the poor, households of middle or high income earning categories can afford high costs of cadastral survey and generally, of processing a land title, or can meet the legal costs to defend their land rights from external threats. H_{policy} means that households assume tenure security on the land for absentee landlords, in line with the policy provisions for adverse

possession. Some households occupying public or private forestland attain a sense of security due to the lax in policy implementation. (H_{other}) a household's possession of formal or informal documentary evidence of land ownership in part, determines the degree of security.

By social cultural landscape, the variables involved are noted as;

$$3) S_{\text{social-cultural-landscape}} = f(S_{\text{ethnic-uniformity}}, S_{\text{policy}}, S_{\text{integration}})$$

Where $S_{\text{ethnic-uniformity}}$; means village structure or ethnicity of adjacent households and ethnic heterogeneity of the institutional staff. Ethnic affiliation can attract selective discriminatory service delivery biased against household of another ethnic background e.g. in arbitration of land conflicts. Non-ethnic uniformity ignites a clash of norms, cultural values, and interests. S_{policy} , is the policy or legal provision for the freedom of population mobility and settlement (e.g. Article 29(2) of the Constitution of Uganda 1995 grants every Ugandan citizen a right to settle anywhere in Uganda), and the social legitimacy of those instruments. By $S_{\text{integration}}$, households integrated into a different ethnic group e.g. through intermarriages, tend to assume relative security from eviction by that ethnic grouping.

$$4) P_{\text{policy environment}} = f(P_{\text{publicity}}, P_{\text{legitimacy}}, P_{\text{enforcement}}, P_{\text{external pressures}})$$

Where; $P_{\text{policy environment}}$ denotes processes, effectiveness, and impediments in land policy and legal environment. $P_{\text{publicity}}$ is the awareness of existing policy and legal instruments providing for land tenure, land-use, and land tenure security. $P_{\text{legitimacy}}$ implies; a) harmony between laws with the norms; for instance, land rights set out in law, or policy solutions to land tenure issues thereof do not rhyme with the interests or rights preferred by land users on the ground, b) there are no poor provisions for affordable land registration processes. $P_{\text{enforcement}}$ means the capacity to enforce laws, fairness in the application of the law (bias, patronage, corruption, etc), and state of government oversight. $P_{\text{external pressures}}$ are spontaneous (political interference, civil wars, etc), historical (path-dependence e.g. colonial legacy) and evolving (international environmental policies) pressures affecting policy development and implementation processes.

ii) Prediction of Land-Use Change Patterns

Understanding the dynamic factors underlying land tenure (in)security, is a step towards predicting/modelling land-use change to guide planning and decision making processes. Spatial simulation and statistical models have been set to capture people's interactions with land use systems. They mimic causal mechanisms and feed-back loops of LUCC, as learning tools in understanding the dynamics and driving forces of the land use system and show how land holders' choices might affect the direction the future may take (Verburg 2005 cited by Le *et al* 2008). For Kibaale District, predicting land use choices is far from easy, especially where land

allocation at the household level is arbitrary influenced by unstable policy environment. Land-use change is thus a function of;

$$\text{Land - Use Change} = f(\text{R}_{\text{Respondent's-Profile}}, \text{B}_{\text{Biophysical Factors}}, \text{I}_{\text{Institutional Factors}}, \text{E}_{\text{Econ Factor}}, \text{E}_{\text{External Influences}})$$

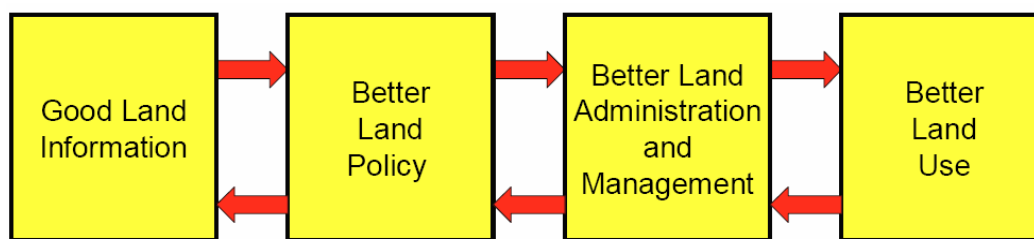
The Respondent's profile includes the state of land tenure security enjoyed by the household; Household size (dependence ratio, labour), Income (off-farm or land based), Property endowment (asset endowments), Cultural background (attitudes, perceptions towards forests) e.g. to most immigrant Bakiga, forests valuable areas for agriculture, yet the indigenous Banyoro view forests as their cultural heritage that must be preserved. Institutional factors include established structures and regulations governing land-use control. Biophysical factors include soil fertility, soil drainage, climate, altitude, vegetation. They affect the placement of nature reserves or agricultural activities (Huston 1993, cited by Brown *et al.*, 2004). Vegetation types influence charcoal burning, logging, and even agriculture. The expansion of commodity markets and price fluctuations predominate the economic factor.

The policy environment is probably the strongest factor. It includes Policy gaps (e.g. lack of a comprehensive land policy, population resettlement policy), implementation capacity (monitoring and law enforcement), political circumstances (patronage, and interference). In addition, there is tension between ENR management and other policy domains such as agriculture, economic development, etc, tension between technical staff and locally elected officials, tension between different levels of government, mainly between the district and national levels (Oosterveer and Vliet, 2010).

8.2.2. Conclusive Remark about the Model

The qualitative model is illustrative, and does not address the institutional arrangements but focuses on procedures and strategies. With emphasis on planning with target setting as benchmarks for achieving national goals, the model is tailored to the conditions in the study area, but can be applied elsewhere with slight modifications for general application. Land tenure is a strong factor in influencing land-use decisions. However, the case of Kibaale District, as equally reflected in the model, has shown that land tenure and land-use dynamics are strongly dependent on the policy environment. Even more importantly, sufficient resources must be invested in the good land information system, better land policy, better land administration and better land use without which, according to UN-FIG (1999), sustainable development is unattainable (see Figure 36)

Figure 36: The Chain of Relations for Sustainable Development



Source: UN-FIG (1999)

8.2.3. Specific Recommendations for the Study Area

Based on the model developed in Figure 34 and 35, the study illustrates the approximate scale of forest-cover at which sustainability can be assumed using available data, in Table 34. As the government through the National Development Plan commits to reverse the extent of forest cover to the 1990, we assume that forest coverage as of 1990 is the possible scale at which ecological sustainability was assumed to be achieved.

