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AGROFORESTRY IN LANDSCAPE MOSAICS

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The Policy Terrain in Protected Area Landscapes

How Laws and Institutions Affect Conservation, Livelihoods, and Agroforestry in the Landscapes Surrounding Bwindi Impenetrable National Park, Kabale, Uganda

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ALAM's Mission: To improve the science and practice of conservation through better understanding of agroforestry and communities in landscapes that comprise agricultural lands, trees, and protected areas.



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Introduction

The World Agroforestry Centre (ICRAF) has the opportunity to become a new leader within the field of conservation. Through the promotion of appropriate agroforestry technologies evolved from local priorities and demands and founded upon high quality research, ICRAF can offer a practical “middle ground” to the contentious debate surrounding conservation of protected areas and the rights of local communities. Within the scope of using agroforestry as a landscape conservation strategy, ICRAF can expand ideas about how best to conserve biological diversity in a way that includes - rather than excludes - people and agroecosystems.

The use of agroforestry in buffer zones is not a new idea per se. Many organizations have used agroforestry as part of integrated conservation and development projects (ICDPs) in an attempt to meet both conservation and livelihood goals. Yet within such projects, agroforestry was typically one activity among many geared towards larger project goals. Unfortunately, very little has been written documenting the actual effectiveness of agroforestry in ICDPs (Ashley and Spainhower 2002).

Recently, a number of scientists have offered new strategies that promote agroforestry as a means of improving local livelihoods while conserving important species and environmental functions. Peter Brosius and Diane Russell (2003) proposed to “reinvent” community-based conservation by suggesting the principle of building assets across generations. These assets can include natural assets, social assets, and economic assets. Leakey and Tchoundjeu (2001; see also Tchoundjeu et al. 1999) made first-rate progress in the domestication and marketing of indigenous fruit trees in the humid lowlands of West Africa, thus supporting conservation through local use. Additionally, Schroth and colleagues (2004) recently authored a synthesis of the benefits that agroforestry can offer biodiversity conservation in tropical landscapes. They identified three hypotheses on how agroforestry can contribute to conservation: (1) agroforestry can protect nature by reducing pressure to deforest land, (2) agroforestry can provide habitat for native plant and animal species, and (3) agroforestry can serve as a benign matrix land use for fragmented landscapes. Despite these benefits, however, they state that integrating agroforestry into conservation is a major policy and institutional challenge.

While the opportunities seem quite promising, it is important to consider how the given policy environment and the practices that ensue from it impact agroforestry efforts that fall within the sphere of influence of protected areas. Identifying opportunities and bottlenecks, as well as constructing an understanding of how agroforestry can best function within a variety of policy landscapes, will provide a necessary foundation upon which to build a buffer zone agroforestry strategy.

Scope of Study

1. For the purpose of this study, the term policy is broadly defined as “a rule that influences the behavior of an individual, or firm, or organization” (Ender and Giovannucci 2003).

To address a lack of political and social understanding, ICRAF commissioned a study of the “policy terrain” within the agrarian landscape surrounding Bwindi Impenetrable National Park (BINP) in Kabale District, Uganda, and its effect (either actual or potential) on agroforestry in the protected area landscape. The working hypothesis for the study is as follows: Agroforestry can help to mediate the policy¹ terrain of protected area landscapes by meeting the livelihood demands of communities and supporting the conservation goals of protected areas.

In order to test this hypothesis, a list was compiled of all of the relevant policies, laws, and bylaws as cited by key stakeholders from various domains. In particular, this report aims to look at how the “ground-level” reality, which does not necessarily reflect national level policies, affects agroforestry efforts, determines potential winners and losers of a given policy or law, and identifies opportunities where agroforestry can play a role. More specifically, this refers to identifying converging policies and conditions that create a local demand for agroforestry products, services, or benefits. Relevant stakeholders include government officials, NGOs, local officials, local people, and marginalized populations. Policies of particular interest include those related to the environment, natural resource management and use, forestry, agriculture, land tenure, environmental conservation, protected area management, markets, gender, and traditional practices.

With a basic understanding of the political and legal terrain, it is then important to identify how different environmental and natural resource management stakeholders operate and interact within the policy terrain in order to gain a description of institutional policies, practices, and their potential impacts. Four key assessment areas were chosen – technology, extension, markets, and livelihood – which provide a framework for understanding the types of knowledge and tools that stakeholders are introducing (technology), their methods of sharing and spreading information and practices (extension), how they are working to diversify and/or increase farmer incomes (markets), and finally, how farmers judge their standard of living according to their own indicators (livelihoods).

Background: Forest and Human Ecosystems

National Parks and Reserves

Bwindi Impenetrable National Park (BINP), located in southwest Uganda in the Kigezi Highlands on the border of the Democratic Republic of Congo, is thought to harbor the most diverse forest in East Africa (UNEP 1997). The park lies between 1,190masl and 2,607masl (ibid.) and, as a suspected Pleistocene refugia, BINP contains both lowland and montane forest ecosystems (Cunningham 1996). Encompassing 321 km², it is home

to half of the world's remaining population of mountain gorillas (*Gorilla gorilla beringei*) (ibid.). Today, forests no longer exist outside of the park boundaries due to agricultural practices and a high demand for forest products like timber and fuelwood (Obua and Muhanguzi 1998). Consequently, BINP is a critical watershed for the surrounding agricultural highlands (UNEP 1997) and for the rivers that flow into Lake Edward and Lake Mutanda (Cunningham 1996). The park also harbors an extensive amount of biological diversity, including 26% of Uganda's woody species, and East Africa's highest recorded diversity for birds, butterflies, plants, and primates (Cunningham 1996).

Echuya Forest Reserve is located in Muko sub-county within the Kabale district. The reserve consists of 2,700 hectares of bamboo forest without a management plan and 30 hectares of *Pinus patula*.

Human Ecosystem

BINP lies within Kabale, Kisoro, and Kanungu Districts and is surrounded by an intensely cultivated landscape of patchwork plots, scattered across steep mountain slopes, moderately steep hillsides, and valley bottoms. In Kabale District, population density is one of the highest in Africa, estimated at 370 persons/km² (Africare 2002). Squeezed onto fragmented farms, residents grow an assortment of Irish potatoes (*Solanum tuberosum*), maize, sorghum, wheat, bananas, beans, peas, sweet potatoes, and a variety of other crops. Farmers rely almost entirely on fuelwood and tend to grow small woodlots of eucalyptus (*Eucalyptus spp.*) and black wattle (*Acacia mearnsi*) trees. Research, however, indicates that on-farm sources in Kabale are not adequate to meet household demands (Ashley 2003). On average, 34% of households own less than 0.21 hectares of land (Africare 2002). Due to intense cultivation and the steepness of slopes, soil erosion and fertility loss are major problems that cause poor or reduced harvests.

The region has a favorable climate, with mean minimum and maximum temperatures of 10° C and 23° C, and an average annual rainfall of 1,000 to 1,500 mm. Rainfall is bimodal and occurs from March to June and from October to December (Levand 2002). The landscape is composed of flat-topped hills and steep descending valleys. Altitude in the district ranges between 1,200m and 2,800m. While a diversity of species grows in the agrarian landscape, the eucalyptus and black wattle dominate the area (Kindt 2002; Lindblade 1998).

The Bakiga are the majority ethnic group in Kabale District. Agriculturists by nature, they belong to clans that have been farming the slopes of Kabale since before the arrival of colonials in the early 20th century.

