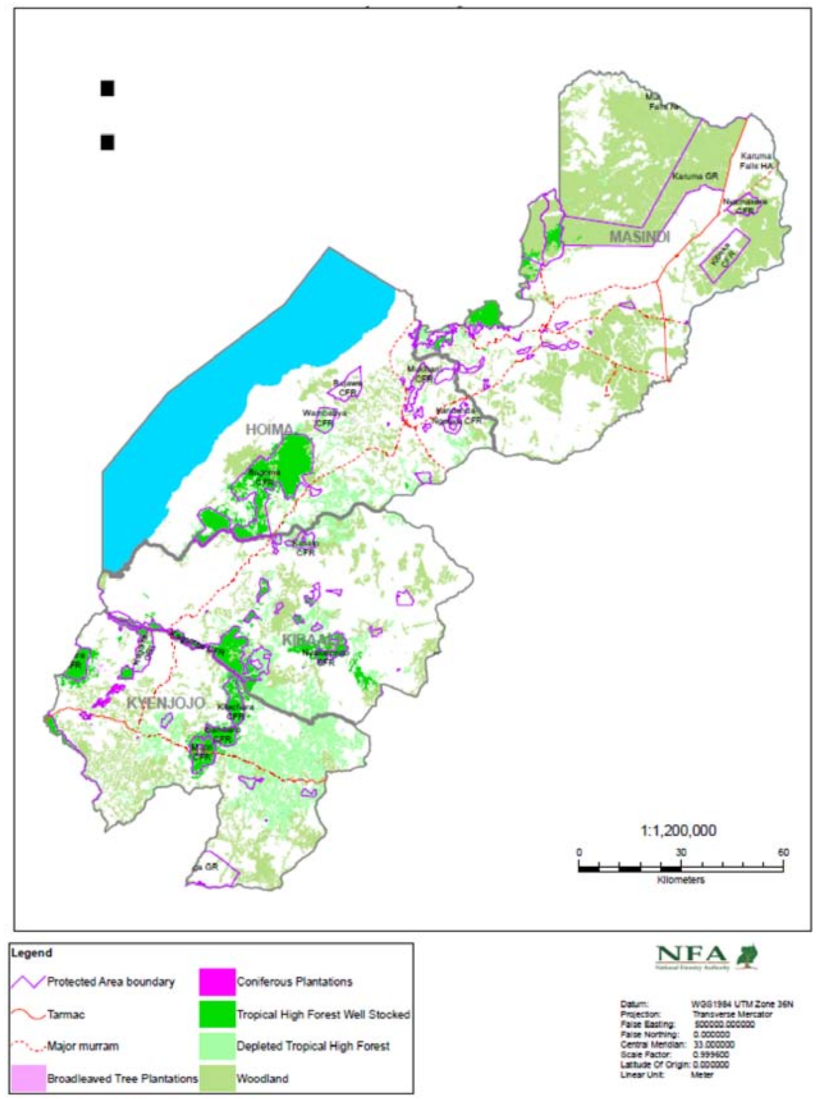
Budongo-Bugoma Landscape REDD+ Project

Source(s): *Budongo-Bugoma Landscape REDD+ Project: Feasibility Assessment*

Project location

The proposed project is located in Hoima, Kibaale, Kyenjojo (and Masindi) districts, Uganda. (p.2)



(Source: NFA National Biomass Unit, 2010 based on 2005 data).

Forest cover in Budongo-Bugoma Region - Masindi, Hoima, Kibaale, and Kyenjojo Districts (p. 10)

Proposed project general location

Forest area and types *p.8, 18*

The geographic scale of the project intervention, along with the project boundaries, is yet to be determined.

Budongo and Bugoma are forest reserves under central government protection, covering around 80,000 and 40,000 ha of land. They are situated in a landscape made up of patches of mainly degraded tropical high forest and woodland. In total, the forest and woodland patches in the landscape outside protected areas make up about 350,000 ha under private, communal and government ownership, in addition to around 330,000 ha of forests and woodlands in protected areas (NFA/NEMA 2008).

In the broader landscape there appear to be around 90,000 ha of remaining tropical high forests outside of protected areas in the 3 Districts Hoima, Kibaale and Kyenjojo as of 2005 (NFA). This number includes forests in various states of degradation but does not include woodlands (of which there are another 120,000 ha). Another 2,000 ha of high forest (and close to 100,000 ha of woodland) remain outside protected areas in Masindi district.

The distribution of patch sizes is unclear at present and appears to be highly variable, ranging from below 1 ha to 3,400 ha. The sizes of individual forest properties, as estimated by forest owners themselves, range from less than 1 ha up to around 683 ha for individual land owners.

The topography is characterized by broad hills and valleys with average elevations of about 1,100 m above sea level. The vegetation comprises a mosaic of forest, woodland and grassland, intermixed with the cultivated fields of subsistence farmers and bush fallow.