With the demographic data from KDLG, (2010) and study findings by NFA 2006 (as cited by NEMA, 2008) on the extent of forest-cover for Kibaale District in 1990, the study computes the average forest-cover each household in the district would have to protect to reach the national target by 2015. The challenge is the restricted spatial distribution of forests, because the average forest area a household must maintain or restore is derived from the forested area of 1990 divided by the number of households in 2010. Relative accuracy would therefore be achieved if the number of households located in the forest clusters as of 1990 is known.

Table 34: The Scale of an Ecologically Sustainable Forest-Cover

Geographical Scale	Extent of Forest Coverage in 1990(ha)			Scale for Sustainability		
	Permanent Forest Estate (PFE)	Central Forest Reserves	Total Forest-Coverage	PFE	Private Owners (PFO)	Forest
National Level	1.9 Million	1,265,742 ha	4.9 million	1.9 Million	3,430,000ha (70%)	
Kibaale District (District Level)	25,503ha	25,540ha (including plant. FRs)	114,102.66 ha	25,503ha	88599.66ha	
Local Level (Community)	% cover of PFE	% coverage of CFRs	PFE + PFO	% of PFE	1.03ha/Household (88599ha/85,822HH)	

Sources; USAID (2006), KDLG, (2010), NFA (2006 as cited by NEMA, 2008), GoU, (2009)

The study assumes that the Permanent Forest Estate is restored (e.g. through enrichment planting) for strict protection. The requirement to create conservation corridors (and restore forest ecosystems functions) would imply that some households would reserve more land for

conservation. At the village level, the sustainable forest area would be the total of the area covered by the PFE and the land area under Private Forest Owners. Given the context of governance conditions, the following measures are recommended;

8.2.3.1. Politico-Scientific Intervention

The study found that forest crime is primarily driven by political patronage and political interference. This calls for political will and increased public demand for political accountability. Politicians should engage in a constructive dialogue with technocrats, and should for the good of the country and future generations; be part of planning processes. After all, solving wicked problems insofar as is possible tends to be part of science and part politics (Laurence *et al.*, 2012c) and tackling forest crime is as much a political process as is technical (The World Bank, 2006). Moreover politicians decide passing the Acts, policies, how environmental regulations are enforced, etc (Anderson et al 2006, cited by Otieno *et al.*, 2012). All avenues must be sought to rescind the 2006 presidential order halting forest evictions. To make it feasible, the Land Fund must be operationalized to compensate the poor and landless forest encroachers. Land users must be protected from land grabbers and action taken against powerful interests.

8.2.3.2. Institutional Capacity

Capacity building is a necessity for the entire land governance institutional framework including the line ministries and decentralised agencies. Institutional capacity building however requires that the ENR sector budget ceiling is reduced, and simultaneously, the sector is given a high priority for funding in national budget allocations. This will attract substantial Official Development Assistance for sustainable forest management. There is need for specialized capacity building initiatives tailored to the individual institutions' financial, human and technical resource deficiencies. The creation of synergy between agencies such as UWA., will make logic in the need to create the biodiversity corridors and yield efficiency from combined effort that forestry alone may not achieve.

8.2.3.3. Control Immigration, Land Inventory and Conservation Incentives

The influx of immigrant settlers in Kibaale District must be halted and monitored. As a matter of urgency, this should be followed by a full land inventory to establish who owns/occupies what, how much, and where. Where possible, a Social Tenure Domain Model (STDM) should be designed to guide the implementation of the Land Fund. This information will ease rigorous and coordinated planning for the protection of habitat linkages through the Reducing Emissions from Deforestation and Forest Degradation (REDD) initiatives, carbon trading initiatives, and Payment for Ecosystems Services (PES). These intervention measures will limit the expansion of agricultural frontiers or spur the dereliction of crop land leading to natural forest recovery.

8.2.3.4. Operationalize the Land Fund and Strengthen Decentralised Land Agencies

The government must secure the requisite financial resources for the Land Fund to purchase land and redistribute the land to occupants. This will halt the disillusionment among the land users concerning the progress of the Land Fund. The government should restructure the District Land Boards, and strengthen Area Land Committees to control against graft, clientelism, and illegal land allocation in public and private forests.

8.2.3.5. Transparency and Accountability

There is a need to improve transparency and accountability in all public institutions as a capacity building measure, and means for efficiency. In forestry, inadequate mechanisms of accountability have led to the withdrawal of donor support and exacerbated an already weak financial capacity. For instance, Norway collaborated with Uganda in the forestry sector for many years but withdrew her support in 2010 citing management irregularities at the NFA, and recommitted itself to the forest sector, “only when an acceptable level of governance is reestablished in the key forest sector institutions” (The World Bank, 2012a). In Kibaale, the District Forest Office should be restructured and the District Service Commission protected from patronage for fair and transparent process of staff recruitment.

8.2.3.6. Strengthen the Surveying Industry

The government should address itself to the governance problems eating up the surveying industry. The operations of the Surveyors Registration Board should be reviewed to streamline transparency. This will increase the competitiveness of the industry and create employment opportunities to the disillusioned land surveyors sidelined by institutional capture. It is likely to reduce the exorbitant cost of surveying, improve the integrity of the surveying industry, and attract the public to land registration.

8.2.3.7. Policies and Participatory Planning and Social Integration

A comprehensive national land policy and national population resettlement policy are long overdue. There should be adequate planning in population resettlement programs complete with public participation. This should consider a spectrum of social, economic, and environmental concerns. The issues of ethnic rivalries should be addressed through public dialogue and social integration initiatives.

8.2.3.8. Strengthen Forest Monitoring and Public Participation

Forest monitoring and law enforcement is an issue of particular concern. The number of forest patrolmen should be substantially increased to a minimum of 3 per CFR, their remuneration improved, and timely disbursed. After all, the problems of forest law and governance will not be solved only by jail, fines, and legal prosecution (The World Bank, 2006). Hence, NFA should conduct joint boundary demarcation programs with adjacent communities to contain adverse

latent and exposed conflicts. In addition, community participation in forest law enforcement and monitoring should be promoted. Forest crime reporting must be promoted with a reliable level of witness protection. The kingpins of illegal pitsawing are known and must be apprehended. But forest law enforcement should go beyond illegal logging to tackle illegal cultivation for crop farming. While this is likely to attract political acrimony, as responsible conservation agencies and individuals require boldness and tenacity to run the gauntlet of power brokers and elites.