In contrast, the Batwa are a very marginalized minority ethnic group that once resided within the Bwindi Forest, but now live a hand-to-mouth existence at Bakiga farms and towns or in small communities on small parcels of purchased land. Referred to as pygmies by some outsiders, their once nomadic hunter-gatherer society was well-equipped to living in the forest in temporary structures constructed from forest

materials, where they remained on the far periphery of development and political activities in Kabale. In 1991, however, the Bwindi Forest was upgraded to a national park, which, under Ugandan regulations, excludes people from living within its borders. Over 250 Batwa families were forced to leave Bwindi Forest and abandon their traditional lifestyle. Without government support or compensation, the Batwa became squatters on Bakiga farms and continue to live in dire poverty, subject to extreme racism and prejudice due to their smaller physical stature and traditional forest dwelling lifestyle.

Methodology

2. During the time of this study, ICRAF's national host organization was Uganda's Forestry Resources Research Institute or FORRI.

3. CARE's Development Through Conservation (DTC) project actually came to a close in 2002, but given the importance of this project, it has been included in the analysis.

4. See Appendix 1 for a description of the organizations.

Two sub-counties were selected from Kabale District due to their relative proximity to the Forest Resources Research Institute/International Centre for Research in Agroforestry (FORRI/ICRAF)² field office in Kabale Town and the presence of a variety of stakeholders operating within the sub-counties. Ikumba sub-county is located in the northwest corner of Kabale District and is made up of six parishes. Muko sub-county lies just south of Ikumba and encompasses seven parishes.

Five NGOs were identified as operating or projecting an influence within the two sub-counties: Africare, African International Christian Ministries, Cooperative forr Assistance and Relief Everywhere, Inc.(CARE),³ FORRI/ICRAF, and the Mgahinga-Bwindi Impenetrable Forest Conservation Trust (MBIFCT). Semi-structured interviews were conducted with representatives from all five organizations.⁴

Attempts were made to conduct semi-structured interviews with all of the key government offices operating in the two sub-counties. Interviews were conducted with the district forest officer (DFO) for Kabale; the forester in charge of the Echuya Forest Reserve, which is located in Muko sub-county; and the district coordinator for the National Agricultural Advisory Services (NAADS). Both the district environment officer (DEO) and the district agriculture officer (DAO) were unavailable.

Semi-structured interviews were conducted with local government representatives from Ikumba and Muko sub-counties. The sub-county government level—commonly known as the LC3 level—was chosen because it is the nexus of national and local governance, where national policies are implemented and community rules and decisions are enacted into bylaws. Respondents included the local chairperson, the secretary for production and environment, and members of the local government council.

In order to conduct semi-structured focus group interviews with randomly selected farmers, three parishes were initially selected at random from each sub-county. In Ikumba sub-county, Kitojo, Nyamabale, and Nyaruhanga parishes were selected. In Muko sub-county, Nyarurambi, Butare, and Kaara parishes were selected. One village was then randomly selected from each of these parishes, based on lists obtained at the local government offices. The Ikumba villages were Mukirwa, Rurengere, and Nkukuru, and the Muko villages were Bugunga, Kabaya, and Mufumba. Finally,

approximately ten men and ten women were randomly selected to participate in gender-specific group interviews. These male and female farmers were selected from the village-level government – also known as the LC1 – list of taxpayers.

Because only men are required to pay a graduated tax in Uganda, the village taxpayer lists only accounted for men. By sampling the wife of every other randomly selected man, however, it was possible to compile a random list of female, as well as male, participants. The weakness with this method is that unmarried or long-widowed women may be excluded from the sample. Unfortunately, this study did not permit a proper village census.

On occasion, some of the randomly selected villagers were not available to participate, leaving the actual core groups to be quite small in number. As a result, “self-selected” men and women who came to listen or to express their voices were permitted to participate. Therefore, each focus group in the study represents a core group of randomly selected villagers, as well as other interested people. Because this study is primarily aimed at gathering information, permitting these people to participate and share information proved to be valuable.

To ensure that minority groups were also represented within the study, an interview was conducted with a Batwa community living in Mufundi village within Muko sub-county. Due to the Batwa community’s marginalized status, it seemed inappropriate to insist upon a random sample of respondents. This group interview was therefore conducted with those people who were inclined to participate or listen.

Policy Terrain

Background

Uganda’s government operates within a decentralized system that issues power at the national and local levels. According to the Ministry of Local Government, “The system of Local Government in Uganda is based on the District as a Unit under which there are lower Local Governments and Administrative Councils” (Ministry of Local Government 2005:1). In a district rural area like Kabale, the local governments are at the district (also called the local council 5 or LC5) and sub-county (LC3). The administrative units in rural areas are present at the county (LC4), parish (LC2), and village (LC1) levels. At each level, local chairpersons are elected by their constituents and are supported by a local government council, including a secretary for production and environment. While parliament can enact policies and regulations at the national level, district (LC5) and sub-county (LC3) governments are charged with authorizing and implementing these laws. Further, communities have the power to bring issues and village-based rules to their local chairperson and local government council, who can implement regional bylaws. Therefore, in principle, Ugandans have a system of government that entrusts power to local levels and enables grassroots actions.

National Policies

The latest Uganda Forestry Policy was written in 2001 and has a strong focus on encouraging and directing tree planting in an effort to curb environmental degradation and reduce poverty. The National Environmental Statute of 1995 directs district environment councils to identify areas at risk of environmental degradation and local environment councils to target these areas with afforestation or reforestation. If these lands are already under a system of tenure, then that person is responsible for taking measures to plant trees. In Kabale, however, this law is unenforceable due to the extent of degraded hillsides, the overall land shortage, and the limited supply of seed and seedlings.

The National Forestry and Tree Planting Act (2003) established, in theory, a so-called “tree fund” to promote tree planting at national and local levels. While this sort of fund could represent an excellent opportunity for farmers and communities, the details of such an arrangement are not defined. Further, the same act gives the minister and the district council the authority to “direct” tree planting with respect to the place, the people, and the frequency.

The government is also working to support and encourage private participation and investment in natural and plantation forestry, particularly the development and sustainable management of natural forests on private lands. Under the 2001 forestry policy, all forest produce belongs to the owner of the forest and may be used as the owner determines, provided harvesting is conducted in accordance with the management plan. Investors are typically wealthy individuals with good connections; however, this could represent an opportunity for farmers or communities as well.

Conservation Policies

According to the Uganda Forestry Policy, Uganda’s forest biodiversity will be conserved and managed in support of local and national socio-economic development and international obligations. Unfortunately, this support is not always equally distributed among populations. Some communities have suffered abuses and significant loss of land and livelihoods due to conflict between conservation objectives and local values. According to Sanginga and Kamugisha, “little attention has been paid to local conflicts over the use and management of agricultural-based natural resources (soil, plants, trees, and animals) by small-scale resource-poor farmers. Yet, these are probably the most common and widespread conflicts affecting natural resource management practices and livelihood options of the large number of small-scale farmers who constitute the bulk of rural population in sub-Saharan Africa” (2003: 4).

User Rights in Protected Areas

Bwindi Impenetrable National Park

Entrance to Bwindi Impenetrable National Park (BINP) is prohibited without authorization from the Ugandan Wildlife Authority (UGA). Therefore, the majority of people living in proximity to the park have no user rights within its boundaries. A

select group of “user experts” residing in parishes that border the park are given limited access to multiple-use zones within the park. These zones constitute less than 20% of the park’s 321 km². User groups, including beekeepers, herbalists, and handcrafters, are required to sign memorandums of understanding (MOU) with the park management. On designated days, the group as a whole under the surveillance of park rangers is permitted to enter specific zones to collect honey, herbs, or basket and mat materials. Members of these groups are not allowed to collect firewood or any other forest product, but some members illegally collect seeds and wild seedlings in an attempt to grow the trees on-farm for medicinal or livelihood purposes.

Hunting in the park is forbidden, but subsistence poaching occurs despite the risk of fines or imprisonment. This law also prohibits farmers from shooting or trapping “problem animals” that leave the forest and raid their fields. Farmers are not compensated for such losses; UWA claims that it would be too hard to confirm damage or prevent farmers from taking advantage of compensation opportunities. Unfortunately, pest and problem animals like elephants do cause extensive damage, destroying crops and housing in villages close to the park. Legally, farmers can seek compensation from the government; this, however, is not a farmer-friendly process, and there is no guarantee that they will be compensated.

Removal of rocks, wildlife, and trees is illegal without written permission. This specifically includes harvesting of firewood, timber, bamboo, building materials, seeds, and seedlings throughout the entire park, including the multiple-use zones. Initially, these restrictions caused problems for the border communities who lost access to the forest resources.

In general, both wildlife proponents and future generations of locals benefit from the conservation policies governing BINP and the protection of its biodiversity. The government also receives large financial gains from tourists who visit the country and want to view mountain gorillas in their natural habitat. According to the local communities, the park does provide rainfall, windbreaks, and benefits associated with tourist money that enables new enterprises, new infrastructure, and cost sharing within the various border villages. Despite these benefits, however, local communities still lost access to important forest resources like timber, firewood, medicinal products, and honey, which cannot be compensated for through the construction of community clinics or schools.

Echuya Forest Reserve

According to the National Forestry and Tree Planting Act (2003), local communities may freely cut and take any dry wood or bamboo from a forest reserve or community forest for personal domestic use. But no person shall cut, disturb, damage, burn, or destroy any forest produce or remove or receive any forest produce except in accordance with the forest reserves’ regulations for proper management. Essentially, these two regulations provide guidelines for the use of resources within forest reserves, but defer the extent of actual access to the reserves’ management plans and the on-site for-

est authority, thus leaving room for circumvention, selective application, and interpretation of the laws (Ribot 1999).

Local communities do have limited access to the Echuya Forest Reserve, which is comprised of 2,700 hectares of bamboo forest and 30 hectares of *Pinus patula*. According to the forester responsible for the reserve, there is no clear management system in place for the bamboo forest and there is a lack of supervision. The forester allows members of the local communities to cut dried bamboo one day a week for a fee of 500 shillings per stalk, but people are not permitted to cut the new bamboo shoots within the reserve. Interestingly, the forester stated that he charges members of the minority Batwa community a discounted rate of 500 shillings per head-load. This figure, in turn, is disputed by members of the Batwa community, who claim that they are charged 1,000 shillings per head-load, which they then trade for food from the local Bakiga population. African International Christian Ministries, an NGO working closely with the Batwa community, claim that the Batwa are also allowed to gather firewood from the reserve. Despite weekly access, the reserve's forester complained that many people "steal" bamboo, leaves, and young shoots. More informed management might enable better user-systems, which could strengthen links to markets for the forest products.

According to the forester, no firewood collection is allowed within Echuya's pine forest, as people cause too much damage and take more than just the dried or fallen wood. The forester stated that he initially offered to teach community members how to properly prune each tree and exchange their labor for free access to the branches and deadwood, but people refused.

Landscape-level Conservation

The existence of landscape environmental conservation laws means that people are not only living according to protected area conservation laws, but also according to laws which promote conservation within the farming landscape. This can create challenges for farmers and may augment tensions between conservation values and livelihoods as more land is protected or placed under specific regulations. These tensions may be exacerbated in particular by the shortage of land in Kabale and by the uncertainty and contradictions within current reserved tree species laws.

Ownership of reserved tree species

There is considerable confusion surrounding ownership and use of reserved and protected tree species. The district forest officer for Kabale claimed that the law, which originally gave the government ownership of reserved species, has changed. However, the National Forestry and Tree Planting Act of 2003 clearly states in Regulation 30 that the minister or district council "may declare reserved species which will be subject to such controls as specified." Regulation 31 also states that, even on private land, the minister or district council may declare trees or groups of trees to be protected and subject to controls. Interestingly, a number of NGOs operating in the two sub-coun-

ties already support on-farm planting of *Prunus africana*, an endangered indigenous species of both timber and medicinal value. Efforts to plant *P. africana* have not been opposed, but the trees are still young and it will be important to clarify such laws before regulations or potential taxes arise.

The Uganda Forestry Policy recognizes the ambiguity and has called for a review of the laws. In its Policy Statement 6, it proposed two strategies: (1) to support domestication of wild species and (2) to promote use of indigenous species and knowledge in farm forestry. If such policies are adopted as law they could provide strong support to agroforestry domestication efforts on farm, but farmers' rights to own, use, and harvest the trees would need to be clear and indisputable.

Protected wetlands and buffered waterways

National policy currently promotes the conservation and protection of wetlands and, as such, no new titles to wetlands may be issued or old titles renewed. In Kabale this law magnifies the problem of land shortage, as the wetland valley bottoms become protected grounds while many hillsides are degraded and unsuitable for cultivation. Nonetheless, people do cultivate and graze cattle in the valley bottoms.

Sub-counties and villages have initiated bylaws to protect wetlands and rivers and to reduce erosion and sedimentation. In Muko, the local government stated that farmers must leave seven meters between a field and the river, thus reducing the area allowed under cultivation. Nearly all of the focus groups that cited this law were comprised of women, reflecting women's primary role in cultivation.

Local Laws

At the local level, many customs promote agroforestry, like planting trees on the border of plots to reduce quarrels. Local bylaws also support agroforestry interventions and farming systems directly and indirectly. However, such laws do not always achieve their intended objectives, as many on-farm species coppice,⁵ thus eliminating the need to re-plant. Further, disputes and conflicts over user-rights are common, particularly between genders since there is wide variation and interpretation of women's rights to own and use trees from village to village. Such ambiguity and uncertainty demonstrates the importance of not generalizing policies, even at the most local levels.

5. Coppice are shoots that sprout from cut or burnt stumps of trees (Amanor 1996).

Cut a tree, plant a tree

According to NGOs working in the area, the "cut a tree, plant a tree" law was developed in response to the problem of landslides. It applies not only to farmers, but also to charcoal makers who typically cut an entire hillside at one time. Farmers are quite supportive of this bylaw, citing the environmental benefits (soil conservation and rainfall attraction), as well as the products and income obtained from planting trees. This bylaw was mentioned in all six Bakiga villages and appears to have wide recognition; however, references to the bylaw are misleading. While one might expect to see

major reforestation efforts underway, this is not the reality. According to a 2002 Africare survey, in the past 12 months, over 52% of households had not planted any trees. Instead, most farmers cut eucalyptus (*Eucalyptus spp.*), a tree whose coppicing ecology makes replanting unnecessary.

No “free” cutting

The essence of this village-based law is that men do not want women going into their shamba, or woodlot, to collect or cut firewood. Unfortunately, however, present levels of on-farm trees do not supply a sufficient amount of firewood (Ashley 2003). Male villagers mentioned this law, which appears to reflect the traditional distinction between men who “own” and “harvest” trees, and women who are responsible for collecting firewood. Conflict surrounding where and how people can gather firewood may promote the cutting of mature species better suited for another function, push people to harvest from the forest or woodlots illegally, or confine families to fewer meals per week.