8.3. Methodological Limitations and Directions for Further Research

The author ensured the reliability and rigor of the research to obtain scientifically defensible results. Despite the validity of the findings however, the author observes identifiable research limitations rooted in the methodology and scope. It is highly probable that any future research will find some of the hard facts obtained by the researcher, the spatial, as well as documented or expressed evidence of patronage, institutional incapacity, and corruption, and others. The social aspect of this research makes it difficult to repeat the findings. Perceptions are always evolving because the governance paradigm is dynamic where; new evidence may be produced, political change may bring new perceptions, etc. (see Palmer *et al.*, 2009).

On the other hand, land governance entails many actors. It was very difficult for the study to exhaustively collect data from all the relevant actors and as such; some financial institutions, many NGOs, and CBOs were not covered. The study relied on the data gathered from survey respondents. Besides, oil and gas discovery in Uganda with some oil wells about L. Albert in Western Kibaale District, has prompted genuine public expectations for economic recovery and therefore more revenues to the district administration, better services and more jobs that could lift pressure on forests. This emerging issue too, was not assessed in this study and requires attention in future. Moreover, the oil sector is already noted to be tainted with governance problems including lack of participation, undue political interference (The World Bank, 2012a) and tendencies of corruption at a grand scale.

An inquiry into governance problems is never conclusive. Exposing facts on corruption by key informants can be undermined by concerns over job tenure security. Besides, cases of bribery are normally undocumented, highly secretive, and yet can load the burden of proof to those that may wish to expose the problem. Moreover, some of the key informants can at the same time be the recipients of bribes who will naturally hide the facts. In addition, this study argues, and rightly so, that the economic drivers in forest-cover dynamics are underlain by features of weak land governance. The study did not assess the impact of the economic crisis with associated inflationary pressures that severed towards the end of data collection. In addition, neither did the study cover the ecological and socioeconomic impact of forest destruction.

Due to unforeseen challenges, it became difficult to conduct accuracy assessment of classified data. While the author swipped the classified image against the false colour composite to routinely ensure the agreement between the two data sets, it is vital that the future study conducts accuracy assessment. In addition, the author observes that related future scientific inquiry should cover a wider spectrum of land governance actors and carry out inter-institutional analysis. This will inherently identify the relations between land governance structures as an enhanced analysis of land management processes in a systems perspective. Whereas the study obtained credible evidence on governance shortfalls, the secretive nature of land governance shortfalls such as bribery means that future studies can investigate the problem further and come up with more supplementary facts, and probably, a new perspective. In line with changing economic conditions, the study argues that economic constraints (inflationary pressures with high interest on credit, rising commodity prices including agricultural inputs and forest products such as charcoal and timber, poor access to market information), and opportunities (expansion of markets) merit particular attention.

8.4. Closing Statement

The spatial patterns and processes of land use and forest-cover change are driven by complex underlying mechanisms (drivers). Problematic governance conditions from the local and national levels are strong in this complexity. Cobbled together, the ultimate drivers of forest-cover change identify with weak governance conditions, and the quality of land governance in Kibaale District symbolises the state of national land governance system. Population pressure and expansion of markets cannot illuminate the “unpalatable truths” of institutional failure, and political interference that underpin land tenure insecurity, inadequate land use regulation. Forest-cover loss and land tenure problems are certainly soluble. Yet as land tenure has become so politically sensitive, deforestation is unlikely to lend itself to easy solutions. Remedial measures lie in improved land governance to streamline fair and equitable access to land with tenure security. It requires that every stakeholder has a role to play. The government must proactively define the direction for good practice; enforce rules and strengthen political accountability. As rain-fed agriculture is the economic mainstay, and the vast majority of the population directly survive on natural resources, the future of Kibaale District and Uganda in general lies with strong land tenure security and sustained environmental integrity, where sound land governance will be the secret behind.

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Annexure

Annex 1

List of Gazetted Forest Reserves, Size and Level of Encroachment:

Name	Size (ha)	Extent of encroachment (%)
Kangombe	11,331	60
Guramwa	1,546	75
Kanaga	650	75
Nyabigoye	495	50
Nyakarongo	3,535	60
Kihaimira	572	40
Muhunga	399	40
Rukara	456	40
Kijuna	1,225	60
Nyabiku	355	60
Ruzaire	1,160	80
Nakuyazo	342	60
Kagadi	8	40
Rwengeye	329	60
Kasato	2,691	50
Kyamurangi	417	40

Source: Natural Resources Department, Kibaale March 2009, as cited in KDLG (2010).

Annex 2: The Executive Order on Forest Encroachment



THE REPUBLIC OF UGANDA

BY HIS EXCELLENCY Y.K. MUSEVENI


THE PRESIDENT

EXECUTIVE ORDER


WHEREAS it is in the public interest that evictions of occupants of Forest Reserves and Wetlands in Uganda be forthwith stopped:

NOW, THEREFORE, in exercise of powers conferred upon the President by clause (1) of Article 99 of the Constitution, I hereby ordered that any eviction of occupants of forest reserves and wetlands be and are hereby halted pending order to the contrary.

Given Under My Hand And Public Seal at Kampala This
... Day of ... 2006.


Yoweri K. Museveni
PRESIDENT

Annex 3: Formal Permission of Encroachment and Proposal to Degazette Guramwa CFR


THE REPUBLIC OF UGANDA
KIBAALE DISTRICT LOCAL GOVERNMENT
OFFICE OF THE DISTRICT CHAIRPERSON
P.O. Box 2
Karuguuza

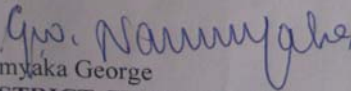
Ref: COU/152/1 2nd September 2010


The Chairperson LC III
Nkooko Sub-county

DEGAZETTING GURAMWA FOREST RESERVE – RUTOOMA

I am in receipt of your letter of 25th August 2010 in which you submitted council resolution recommending the degazetting of Guramwa Forest Reserve (Rutooma). I shall forward it to the District Council for discussion and onward transmission to the relevant Ministry in Kampala

In the meantime, the people of Guramwa – Rutooma should continue with their farming activities unhindered.



Namyaka George
DISTRICT CHAIRPERSON



Distribution

- Resident District Commissioner – Kibaale
- MP Bugangaizi East
- DISO – Kibaale
- CAO – Kibaale
- NFA - Kibaale ✓

Annex 4: Printing Timber Movement Permits by the DFO


THE REPUBLIC OF UGANDA
KIBAALE DISTRICT LOCAL GOVERNMENT
NATURAL RESOURCES DEPARTMENT
P.O. Box 2
Karuguuza

Our Ref: NR/103/1

4th September 2009

The Chief Administrative Officer
Kibaale District

Thru: Chief Financial Officer
Kibaale District

Thru: District Natural Resources Officer
Kibaale District

Forwarded
[Signature] 4/9/2009

DISTRICT NATURAL RESOURCE
OFFICER KIBAALE

REQUEST TO PRINT OUT FOREST PRODUCE MOVEMENT PERMIT BOOKS (45 BOOKS)

There is shortage of Forest Produce Movement Permit Books from Forest sector support Department at the Ministry, where I have been getting them.

This is to request the District to print its own.

The format for the FPMP Book in attached and its self carbonized.

3 Proforma Invoices from the 3 companies to print them are also attached.

I recommend capital graphics Ltd to print them because it's the cheapest at 20,000= per book.

[Signature]
Kyomuhondire Wilson
Ag: DISTRICT FORESTRY OFFICER - KIBAALE

Annex 5: Proceedings to Illegal Forest Land Allocations by the District Land Board

BUJOGORO - KITOOGA L.C. Is
 NYAMARUNDA PARISH
 MUGARAMA SUB-COUNTY
 KIBAALE DISTRICT

28/08/08

The Chairman L.C.V.,
 Kibaale

The RDC
 Kibaale

The Chief Administrative Officer,
 Kibaale

The Chairperson District Land Board ✓
 Kibaale
 P.O. BOX 2
 Karuguzza

RE: APPEAL TO STREAM LINE/RE-LOCATE LAND OFFERED OR LAND APPLIED FOR UNDER PROCESS AT BUJOGORO - KITOOGA L.C. Is, NYAMARUNDA, MUGARAMA SUB-COUNTY.

We the under listed and signed are people offered land by the District Land Board and with land applications under process with it at Bujogoro - Kitooga L.C. Is, Nyamarunda, Mugarama Sub-county. In addition, there are also livelihoods who have been in the same area.

The reason for our appeal as there above stated is as follows:

1. Surprisingly, on 21st August 2008 at Starlight Hotel Karuguzza, during a stakeholders sensitization meeting to manage sustainably Central Forest Reserves, National Forestry Authority clearly stated that Kangombe central Forest Reserve had also been encroached upon and yet Bujogoro - Kitooga L.C. Is belong there!!
2. Simultaneously, the cartographer who represented the District Land Office disclosed that there was oversight in the land transactions pertaining to the subject land offers/applications under process due to lack of adequate equipment and materials in the District Land Office. It is still thin of young to take off properly.

3. The Chairperson of the District Land Board also stated the same thing as the cartographer that the District Land Officer was not properly equipped by such a lack of Cadastral maps.
4. We greatly regret the big expenses incurred in the subject land transactions as shown below:
 - (a) Application processing fees banked on District General Fund Account No. 0140063137001
 - (b) Some applicants paid also premium in Bank on the same account No. above.
 - (c) Others surveyed the land.

In view of the aforesaid, we strongly appeal to you to streamline/re-locate IMMELY the subject land offers or land applications still under process at Bujogoro - Kitooga L.C. Is, Nyamarunda, Mugarama Sub-county, forms to foster the intended development.

Best regards.

Kasirye Diryane
 KASIRYE DIRYANE
 Chairperson of the under signed attached list.

- c.c. State Minister land.
- ✓ c.c. State Minister for Internal Affairs /Area M.P - Buyanja County.
- ✓ c.c. Area M.P - Buyanja County.
- ✓ c.c. Area M.P - Bugangaizi County
- ✓ c.c. Woman M.P - Kibaale
- c.c. Director NFA - Kampala
- c.c. Chairperson NFA - Kampala
- ✓ c.c. Omukama's Minister of Natural Resources - Bunyoro Kingdom.
- ✓ c.c. DISO - Kibaale
- ✓ c.c. DPC - Kibaale
- ✓ c.c. District Counselors - Mugarama.
- ✓ c.c. Land Rights Centre URDT - Kagadi.
- ✓ c.c. Secretary Land Board - Kibaale
- ✓ c.c. Sector Manager NFA - Kibaale
- ✓ c.c. Chairperson L.C.III - Mugarama
- ✓ c.c. Area Land Committee - Mugarama
- ✓ c.c. Production Officer - Kibaale
- ✓ c.c. Natural Resources - Kibaale.
- ✓ c.c. District Councilors - Mugarama S/County.
- ✓ c.c. District Speaker - Kibaale
- c.c. The
- c.c. To each member.