Women’s rights to trees

Women from five Bakiga villages acknowledged their rights concerning trees, but there was little uniformity in those rights. In Rurengere and Mufumba, a woman can both own and cut trees that are her own, but if it is not her personal tree, then she must seek permission from the owner. In Mukirwa and Kabaya, even if a woman owns a tree, she is not allowed to cut the trees. In Nkukuru a woman is not allowed to own trees.

Women and land rights

In Kabale, women’s land rights are complex and differ depending on the sub-county or village. The local government and women from Mukirwa (Ikumba sub-district) stated that if a woman buys land then she owns the title. However, the local government representatives perceive that even if she buys the land, it usually becomes the property of her husband. In Muko sub-county, though no official bylaws exist, the local government council states that if a woman buys land, then her husband does not have the right to sell it. In the villages of Nkukuru (Ikumba) and Kabaya (Muko), meanwhile, both men and women stated that a woman could not own land even if she buys it, except in the case of a woman without a husband. These examples demonstrate a strong discrepancy between legal and traditional rules about property ownership and land rights. Depending on where a woman lives and her marriage title, she can either benefit or lose under these local and customary laws.

Family property and consent to sell law

In Ikumba and Muko sub-counties, the local government councils state that no farmer, male or female, can sell land without their spouse’s approval. Women in Mukirwa contend that it is the men who own family land.

Markets

Farmers selling produce and products at the market are required to pay a small tax that typically amounts to a few hundred shillings. At the sub-county level, government officials refrain from issuing taxes or permits to buyers since they are trying to attract business, but large-scale traders must pay taxes as they transport products across district lines. Charcoal makers and beer brewers are required to pay sub-county taxes and to purchase permits, as are small shop owners. National policies have de-regulated the marketing of forest products, as plantation owners are no longer required to purchase commercial permits.

Markets at the local level are diverse in the number of products bought and sold, though the seasonality may reduce the actual diversity at any time of year. In a local market chain, farmers produce their vegetables, grains, or other products, which they sell for a commonly fixed price at a weekly market to fellow farmers, to schools, or to construction workers employed in the village.

Sorghum, Irish potatoes, and other agriculture products create the bulk of locally marketed products, and are jointly sold by men and women. Fruits, garden vegetables, firewood, trees, seedlings, and tobacco also provide supplemental income at the local level. Women were the only farmers who mentioned selling fruits. The majority of on-farm trees are used for firewood or building materials, but farmers do sell trees when they need to buy soap, salt, or other household products. Though the demand is inconsistent, they usually sell to schools, to fellow villagers constructing a house, or to people who need firewood.

The market chain for products like charcoal and traditional beers includes local processing. Producers sell either the sorghum or their entire woodlot to a buyer who processes the wood into charcoal or the sorghum into beer. The beer is usually consumed locally. Charcoal is sold locally, throughout the district, or in other regions.

Five of the six villages participate in regional and national markets through the production and sale of Irish potatoes. The local producers sell 80-100 kg sacks of potatoes to a local buyer for 10,000-15,000 shillings. These buyers store the potatoes until large-scale buyers arrive to transport the potatoes to Kabale town, Kisoro district, or Uganda's capital city Kampala. They typically pay 20,000 shillings per sack.

Women use money from the sale of crops and tree products to pay school fees, buy clothing, and purchase house provisions. Men use money from their sales to pay school fees, pay the graduated tax, buy household supplies, and, to a lesser extent, to buy land, livestock, and materials to improve their houses. It is interesting to note that none of the focus group participants mentioned alcohol despite high consumption levels of local beers and spirits, particularly among men.

Who is facilitating market access?

The Mgahinga Bwindi Impenetrable Forest Conservation Trust (MBIFCT) is the only organization working in the landscape surrounding the park with an on-going

small enterprise project. At present, it is only a pilot project operating at three sites (though they do plan on scaling up), and project activities have been pulled back due to a lack in funds. MBIFCT's small enterprise project focuses on using entrepreneurs to train community groups in beekeeping, mushroom growing, and basket making and is helping these groups to establish links to regional and national markets.

No other NGOs are currently working to establish clear links between on-farm production and markets. However, a number of organizations, including ICRAF, are moving forward with a temperate fruit strategy to link on-farm production of apples, pears, and avocados to regional and national markets.

According to the farmers interviewed, none of the organizations have promoted micro-enterprises or facilitated access to markets. On the other hand, farmers do operate independently of NGOs and are capable of penetrating the market environment on their own volition.

Interpretation and Implementation of Laws

While laws surrounding the BINP are clearly applied and surveyed, there is an absence of information about how many of the environmental management and landscape conservation policies are to be applied and enforced and clear discrepancies between stakeholders' understandings of these policies and laws. What is interesting about these discrepancies is not who is right, but rather that people and organizations have different interpretations of the law, which will inevitably have consequences. Box 1 outlines examples of some of these discrepancies of fact and interpretation.

This situation infuses a level of uncertainty into the policy terrain, particularly with regard to how farmers are permitted to use natural resources and how conflicts are resolved. Such lack of clarity can serve different interests depending on the context. Uncertainty and a lack of enforcement can be advantageous at the grassroots level, particularly in a decentralized system, allowing farmers to pursue multiple farming and livelihood strategies. On the other hand, unequal power dynamics make it easy for an authority or leader to control resources, demand benefits, or unequally distribute resources when conflicts or disputes arise over user rights or when the authority represents the sole access-pathway to the resource.

At the national level, it is difficult to effectively implement rules governing the management and use of forest resources and plantations. According to the District Forest Officer (DFO), the DFO's agency seeks help from other law enforcement agencies and strives for collaboration since they are "thin on the ground in terms of bodies." At the sub-county level, environmental management laws do not have strong enforcement mechanisms because, as one local government official stated, "we prefer to focus on sensitization and behavior change." Another factor is that officials are locally elected and therefore have an interest in pleasing their constituencies.

Box 1: Examples of contradictions, discrepancies, and variations between stakeholders

1. Discrepancy between NGO and government officer: According to Africare, plantation owners (and potentially farmers) require a forester's permission and must pay a tax in order to harvest trees for commercial purposes. According to the DFO, commercial harvesting no longer requires a permit.
2. Contradiction between national policy, government agent, and local community: According to the National Forestry and Tree Planting Act (2003), anyone can freely cut and take any dry wood or bamboo from a forest reserve for personal domestic use. Contrary to this policy, the forester in charge of Echuya Forest Reserve prohibits anyone from collecting dry wood in the pine forest. In the bamboo forest, he only allows collection one day per week and claims to charge the local Bakiga community 500 shillings per stalk of dry bamboo and the local Batwa community 500 shillings per head-load⁶ of dry bamboo. According to one Batwa community, meanwhile, the forester charges them 1,000 shillings per head-load of bamboo.
3. Variation in village laws: There is extensive inter- and intra-village variation in interpretation and application of local laws, particularly regarding open grazing versus zero grazing,⁷ women's property rights, and women's tree tenure arrangements. For example, in Kabaya village men claim that open grazing of their cattle is permitted, whereas the women assert that it is not legal. And of five female interview groups, three different versions of women's rights to own and cut trees were described. This demonstrates the danger in relying on certain groups within a village to speak for another cohort, or in taking policies or practices from one place and applying them to another area or even neighboring village.

6. It is likely that the forester charges Batwa people less money because of their compromised social and economic situation.

7. Zero grazing prohibits grazing farm animals in the village. Instead, it is expected that animals be kept in sheds or corrals where their feed is brought to them. From a simple agroforestry perspective, grazing livestock does more harm than good to trees and crops, particularly to young seedlings, saplings, and fodder species. Open grazing also causes soil erosion and bund breakage. On the other hand, without adequate fodder supplies, zero grazing can be a difficult task, and proponents of open grazing cite the benefits of spreading manure across the farmland.

Institutional Policy Terrain

Technology

What technologies are provided?

The "technologies" that NGOs and government programs claim to offer to groups and individual farmers focus on (1) establishing income generation and market opportunities, and (2) providing agroforestry techniques that improve soil fertility, reduce soil erosion, and supply farmers with poles, firewood, and stakes. Due to effective sensitization, local government members and individual farmers clearly

understand the purpose and objectives of the various agroforestry and development technologies. Table 1 displays the close link between the organizations’ main objectives and the perceptions of these objectives by farmers and local government representatives.

Table 1: Institutional objectives and local government and village perceptions of institutions’ objectives.

	NGO and Government Programs	Local Government Perceptions	Farmer Perceptions (5 Bakiga Villages)
Objectives of development interventions	<ul style="list-style-type: none"> ▪ Establishing income generation and market opportunities ▪ Providing agroforestry technologies that provide environmental benefits and tree products 	<p>Ikumba sub-county:</p> <ul style="list-style-type: none"> ▪ Improve agriculture ▪ Soil conservation ▪ Income generation /enterprise ▪ Tree products ▪ Conservation <p>Muko sub-county:</p> <ul style="list-style-type: none"> ▪ Improve agriculture /farming ▪ Soil conservation /fertility ▪ Improve infrastructure 	<ul style="list-style-type: none"> ▪ Soil fertility ▪ Prevent erosion ▪ Improve harvest ▪ Improve nutrition ▪ Provide tree products ▪ Provide income ▪ Reduce labor

The general understanding of park laws and the effective relay of information regarding development objectives are indicators that the generation of awareness about BINP has been extensive. Despite this “success”, however, the number and variety of technologies actually being introduced into the farming system is low compared to NGO intentions.

Three technologies – woodlots, fruit trees, and beekeeping – are promoted by over half of the organizations and government offices. Yet, the average farmer asserts that they have not received new technology or guidance on woodlots, fruit trees, or beekeeping. According to the farmers, they are receiving information about inter-cropping (the mixing trees with crops), planting both vegetables and trees in row arrangements, planting trees along plot boundaries or terrace edges, establishing hedge-rows, and improving tree spacing.

Table 2 demonstrates how, among the groups of respondents, there is variation between villages and gender as to the number of organizations providing technology and the technologies that are actually introduced. Such variation demonstrates poten-

The Policy Terrain in Protected Areas in Uganda

tial inconsistencies and inequalities in extension methods. It is important to note that these technologies are methods of which farmers are aware because they were introduced at some level. This does not mean that adoption has actually taken place on each participant's farm.

Table 2: Technologies provided by NGOs according to farmers and officials

	NGO Claims (on number of providing organizations)	Local Government Perceptions	Female Farmers Perceptions	Male Farmers Perceptions
Number of NGOs providing technologies	7 NGOs working in Ikumba and Muko sub-counties	4 NGOs cited as providing services	Women from 4 villages cited 2 NGOs that provide them services	Men from 4 villages cited 4 NGOs that provide them services
Technologies	Woodlots (5 org.) Fruits (4 org.) Bee keeping (4 org.) Hedge-rows (2 org.) Boundary planting (2 org.) Improved fallow (2 org.) Domestication (2 org.) Water trenches (2 org.)	Woodlots Handcraft Bee keeping Nurseries Intercropping Boundary planting Fruits	Mixed planting (4 villages) Rows (3 villages) Boundary/Terrace planting (2 villages) Hedge-rows (1 village) Tree spacing (1 village)	Rows/Line planting (4 villages) Boundary/Terrace planting (2 villages) Homegarden (1 village)

Table 3, likewise, shows that the number of species that are actually available and received on farms is lower than the number of species promoted by organizations. Interviews with NGO and government representatives brought together a list of 31 species of trees and improved crop species used in various agroforestry technologies. But in the interview groups, female and male farmers only cited 15 and 12 species, respectively, that had been introduced on farms within their village. The species most frequently promoted are those species most frequently listed by farmers as being introduced with agroforestry technology. These species include Irish potatoes, Calliandra, and Grevillea.

It is quite probable that the list of trees promoted by organizations is actually longer. One difficulty with collecting this information was that, in three of the interviews with NGOs, the representatives of the organization could not remember the tree species that had been promoted with the various technologies and appeared uncertain about the technical aspects of agroforestry interventions.

Table 3: Species promoted and received

	NGO	Local Government	Female Farmers	Male Farmers
Total Number of Species	31 species promoted	17 species received	15 species received	12 species received
Species most frequently promoted/received with technologies	Irish Potato (4 org.) Calliandra (3 org.) Grevillea (3 org.) Alnus (3 org.) <i>Pinus spp.</i> (3 org.)	Grevillea (3) Calliandra (3) Passion Fruit (2) Irish Potato (2) Beans (2)	Calliandra (4) Grevillea (4) Alnus (3) Beans (3) Irish potato (2) Cabbage (2) Pinus spp. (2) Sesbania (1) Podocarpus (1) Eucalyptus (1) Cypress (1) Carrots (1) Maize (1) Apple (1) Avocado (1)	Calliandra (4) Grevillea (4) Irish Potato (2) Eucalyptus (2) Pinus spp. (2) Alnus (2) Cabbage (1) Beans (1) Sesbania (1) Elephant grass (1) Apple (1) Avocado (1)

What do people want?

Four villages highlighted the activities and technologies they would like to receive. The three Bakiga villages were unanimous in their desire for more awareness and training in farming methods, tree planting, and fruit growing. One village also expressed its desire for improved seeds and animal breeds, as well as financial support to start enterprises. The Batwa community also requested crop seeds, stating that it is obliged to trade its labor on Bakiga farms for seeds and food.

According to Africare's 2002 survey, high-quality planting materials are quite limited in availability, which explains why 26% of households reported that they did not have tree seedlings to plant. There is clearly a need to improve tree seed supply and distribution (Asare and Anders 2003), as well as an opportunity to diversify those species available to farmers. One area of agroforestry opportunity may be to focus on trees and shrubs that have important medicinal properties.

Extension Trends

Who is targeted and how is it structured?

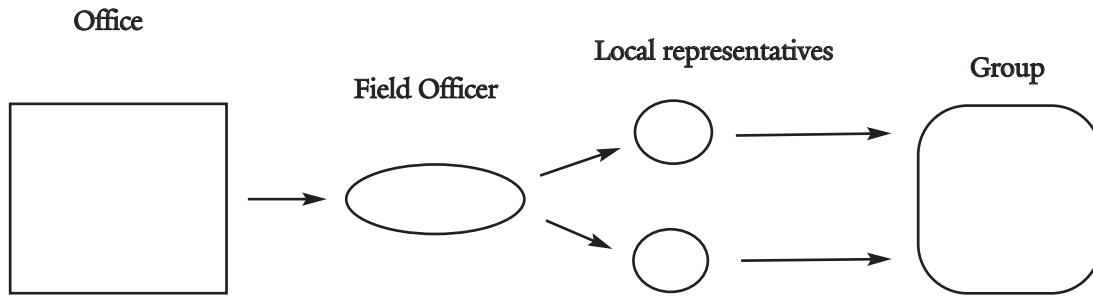
Extension services in the two sub-counties bordering the national park are largely group-focused. Information, training, and germplasm are oriented to those farmers who are members of a farming group, but it is unclear what this means for farmers who are not group members. Of those farmers who participated in the interviews, 54% are not members of farming groups. Through interviews, it also emerged that three dissemination structures are present within the landscape.