Annexure 6: The List of Illegal Forest Land Allocation Beneficiaries

NAME	AREA	WITH OFFER	APPLICATION UNDER PROCESS	ACREAGE	SIGNATURE
BIRANGI TADEO	BUSOGORO-KIDINDIMA	✓		123	[Signature]
KARU GABRIEL	BUSOGORO-KYEMBOGO	✓		50	[Signature]
KABOTERE ELIAS	BUSOGORO-KYEMBOGO	✓		156	[Signature]
FRANGI JOHN	BUSOGORO-KYEMBOGO	✓		250	[Signature]
[Name]	BUSOGOROKIDINDIMA	✓		204	[Signature]
[Name]	BUSOGORO-KYEMBOGO	✓		25	[Signature]
Bamige & Joseph	BUSOGOROKYEMBOGO	✓		160	[Signature]
[Name]	BUSOGORO-KYEMBOGO	✓		120	[Signature]
Mukisa John	BUSOGORO-KYEMBOGO	✓		600	[Signature]
Alibankwa ha Dancan	BUSOGORO-KYEMBOGO	✓	✓	40	[Signature]
Kusamba Matye	BUSOGOROKYEMBOGO	✓		500	[Signature]
Mugica William N-G	BUSOGORO KYEMBOGO	✓	✓	200	[Signature]
MUKWAZA NYAKATWA	BUSOGORO KYEMBOGO	✓		100	[Signature]
BIRANGI DANIEL	KITOOGA MURIZI	✓	✓	60	[Signature]
DAGANTANA SYLVESTER	BUSOGORO	✓		150	[Signature]
KEMERWA EMANUEL	KITOOGA MURIZI	✓	✓	60	[Signature]
KAMULEWA AVADEI	BUSOGORO KYEMBOGO	✓		50	[Signature]
MTAHONDI AGUSTINI	KITOOGA MURIZI	✓		70	[Signature]
MUGANYIZI PATRIC	KITOOGA MURIZI	✓		50	[Signature]
[Name]	KITOOGA	✓		120	[Signature]
NDEGAMIYE Charles	KITOOGA MURIZI	✓		80	[Signature]
Kisamba John	KITOOGA MURIZI	✓		200	[Signature]
Tinka Edward	KITOOGA MURIZI	✓	✓	160	[Signature]
MUKWABI GEORGE	KITOOGA MURIZI	✓		200	[Signature]
APITO MAGEZI	KITOOGA MURIZI	✓		300	[Signature]
Wabale Edson	KITOOGA	✓		100	[Signature]
KWATAMPWA	KITOOGA	✓		100	[Signature]
SASAMUKA HENRY	KITOOGA	✓		30	[Signature]
NYAMBI SYLVESTER	BUSOGOROKIDINDIMA	✓		150	[Signature]
BALIKWA MATHIAS MUGA	BUSOGOROKYEMBOGO	✓		100	[Signature]
TIBESIGWA JOHN	KITOOGA MURIZI	✓		300	[Signature]
Isimama Ali	KITOOGA	✓	✓	60	[Signature]
	BUSOGORO-KIDINDIMA	✓		150	[Signature]

Sylvester Nyambi has delivered 430.000K deposit for the survey of land at busogoro his group. This makes a total of 890.000K deposit having already received 460.000K

[Signature]
Musinguzi Denis
18/04/08

Annex 7: The Questionnaire

The researcher is a doctoral student at the Technical University of Munich. He is focusing on the implications of land governance on forest cover change, and Kibaale District is his case study area. This is a voluntary academic contribution towards sustainable forestry and land management. The information collected is thus purely for academic purposes and will be used for deliberate assessment and design of critical recommendation measures. Your responses to questions herein will be treated with utmost confidentiality.

I. General Information

1. Location of the Respondent

(1) Cell 2) Parish 3) Sub County 4) County
.....

2. Age of the Respondent

1). 18-29 2). 30-47 3). 48-59 4). 60+

3. Sex of the Respondent 1): Male 2). Female

4. Level of education

1) No education 2). Primary Level 3) Secondary Level
4) Tertiary institution 5). Others (specify)

5. Occupation of the Respondent

1). Peasant 2). Teacher
3). Business (specify) 4). Others (specify)

6. Household size

1). 2-4 2). 5-8
3). 9-11 4). 12+

II. Access to Land and Land Tenure Security

7. How much land do you think would be sufficient to satisfy your individual and family needs? (If possible specify in terms of acres)

1). 1-3 2). 4-6
3). 7-10 4). 11-15+

8. How much land do you actually own? (if possible please establish exact acreage)

1). 1 - 3 2). 3-7 4). 8-13
5). 14 - 19 6). 20+ 7). Others (Specify please)

9. Please mark any of the following type of land ownership systems that apply to you?

1). Customary 2. Freehold 3). Mailo land
4). Leasehold 5). No Idea

10. Which of the following resources do you access/use resources on land parcels which are not exclusively your own?

1. Firewood Extraction 2. Charcoal Burning 3. Grazing
4. Agriculture 5. Handcraft materials 4. Others (specify)

11. On which tenure systems are those land parcels from which you extract such land resources?

1. Public Forests 2. Community Forest/grazing land 3. Neighbours' land
 4. None of the mentioned 5. Others (specify)

12. Please indicate the forms of access to land and land transactions you have undertaken

Particulars	Land Purchase	Land Sale	Donation (Gift)	Inherited	Rented in	Rented Out	Borrow	Allocation	Forest clearance/ Land capture
1. Parcel Size									
2. From Whom									
3. How did you know of/advertise the availability of the land parcel									
4. Price/rental fee									
5. Transaction Year/access									
6. State at the time of the transaction									

- | | | |
|--|---|---|
| <p>2.</p> <p>1. LCs</p> <p>2. Family member/relative</p> <p>3. Neighbour/friend</p> <p>4. Any Land Owner/local owner</p> <p>5. Government officials (Specify)</p> <p>6. Local chief</p> <p>7. Strangers</p> | <p>3.</p> <p>8. Word of mouth</p> <p>9. News paper</p> <p>10. Onsite signposts (land sale adverts)</p> <p>11. Real Estate Agents</p> <p>12. Personal Discovery</p> <p>Others (specify)</p> | <p>6.</p> <p>13. Primary Forest</p> <p>14. Secondary Forested</p> <p>15. Protected Forest</p> <p>16. Cultivated</p> <p>17. Abandoned</p> <p>18. Marshy</p> <p>19. Others (specify)</p> |
|--|---|---|

III Security of Land Tenure

13. How secure do you feel your land ownership system is, from eviction?

- 1). Very Secure 2). Partially Secure
 3). Not secure at all 3). Others (Specify)

14. If you have degree of tenure security, what has been the main factor contributing to this?

1. Land title/Customary Certificate 2). Informal written agreement
 3). Community recognition 4). Duration/period of use
 5). Legal Certainty 7). Others (Specify please)

15. How possible is it for you to use your land as a security for a loan from the bank or any other formal financial institution?

- 1). Very Possible 2). Fairly Possible
 3). Impossible 4). No idea

16. Has your land ownership ever been challenged with counter ownership claims or land conflict?

1. Yes 2. No

17. What has been the cause of such claims?

- 1) Unclear boundaries 2). Land Fraud

- 3). Dubious land sale 4). No proper documentation
 5). Others (specify please)
 18. From who have you have the threats to your land ownership emerged?
 1). Government Agency 2). Neighbours 3). Absentee Landlords
 4). Family member 5). Local leaders 6). Others (Please Specify)

19. Are you informed of how to process a land title/certificate of customary occupancy?
 1). Yes 2). No
 20. In your opinion, what is the main challenge of acquiring a land title/certificate of land ownership?
 1). Very Expensive 2). Lack of adequate information
 4). Land Conflicts 5). Occupation of Public Forest land
 6). Unreliable land institutions 6). No idea
 21. Please indicate the state of your land rights in the table with regard how they apply in your situation

Land Right	Spouse	Government Authorities	Landlord	Nobody	Others (specify)
Use Rights					
Whose consent do you need to plant crops on your land					
Whose permission do you need to clear trees from your land parcels					
Who must you consult to plant trees permanently on your land parcel?					
Land Alienation Rights					
Whose consent is vital if you decide to sale your land parcel?					
Whose consent do you need to extend land to your heir or any other person?					
Duration of Use					
Who influences how long you can use your land parcel?					
Whose consent do you need to use land to access a bank loan					

IV. Land Use and Forest Management

Agricultural Land Use

22. How do you derive livelihood (and/or income) from land?
 1). Agriculture 2). Lumbering 3). Wage Employment
 4). Alcohol brewing 5). Brick making 6). Remittances
 7). Business 8). Others (specify)
 23. What is the present type of land use existing on your private land parcel?
 1. Crop Fields 2. Livestock Keeping 3. Natural Forest
 4. Plantation forest 5. Agro-plantations (Coffee,) 6. Abandoned land
 7. Wetland 8. Others (Specify)

24. Please select a crop type and major goal of crop farming?

Crop	Commercial	Domestic	Scale
Bananas			
Tobacco			
Groundnuts			
Maize			
Sweet potatoes			
Millet			
Trees			
Coffee			
Others			

25. With respect to livestock keeping/Cattle ranching, please identify the scale at which you carry out this activity?

1. Large-Scale 2. Medium Scale
 3. Small Scale 4. Others (Please specify)

26. Which of the following activities have you previously carried out and probably changed/stopped?

1. Local Brew Distillation 2. Tobacco Growing
 3. Lumbering 4. Tree sales to lumbers 5. Others (specify Please)

27. Why did you change from any of the above activities?

1. Pests and Diseases 2. Price fluctuations 3. Exhausted Resource stock
 3. Exhaustion of tree stock 4. Soil Exhaustion 5. Others (specify)

28. What alternative soil fertility-restoration/soil-productivity improvement measures do you apply?

- 1). Agroforestry 2). Soil Manuring 3). Rotational Fallowing
 4). Crop Rotation 5). Soil erosion control 6). Agro chemical fertilisers
 7). Others (Specify)

29. What are your common strategies to maximize agricultural yields and profitability?

1. Extensive cultivation 2. Improved crop varieties/animal breeds
 3. Soil Manuring 4. Artificial Fertilisers 5. Others (specify)

30. What has been your major source of motivation to apply measures in question 28 above?

- 1). Farmer to farmer learning 2). National Law 3). Own initiative
 4). NGO programmes 5). Byelaws 6). Others (specify)

31. Which of the following has been active in promoting sustainable land use?

- 1). Government Agency (NAADs, NARO) 2). District Authorities
 3). NGOs 4). Local Leaders
 5). Agriculture Extension Workers 6). Others (specify)

32. In which of the following instances explain your how you could have used fires in land use?

1. Slush and Burning system 2. Post cultivation (burning straw).
 3. Bushfires to avail firewood 4. Burning for fresh pastures
 5. Bushfires for vermin/Pest control 6. Others (specify)

33. What are other common causes of wild fires in your community?

- 1). Accidents 2). Arson
 3). Agriculture 4). Traditional habits 5). Others (specify)
 34. Are there any local rules/bylaws to regulate the use of fires and other forms of good land use or environmental management? 1). Yes No
 35. If Yes, to what extent have they been successfully?
 1. Very Successful 2. Successful 3. Unsuccessful
 36. What have been the major forms and goals of wood extraction? (Please tick where necessary)

Form of extraction	Commercial	Domestic
Woodfuel		
Timber		
Poles		
Others (specify)		

37. What are your main sources of Energy?
 1). Woodfuel (Charcoal) 2). Woodfuel (firewood) 3).Solar Energy
 4). Hydroelectricity 5). Biogas 6) Others (specify)
 38. Do you apply any energy saving technologies?
 1. Yes 2. No
 39. If Yes, what kind of technologies do you use?
 1). Improved cooking stoves 2). Fluorescent lamps
 3).Improved curing of tobacco 4). Metal Kilns
 5).None 6). Others
 40. If No, why?
 1). Lack of information 2). Expensive 3). Labour intensive
 4). Not interested 5). Others (specify)

V. Forest Management

41. Please estimate the amount of acreage on your property in each of the following categories

Category **Acres**

- Natural Forest
- Plantation Forest
- Idle (Abandoned) Field
- Agriculture
- Marsh

42. Why haven't you converted your private forestland to any other land use system?

- 1). Lack of Capital 2). Lack of labour
 3). Poor agric. markets 4). Property restrictions
 5). Environmental consciousness 6). Preserved for agriculture
 7). No reason 8). Others (Specify)

44. Approximately how many years do you think you are likely to sustain the remaining forests on your land?

- 1). 1-2 years 2). 3-7 years 3) 7-20 years
 3). Not sure 3). Others (specify)

45. In your opinion, what are the main general reasons for the clearance of natural forests in your area?

- 1). Conversion to agricultural land 2). Indiscriminate Logging 3). Wildfires
4). Conversion to infrastructure 5). Conversion to forest plantations 6). Others

46. From question 26 above, have you been involved in any forest management activities?

- 1). Forest Management Plan 2). Active Community forestry
3). Training in Forest management 4). Others (Specify)