Centralized dissemination

In centralized dissemination, services and information originate at the central office and move out based upon a “chain of social links” that eventually terminates with a group of farmers. All of the organizations and government offices working around the park practice some form of centralized dissemination. The term centralized implies that information and resources (including human resources) are based in a single central location, which controls the flows of said information and resources.

As seen in Figure 1, the first link in this system is the field officer who is based at the central office. The second link (and sometimes third link) may be a local government leader, a group leader, or a selected “volunteer” farmer who serves as a local representative. Information is generally disseminated to these representatives, who are charged with relaying information and supplies to the targeted groups. Within this system, information can be transmitted through (1) group trainings, organized either for the entire group or at times for a certain member who then relays the information back to the rest, (2) farmer-to-farmer exchanges, and (3) sensitization.

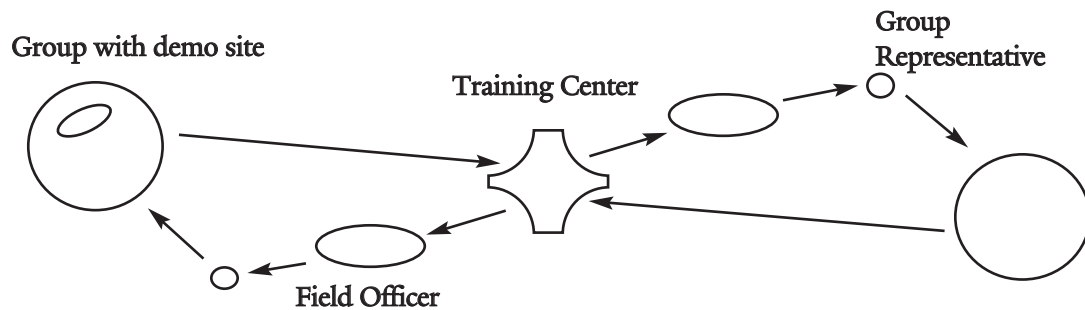
Figure 1: Service and information flow with centralized dissemination



Decentralized dissemination

In a decentralized extension system (Figure 2) like that used by Cooperative for Assistance and Relief Everywhere, Inc.-Development Through Conservation (CARE-DTC), information is centered in a number of field training centers that are located within the target area. These centers are equipped with a field officer and support staff. Strengths of a decentralized training center include the ability to conduct local trainings at the site, to transplant technologies to villages (such as CARE’s demonstration plots), and to maintain consistent contact with the communities. However, the extension officers charged with bringing information to the villages also rely on a chain of social links (similar to the centralized system) that passes information through government officials (LCs), farmer forum representatives, and group leaders who then make principle contact with farmer groups and individuals.

Figure 2: Service and information flow with decentralized dissemination



Tiered dissemination

Traditionally, information and technological links were based on political relationships and power dynamics in government-operated systems. In contrast, the National Agricultural Advisory Services (NAADS) relies on a decentralized, tiered system for information and technology dissemination, though it retains the traditional use of social links. The NAADS vision is to establish and enable a private sector agricultural extension system that is farmer-owned (NAADS 2005). However, its hierarchical structure has not necessarily facilitated the free flowing, demand-driven, market-based service-provider system that it claims to enable.

One of the weak links within this extension system rests with service providers.⁸ Service providers are expected to offer technical assistance to farmers in various agricultural fields, including animal husbandry, pisciculture, agroforestry, and bee keeping. However, according to informants at the international and local district levels, services providers' capacities are limited and the pool of providers is too small to encourage competition. Thus, "lame-duck" technicians cannot be weeded out since farmers have limited options. The NAADS structure is such that the limited budgets of sub-counties are insufficient to hire more than one, at most two, providers, further frustrating the system.

How effective is dissemination?

Based upon the random sampling of farmers, it would appear that extension services are disseminating information to a smaller percentage of the population than NGOs claim. Out of six Bakiga villages, agroforestry and market-oriented technologies have only been introduced to women farmers in four villages by only two organizations - CARE, whose ICD project around BINP has ended, being one of the organizations. Men from four of the six villages have received services from four organizations, three of which are still working in the area. One village has not received any contact whatsoever. It is important to note that CARE-DTC, which had the greatest impact based on farmers' knowledge of organizations operating in their village and technologies received, left a large vacuum when their operations ended.

8. A service provider is the new private sector term being used to describe an agricultural extension agent.

CARE, it could be argued, carried out a successful dissemination campaign if one judges by the fact that they were mentioned in the majority of interviews with villages and sub-counties and their technologies were identified by most groups of men and women villagers. (This does not, however, speak to actual adoption or to the appropriateness of the technologies). Their relative success may also be due to the length of time that CARE spent working around the park and to their decentralized training centers.

How are farmers informed?

According to farmers, NGOs transfer information through two primary methods: field visits and group training. Information is primarily provided by NGO staff, but community members and government extension agents also teach farmers.

How often are farmers contacted?

Actual contact between organizations and farmers varies considerably. African International Christian Ministries (AICM) extension officers actually live in the village, whereas some ICRAF staff provide yearly visits to “observe” temperate fruit trees. Most farmers feel that a visit once a month is not adequate, whereas two or three visits per month are enough. The number of visits, however, does not indicate how well information is understood. It is probably safe to assume that the greater the number of times information concerning technologies is passed from one person to another, the more the quality of that information is diluted.

Extension bottlenecks

- Using a chain of links or a tiered system is not transparent or democratic. In the case of the tiered system used by NAADS, people with power maintain their power in new roles and positions and tend to reap many of the benefits. Demonstration sites, fruit trees, and money for facilitating contracts are just some of the goodies that “links” or “representatives” like LCs, farmer forum members, or volunteer farmers can gain. When all of the benefits rest with one person, it is not an indicator of good dissemination.
- Another bottleneck is that people are appointed, not elected; therefore it is important to question how well they are disseminating information and technology. These social links may, in fact, be “weak links” that weaken the entire extension system.
- There is poor feedback from users in extension systems. NGOs and government organizations may not prioritize listening to farmers.
- One final consideration is the question of whether groups are the best unit for disseminating agroforestry technologies. Understanding how the characteristics and dynamics of different groups may facilitate or impede dissemination is crucial.

Livelihoods and Marginalized Groups

Ugandans living within Bwindi Impenetrable National Park's landscape have a mixed opinion of their livelihoods, but generally estimate that the past five years have brought slight improvements. Four of five male focus groups determined that livelihoods have slightly improved due to improved housing, better income, and an increase in the number of trees that people are growing. The six female focus groups only saw minimal improvements in their livelihoods. Harvests, housing, education, and health were the most common indicators. Livelihood improvements were seen in better housing (three groups), increased education (two groups), and improved seed quality (two groups). However women were divided as to whether harvests had improved, and two groups felt that health had declined.

Mufundi Batwa

The Batwa do not have traditional rights to land outside of the forest and, therefore, fell into dire circumstances when they were forced to leave Bwindi. Over the past few years, two organizations (AICM and MBIFCT) have emerged to help Batwa families by purchasing land so that they can start an agrarian lifestyle and by building houses and schools. Despite the assistance, many people in Batwa communities are still malnourished, uneducated, subject to sickness, and severely discriminated against by the larger Bakiga population for whom they are forced to work for little to no pay.