47. In your view, what is the most important value of the forests?

1. Potentials for Agriculture 2. Woodfuel
3. Grazing area 4. Environmental services
5. Timber 6. Traditional/cultural values
7. Others (specify)

48. In which way have you carried out or participated in the plantation of trees?

1. Residential Shade Trees 2. Community Forestry 3. Land Demarcation trees
4). Afforestation 5). Reforestation 6). Agro-forestry
7). None of the above 8). Others (specify)

VII. Legal Awareness and Corruption

49. In your opinion, is it possible to win a land related court case (at LC1, 3 or High Court) without paying bribes?

1. Possible 2. May be possible
3. Impossible 4. No Idea 5. Other (specify)

50. Please indicate any of the following cases of corruption in the land/forest sectors you are aware of;

- 1). Unofficial payments) 2). Favouritism/Nepotism 3). Land grabbing
4). Individualising communal land 5). Fraud 6). Others (specify)

51. Are you aware of any regulations governing the management of land and forest resources? (Please specify)

- 1). Land Regulations 2). Forest Regulation 3). Environment Act
4). None of the above 5). Others (Specify)

52). Have you ever been accused or notified that you are in breach of any land/forest/environmental law?

1. Yes 2. No

53. If Yes, Why was such notification given?

- 1). Charcoal burning 2). Wildfire 3). Cultivation in protected forest
4). Conversion of wetland 5). Lumbering 6). Others(specify)

8; Interview Schedule – Institutional Assessment

The researcher is a doctoral student at the Technical University of Munich. He is researching about the implications on land governance on forest cover change with specific focus on Kibaale District. This is a critical academic contribution towards sustainable forestry and land management. The information collected is purely for academic purposes and will be used to deliberately assess and design critical recommendation measures. Your responses to questions herein will be treated with utmost confidentiality

Institutional Capacity and Network Assessment; with focus on the formal and informal linkages with like-minded organizations

1. Please indicate the strength of partnerships or coalitions between institutions in land and natural resources management?

Please use a, **b**, **c**, in the columns as signifying; a). **Very strong**, b). **Moderate**, c). **Weak**, d). **Non Existent**

District Board	Land Board	District Land Board	District Land Office	District Forest Office	District Environment Office	Kagadi Forest Sector	Local Politicians	Central Land Registry	Uganda Land Commission	Land Users	NAADS	Land Users	EMESCO D.F.	URDT	WWF	Bunyoro-Kitara Kingdom
District Forest Office																
District Environment Office																
NFAr																
FSSD																
Local Politicians																
Land Registry																
Uganda Land Commission																
NAADS																
Land Users/the Public																
EMESCO Foundation																
URDT																
WWF																
Bunyoro-Kitara Kingdom																

2. To what extent do the partnerships with external organizations to bring new ideas or resources, or both to your organization?

Institution	Nature of Partnerships (or coalition on Projects)	New input – i.e. Ideas and/or Resources in your organisation’s direction

3. How do you rate the capacity of your organization in the use new technologies to practical policy implementation?

Electronic Technologies	Rank	Key areas of use	Opportunities	Constraints
Internet				
Radio				
Telephone				
Others				

- Rank** **Avenues** (please use **a, b, c**, corresponding with optional answers below)
- 1. Very good **a).**Work based Information Communication to the public and external parties
 - 1. Good **b).** Internet discussion groups (thematic or general)
 - 2. Fair **c).** Land, Environment, or Forest Policy and Legal instruments
 - 3. Poor Others (specify please)
 - 4. None Existent

5. Assessment of the organizational capacity and other challenges

Capacity Issue	The impact of the issue on the organizational performance	The Severity(tick the appropriate)		
		High	Medium	Low
Human resources (<i>staffing, planning, development, appraising and rewarding, etc</i>)				
Financial Resources (<i>financial allocation, accountability, etc</i>)				

Infrastructure (transport, equipment and machines)				
Inter-institutional linkages (projects/programs planning, monitoring and implementation)				
Intra-Institutional Linkages (joint law enforcement, project planning and policy implementation of departmental /organizational units)				
Strategic Leadership (e.g. limited involvement of leaders (at national level) in your organizational work)				

6. What actual underlying issues are affecting your organizational performance?

Performance Issue	Severity/Extent			Factors in the environment that affect this issue	Key Aspects of organizational motivation affecting this issue
	High	Med.	Low		
Local (community) participation in organizational Programs					
Accountability – Financial and performance oriented (lack of clear lines of accountability i.e. individual, group, and organizational accountability)					
Incentives to land users (e.g. lack of motivation to land users to register public forests, practice good land use)					
Legal & policy environment (legal gaps, policy failures, legal consistency with the current practices, etc)					
Working Environment	Motivation - remuneration				
	Political interference				
Transparent performance to the public					
Legal Pluralism (e.g. limited public concern for enforcing forest/land/environmental laws,)					

Weak Operational Powers (<i>e.g. lack of powers to execute institutional mandate e.g. land allocation, law enforcement due to external or internal pressures</i>)					
Government's political and ideological trends inline with support to the organizations work					
Other Issues					

7. What do you suggest should be maintained or change for effective performance?

8. To what extent do technological potentials affect your organizational performance (e.g. equipment, machinery, and systems such as information system, library systems, hardware and software etc)

Aspects of Technology	Reality		Details on the issue
	Yes	No	
Every unit in the land/RM department is lagging behind in technology			
Efficient execution of organizational functions (land survey, water treatment, Solid waste management, database mgt)			
Easy Monitoring and Evaluation of land and/environmental resource health (with remote sensing and GIS or other techs.)			
Adequate systems and training exist with adequate training to manage the existing technology			
Technological planning in the organization is adequate			
Access to new or international information is guaranteed through the library and information management systems			
Human resource development adequately supports new technology			

Annex 9: List of the Key Respondents

Respondent Name	Designation	Date of Interview
Hon. Mabel Bakeine	Member of Parliament Bugangaizi County East	23/11/2011
Sarah Kulata	Commissioner of Land Registration (Interdicted)	15/10/2009
Mr. John Kitaka	Chief Cartographer, Department of Surveys and Mapping	25/8/2010
Dr. Moses Musinguzi	Head of Surveying Department, Makerere University	6/11/2011
Mr. Dennis Obbo	Spokesperson Ministry of Land Housing and Urban Development	19/10/2010
Mr. Kaije	Private Surveyor	17/10/2010
Mr. Vincent Kyaligonza	Acting Deputy Chief Administrative Officer	
Mr. Asimwe Vincent	Secretary District Land Board	19/10/2010
Mr. Dennis Musinguzi	Acting District Land Management Officer, District Surveyor	18/10/2010
Mr. Louis Balikuddembe	District Natural Resource Management Officer	12/11/2009
Mr. Patrick Kakeeto	NFA: Kagadi Sector Manager (ex)	First Interview: 12/11/2009 Last Interview: 5/25/2012
Mr. Samuel Masaba	Forest Supervisor, and Acting Sector Manager	20/9/2010
Mr. Wilson Kyamuhundeire	Acting District Forest Officer	12/11/2009 and 18/7/2011
Mrs. Animate Kyaligonza	District Environment Officer	6/9/2011
Mr. Masambu John	Kibaale District Internal Security Officer (DISO)	2/12/2010
Hon. Eng. Yabezi Kiiza	Prime Minister Bunyoro Kitara Kingdom	11/11/2009
Rev. Elisha Kyomya	Minister for Environment and Tree Planting, Bunyoro-Kitara Kingdom	10/11/2009
Rev. Yokosefati Katongole	Chairman Land Board, Bunyoro Kitara Kingdom	20/9/2010
Mr. Filipino Mpabulungi	Remote Sensing Expert NEMA	18/10/2010

A Glossary of Terms

Absentee Landlords: A class of people who benefited from huge land awards by the British colonial government under the “*Mailo*” land tenure system, through the 1900 Buganda Agreement. In Kibaale District, Absentee Landlords possess the legal ownership of approximately 68-70% of the total land area. They became known as “Absentee Landlords” following the post-colonial Referendum in 1964 over the lost Counties which led to their violent expulsion by the local population under the leadership of the popular Mubende Banyoro Committee (MBC). For more details, read Chapter 2 of this study and the “*Report of the Commission of Inquiry into Bunyoro Issues*” by the Government of Uganda (2006).

Albertine-Rift is an area which extends from the Northern tip of L. Albert in Western Uganda, down to the Southern tip of L. Tanganyika and encompasses the natural habitats within about 100km of the Congolese border with Uganda, Rwanda, Burundi and Tanzania. It is an area of great importance for the conservation of biodiversity, and has been identified by the Birdlife International as an Endemic Bird Area, by World Wildlife Fund as an Ecoregion, and Conservation International as a Biodiversity Hotspot. For more information about this region, consult “*Extent and Status of the Forests in the Ugandan Albertine Rift*” by Andrew Plumtre (2003)

Bibanja (Kibanja in singular) means pieces or a piece of land occupied under some duty or obligation to the legal owner

Bibanja Holders/Tenants by Occupancy is a term used to describe the people who occupy the land that is legally owned by landlords most of whom are absentee landlords. Bibanja holders are limited on the Mailo land tenure system are in two categories; the Lawful Occupant or Bona fide occupants. For details, consult Chapter three of this study.

Customary Land Tenure is a system of land tenure regulated by customary rules which are limited in their operation to a particular description or class of persons. This system of land ownership avails no formal documentary evidence of ownership to the majority of the population in Uganda. Customary tenure includes communal rights to pastures, exclusive private rights agriculture and residential parcels. For more details, consult the Land Act 1998 (Cap 227), or “*Land tenure and rural development*” by FAO, (2002).

Deforestation is the sum of all transitions from natural forest-classes (continuous and fragmented) to all other classes. It is a category of land-use change; either as a shift to a different use (land-use extensification) or an intensification of the existing one. More information can be found in Chappin *et al.*, (2002) and Contreras-Hermsilla, (2000)

Forest is “an area of land containing vegetation association mainly composed of trees of any size, and includes a natural forest, woodland or plantation, the forest produce in a forest, and the forest ecosystem” (see the Forest and Tree Planting Act 2003).

Kabaka is a Luganda word which means King. It can be easily understood as the title given to the King of Buganda Kingdom.

Land Grabbing herein means the deliberate acquisition of land by individuals or enterprises in a manner that is fraudulent, unfair, and with limited or no legal and social legitimacy, taking advantage of existing power differences, corruption, and breakdown of law and order in the society. Further elaboration of this definition is found in “Escalating Land Grabbing In Post-conflict Regions of Northern Uganda: A Need for Strengthening Good Land Governance in Acholi Region” by Mabikke (2011)

Land Tenure Security means the certainty that a person’s rights to land will be recognized by others and protected in cases of specific challenges. It is a perceptible concept which draws from multiple factors based on the land owners’ subjective assessment of the political and legal environment. For more details, see Palmer *et al.*, (2009), and Gavian and Ehui (2002:111).

Mailo Land Tenure: Under the 1900 Buganda Agreement, 9000 square miles estimated to be half of Buganda was to be shared among the chiefs and notables in private estates and the rest was to become the Crown land (See Mugambwa, 1987). The term “Mailo land” was since used to mean a form of land tenure system where the “square mile” was a unit of measure during the process of subdividing land amongst the King and notables.

Omukama is a Lunyoro word which means King. It is a title given to the King of Bunyoro-Kitara Kingdom.

The 1900 Buganda Agreement: The agreement signed in 1900 between the Kabaka (through his regent Sir Apollo Kagwa who actually signed the agreement) and Sir Harry Johnson acting on behalf of Her Majesty the Queen of Great Britain and Ireland. The Agreement which is divisible into three main parts; land, taxation and administration, also dispossessed the inhabitants in two Counties (Buyaga and Bugangaizi that form Kibaale District) of Bunyoro-Kitara Kingdom of their ancestral land rights and granted them to the King of Buganda, his notables (relatives and chiefs). The agreement was partly an instrument to reward Buganda Kingdom for fighting alongside the British to subdue Bunyoro-Kitara Kingdom that resisted colonialism. For details see “*The Legal Aspects of the 1900 Buganda Agreement Revisited*” by John Mugambwa (1987) and the “*Report on the Commission of Inquiry into Bunyoro Issues*” by the Government of Uganda (2006).