In Mufundi, the Batwa community continues to live in temporary shelters but has a few permanent structures, including a two-room school. Numbering well over 30 adults, they live on only five acres at the top of a mountain and, during the dry season, are obliged to walk long, steep distances for water. Gaining a livelihood is very difficult for the Mufundi Batwa. Though they have no consistent source of money, they explained that they are obliged to pay for bundles of firewood or head-loads of bamboo (1,000 shillings) from Echuya Forest, which they trade or sell for food with the Bakiga communities. They also stated that when they work for a day on a Bakiga farm, they are paid three kilos of beans in exchange for food preparation or with seeds in exchange for cultivating. According to the primary school teacher, there are 35 children in the Primary 1 and Primary 2 classes, but they have a difficult time learning because they do not have enough food to eat.

The Batwa community has no real representation within the political structure. It has an LC1, equivalent to a village chief, but it did not participate in the LC3 (sub-county official) elections - perhaps because the community members are so marginalized that they lack the capacity or the desire to participate as full citizens and therefore lack true representation. The Batwa need to begin to build their civic and property rights and increase their user-rights to trees and the forest, but this is a process which they cannot accomplish in isolation as their community has little to no social capital within the dominant Bakiga culture and political system.

Agroforestry and Landscape Conservation Opportunities

In the landscape surrounding BINP, there is a strong demand for a landscape conservation strategy that would use agroforestry to meet livelihood needs and conserve forest species through its use on-farm. The reasons for this demand are five-fold:

- On-farm resources do not comfortably meet the high demand for forest products.
- BINP is isolated within an agrarian landscape.
- The landscape is dominated by two exotic species and available germplasm is limited in terms of access and species.
- It is unclear how effectively institutions are actually impacting farmers, particularly the marginalized.
- Discrepancies and confusion surrounding policies and their application hamper individuals' and communities' access and rights to resources and delay the implementation of good environmental policies and practices.

Further, a number of key opportunities exist that could support landscape-scale conservation and greater community participation in resource conservation through use:

- The Uganda Forestry Policy is committed to establishing collaborative forest partnerships for the sustainable management of forests.
- Within the policy there is a strategy to support domestication of wild species and to promote use of indigenous species and knowledge in farm forestry.
- The government has established a tree fund to sponsor afforestation.
- Farmers are well-informed about the benefits of planting trees on-farm.

Agroforestry and community participation have much to offer a landscape conservation strategy in Kabale, Uganda. The following are four salient opportunities that emerge from this study:

1. NGOs promoting agroforestry could actively work to resolve uncertainty surrounding the reserved species law through the domestication of native species that would be actively planted by farmers, particularly those with timber or medicinal value.¹⁰ This would not only help to increase environmental diversity, functional diversity, and marketing diversity within the landscape, but it would also promote the concept of building assets across generations.
2. Allowing joint forest management of the Echuya Reserve and other natural forest reserves could develop the level of active management and enable more diverse and responsible use, as well as facilitate new market opportunities, particularly for the Batwa communities.
3. The establishment of diversified woodlots that contain multiple (native and exotic) species on degraded slopes could provide a way of meeting short-term demands while investing in long-term returns.

10. Across Africa, reserved species laws originated with a focus on protecting endangered or highly valuable trees that had grown naturally. Thus, it is easier to claim ownership to a planted tree than to a tree that has naturally regenerated on-farm. NGOs could play an active role in helping to refine such policies so as to encourage the planting of local tree species.

4. Several new “agroforestry niches” could be exploited. For example, the 7-meter “buffered waterway” bylaw potentially contributes to the land shortage problem by reducing the area available for cultivation. However, targeting these micro-riparian zones with tree planting could contribute to, rather than degrade, the necessary buffers, even while providing valuable resources for farmers.

Generally, national policies create a positive agroforestry environment. At the ground level, however, the policy terrain presents a complex system of laws, bylaws, and local customs that does not necessarily facilitate choices or practices which either back environmental objectives or support livelihoods. Therefore, organizations must be cognizant of this policy terrain and proceed cautiously, as tree planting and agroforestry interventions can create unexpected outcomes (Schroeder 1997), especially if the resources gain value or cause cultural or political tensions. It is particularly important to be cautious of such dynamics in working with the less powerful gender and minority groups.

Finally, environmental organizations operating within protected area landscapes must be willing to advocate for changes or clarifications in national and local policies and to support communities and groups in establishing, justifying, or increasing their access and rights to resources. For example, using expertise and resources to improve the lives of the most marginalized and destitute is critical to reducing poverty and improving livelihoods. At the legislative level in Uganda, clarification of “de-regulated harvesting” and the reserved species law would greatly benefit farmers and plantation owners by allowing them to invest in higher value species of native origin.

References

- Africare. 2002. Uganda Food Security Initiative Baseline Survey. Kabale, Uganda.
- Amanor, K.S. 1996. Managing trees in the farming system: The perspective of farmers. Forest Farming Series No. 1, Forestry Department, Ghana.
- Asare, R. and P.P. Anders. 2003. Distribution of tree seed and seedlings: A diagnostic survey conducted in Kabale District, Uganda as part of improved seed systems for agroforestry in African countries (ISSAAC) programme. Unpublished, Danida Forest Seed Centre, Humlebaek, Denmark.
- Ashley, R. 2003. On-farm tree functions in Kabale, Uganda: Assessing social value and preferred characteristics. Unpublished Master's thesis, Yale School of Forestry and Environmental Studies, New Haven, Connecticut.
- Ashley, R. and K. Spainhower. 2002 (draft manuscript). Applying agroforestry in buffer zones to enhance conservation and development: A brief literature review. The World Agroforestry Centre (ICRAF), Nairobi, Kenya.
- Brosius, J. P. and D. Russell. 2003. Conservation from above: An anthropological perspective on transboundary protected areas and ecoregional planning. *Journal of Sustainable Forestry* 17: 39-65.
- Cunningham, A.B. 1996. People, park and plant use: Recommendations for multiple-use zones and development alternatives around Bwindi Impenetrable National Park, Uganda. People and Plants Working Paper 4, UNESCO, Paris.
- Ender, G. and D. Giovannucci. 2003. Agribusiness policy inventory and analysis. In *A Guide to Developing Agricultural Markets and Agro-enterprise*. Agribusiness and Markets Thematic Group, World Bank.
- Kindt, R. 2002. Methodology for tree species diversification planning for African agroecosystems. Unpublished doctoral thesis, Chapters 13 and 14. ICRAF and Ghent University.
- Leakey, R.R.B. and Z. Tchoundjeu. 2001. Diversification of tree crops: Domestication of companion crops for poverty reduction and environmental services. *Experimental Agriculture* 37(3): 279-296.
- Levand, T. 2002. Patterns of tree diversity in the fragmented landholdings of Kigezi Highlands. ICRAF Report. Kabale, Uganda.
- Lindblade, K., G. Carswell, and J. Tumuhairwe. 1998. Mitigating the relationship between population growth and land degradation. *Ambio* 27(7): 565-571.

- Ministry of Local Government, 2005. Local Government. Government of Uganda. August 2005 <http://www.molg.go.ug/local_govts/local_gov_system.htm>.
- NAADS, National Agricultural Advisory Services 2005. June 2005 <www.naads.or.ug/index.php>.
- National Forestry and Tree Planting Act. 2003. Acts Supplement No. 5, The Uganda Gazette No. 37, Volume XCVI. Printed by UPCC, Entebbe.
- National Environmental Statute. 1995. Ministry of Water, Lands and Environment, Republic of Uganda.
- Obua, J. and G. Muhanguzi. 1998. Farmers' knowledge of indigenous tree cultivation around Bwindi Impenetrable Forest National Park, Uganda. *Indigenous Knowledge and Development Monitor* 6(2).
- Sanginga, P.C. and R. Kamugisha. 2003 (draft manuscript). Minimizing conflicts in natural resources management and use: Social capital and local policies in the highlands of south-western Uganda. African Highlands Institute, Kampala.
- Ribot, J.C. 1999. Decentralization, participation, and accountability in Sahelian forestry: Legal instruments of political-administrative control. Berkeley Workshop on Environment and Politics (August 1, 1998). Paper WP00-5-Ribot. Institute of International Studies, University of California, Berkeley.
- Schroeder, R.A. 1997. "Re-claiming" land in the Gambia: Gendered property rights and environmental intervention. *Annals of the Association of American Geographers* 87(3): 487-508.
- Schroth, G., G.A.B. da Fonseca, C.A. Harvey, C. Gascon, H.L. Vasconcelos, A.N. Izac, A. Angelsen, B. Finegan, D. Kaimowitz, U. Krauss, S.G. Laurance, W.F. Laurance, R. Nasi, L. Naughton-Treves, E. Niessen, D.M. Richardson, E. Somarriba, N.I.J. Tucker, G. Vincent, and D. S. Wilke. 2004. *Agroforestry and Biodiversity Conservation in Tropical Landscapes*. Island Press, Washington D.C.
- Tchoundjeu, Z., B. Duguma, M. Tiencheu, and M. Ngo-Mpeck. 1999. The domestication of indigenous agroforestry trees: ICRAF's strategy in the humid tropics of West and Central Africa. In *Current research and prospects for conservation and development*, T.C.H. Sunderland, L.E. Clark, and P. Vantomme, eds. FAO, Rome. Available at <http://www.fao.org/docrep/X2161E/x2161e17.htm>
- The Uganda Forestry Policy. 2001. Ministry of Water, Lands, and Environment, Republic of Uganda.
- United Nations Environment Programme (UNEP). 1997. "Protected Areas Programme, World Heritage Sites: Uganda." February 2002. <<http://www.unep-wcmc.org/sites/wh/bwindi.html>>.

APPENDIX I: Governmental and Non-Governmental Organizations Operating in Muko and Ikumba Sub-Counties

Ugandan Wildlife Authority (UWA)

- Its mission is to conserve and sustainably manage the wildlife and protected areas of Uganda in partnership with local communities and other stakeholders for the benefit of the people of Uganda and the global community.
- Rangers are charged with law enforcement, tourism, and community conservation.
- Community conservation is based upon collaborative management and has six components:
 1. revenue sharing
 2. multiple use zones
 3. problem animal control
 4. health education
 5. conservation education and awareness raising
 6. conflict management

District Forest Officer (DFO)

- DFO looks after the government forest estate, provides forest management guidance and direction, and links with other stakeholders to implement policies.
- The primary focus is on plantation management.
- DFO also manages a 3,000 hectare bamboo forest in Muko sub-county (Echuya), which also contains 30 hectares of *Pinus patula*

National Agricultural Advisory Services (NAADS)

- The program is responsible for provisioning agricultural advice and services to farmers. It gives farmers, particularly the poor, women, and youths, powers to ask for advisory services for their priority enterprises. In the past, farmers have been waiting for extension workers to bring services to them, but now the farmers have to identify the advice they need and contract the person to provide it. The person will be a private service provider.

Africare

- Africare's five year goal is to improve food security and nutrition in Kabale District by implementing soil conservation and erosion control, increasing agricultural productivity, improving the utilization of nutritious food at the household level (particularly for women and children less than 5 years), and improving household access to food through enhanced road access/egress and increased disposable income.

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- Africare's project sections include:
 1. agriculture and post-harvest handling
 2. community nutrition and sanitation
 3. community road construction
 4. marketing
 5. natural resource management
 6. monitoring and evaluation

African International Christian Ministries (AICM)

- AICM is focused on community development, evangelism, and literacy.
- They have a crisis intervention project with the Batwa community.

Cooperative for Assistance and Relief Everywhere, Inc. - Development Through Conservation Project (CARE-DTC)

Ended operations in June 2001

- The project supported conservation and biodiversity protection in protected areas by creating other options to reduce pressure on resources.
- The intermediate objectives focused on agricultural development, community conservation, and institutional development.

Forest Resources Research Institute/International Centre for Research in Agroforestry (FORRI / ICRAF)

- This organization conducts agroforestry research and development to build capacity for improved livelihoods.
- Its activities focus on disseminating improved technologies, fodder production, improved fallows, participatory research, training, and capacity building.

Mgahinga Bwindi Impenetrable Forest Conservation Trust (MBIFCT)

- Its goal is to maintain biodiversity and ecosystem health of Mgahinga Gorilla National Park (MGNP) and Bwindi Impenetrable National Park (BINP) region. The purpose of the trust is to promote and support long term conservation of biodiversity of MGNP and BINP.
- Biodiversity is directly supported by giving support for park management and related research activities.
- Biodiversity is indirectly supported by giving grants to help local community groups develop economic activities which will provide alternative means of meeting needs that were originally met from harvesting forest resources.
- Core programs include community projects, research projects, park management projects, and education, awareness, and training in communities.
- Special programs are a Batwa support project, ecological monitoring program, and an enterprise development project.

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ADDITIONAL TITLES IN THIS SERIES

- Ashley, Rebecca. 2004. *Conservation Through Use: Identifying Indigenous Forest Species for Agroforestry and Biodiversity Conservation of Farmland Surrounding Bwindi Impenetrable National Park in Kabale, Uganda*. Agroforestry in Landscape Mosaics Working Paper Series. World Agroforestry Centre, Yale University Tropical Resources Institute, and The University of Georgia.
- Ashley, Rebecca. 2005. *Colonial Solutions, Contemporary Problems: Digging to the Root of Environmental Degradation in Kabale, Uganda*. Agroforestry in Landscape Mosaics Working Paper Series. World Agroforestry Centre, Yale University Tropical Resources Institute, and The University of Georgia.
- Ashley, Rebecca. 2004. *The Policy Terrain in Protected Area Landscapes: How Laws and Institutions Affect Conservation, Livelihoods, and Agroforestry in the Landscapes Surrounding the Classified Forests of Faira and Dioforongo, Segou, Mali*. Agroforestry in Landscape Mosaics Working Paper Series. World Agroforestry Centre, Yale University Tropical Resources Institute, and The University of Georgia.
- Ashley, Rebecca and Peter Mbile. 2005. *The Policy Terrain in Protected Area Landscapes: How Laws and Institutions Affect Conservation, Livelihoods, and Agroforestry in the Landscapes Surrounding Campo Ma'an National Park and The Dja Biosphere Reserve, Cameroon*. Agroforestry in Landscape Mosaics Working Paper Series. World Agroforestry Centre, Yale University Tropical Resources Institute, and The University of Georgia.
- Ashley, Rebecca. 2006. *The Policy Terrain in Protected Area Landscapes: How Laws and Institutions Affect Conservation, Livelihoods, and Agroforestry in the Landscapes Surrounding Bwindi Impenetrable National Park, Kabale, Uganda*. Agroforestry in Landscape Mosaics Working Paper Series. World Agroforestry Centre, Yale University Tropical Resources Institute, and The University of Georgia.
- Barr, Robin. 2004. *Landscape-Level-Tree Management in Meru Central District, Kenya*. Agroforestry in Landscape Mosaics Working Paper Series. World Agroforestry Centre, Yale University Tropical Resources Institute, and The University of Georgia.
- Welch Devine, Meredith. 2004. *Three Communities, Two Corporations, One Forest: Forest Resource Use and Conflict, Mabira Forest, Uganda*. Agroforestry in Landscape Mosaics Working Paper Series. World Agroforestry Centre, Yale University Tropical Resources Institute, and The University of Georgia.