Budongo and Bugoma forests are classified as medium-altitude, moist, semi-deciduous (Eggeling 1947; Langdale-Brown et al. 1964). Valleys often have papyrus (*Cyperus papyrus*) swamps bounded by dense clumps of the wild date palm (*Phoenix reclinata*). In general, the landscape on the western side, bounded by Lake Albert, is drier with grassland at the escarpment of the western rift valley progressing eastwards into savanna woodland then tropical high forest patches. Climate conditions range from hot in the Albertine rift escarpment to moderate, with mean annual rainfall of about 1,500 mm (in March-May and September-December).

Tropical high forest types outside government protected areas are highly degraded and exist predominantly in valleys along rivers such as the Waki, Wambabya, Rwamatonga, Hoima, and Kafu. Common tree species in these riparian forests include *Trilepisium madagascariensis, Antiaris toxicaria, Funtumia africana* and *Pseudospondias microcarpa*.

Forest management and use context

All land in Uganda is owned as either government or private land. The following land tenure systems exist: Customary; Freehold; Mailo; and Leasehold. Land is defined as land and all that grows on it. Therefore a landowner is the tree owner except in situations where additional arrangements such as leases and licenses have been made. (p. 13)

Customary tenure is the most common tenure type in the project landscape. Most forests on customary land in Uganda are communally owned by traditional institutions on behalf of the communities. Communities can convert these forests to Community Forests by complying with the provisions of section 17 of the Forest and Tree Planting Act, 2003. (p. 13)

Freehold tenure is a form of private tenure that involves the holding of registered land in perpetuity. *Mailo* tenure is another form of tenure which involves the holding of registered land in perpetuity. It differs from freehold in that it permits the separation of ownership of land from the ownership of developments on land made by a lawful or *bona fide* occupant (lived on land for 12 years or more). Mailo land tenure is common in Kibaale district. (p. 14)

Leasehold tenure is a form of tenure created by contractual agreement reached when the landlord or leaser grants the tenant or lessee exclusive possession of land, usually for a defined period in return for a rent or premium. (p. 14)

The tenure security seems to be dependent on active agriculture or settlement. In the Budongo-Bugoma landscape, an average household may own 1-5 hectares (but some own significantly more). Land is generally not officially registered or even properly surveyed. Boundaries often demarcate only the utilized (agriculture and settlement) part of the land and are mutually known among neighbors. (p. 14)

Under customary tenure, the use of forests and woodlands is virtually open-access. As such, expected profits from woodlands are low and there are strong benefits from conversion to private tenure and agriculture. The main economic activity is subsistence agriculture using hand hoes, pangas (machetes), and fire. Crops grown include sugarcane, tobacco, cotton, maize, rice, beans and potatoes. All households cook with locally gathered firewood (UBOS 2007) openly accessed from existing forests. (p. 8, 9)

Forest conversion on private land is legal. According to the law, there is no requirement for private owners to seek authorization for cutting a few trees from their own land. For clear cutting a large area, however, a private forest owner needs authorization from the district forest officer. (p.14,15)

Human population is high and growing slightly faster than the national rate of 3.2% (UBOS 2007). Average household size is about seven persons. A significant proportion of the population is made up of recent immigrants and war refugees from the Democratic Republic of Congo, Rwanda and northern Uganda. Poverty levels are high. (p. 8, 9)

Rates and drivers of deforestation and degradation

Between 2000 and 2005, annual deforestation, in Hoima, Kibaale, and Kyenjojo district appears to have averaged 4.5%, or 6,200 ha, annually (WCS and MUIENR 2008), although the relative figure is almost certainly higher for forestlands outside of protected areas. Masindi district appears to have only witnessed marginal loss of forest area (50 ha) (in contrast to earlier years). (p. 8)

The deforestation and degradation pressures below affect primarily forests on private and communal land in the Budongo-Bugoma landscape. In the Budongo and Bugoma Reserves themselves, no conversion for agriculture and no significant degradation (except for occasional incidences of illegal logging) appear to have occurred in recent years. (p. 19)

1. Proximate deforestation drivers (p. 20)

The primary proximate drivers of deforestation over the past years have been conversion to small- and medium-sized agriculture for **commercial** production and small-scale subsistence farming. Among commercial uses, in Masindi District the expansion of sugar cane plantations in particular has consumed large areas of forest. In Hoima, tobacco plantations have played a similar role. Maize and rice are also planted for market-driven production as well as local use, rice being rotated with tobacco in some cases. The general situation is similar in Kibaale and Kyonjojo. The above land-uses have usually led to a complete clearing of all forest vegetation with virtually no trees remaining on the affected areas. Apart from agricultural drivers, extensive logging is also driving forest clearance in some areas.

On the **subsistence** side, a variety of crops are grown, in particular maize, rice, sorghum, beans, and vegetables. These subsistence agricultural systems do in many cases contain some trees, although there are no generally established traditional agro-forestry systems. Both of these types of deforestation are not illegal as such as long as they occur with the consent of the formal or customary owners; no conversion permit is required by the authorities.

2. Underlying deforestation drivers (p. 20, 21)
Underlying deforestation drivers for **commercial** agriculture have been the demand for land for sugar (e.g. Masindi) and tobacco (e.g. Hoima) production aimed at national and international markets coupled with unsustainable farming practices. These practices result partly from misconceptions about optimal productivity-maximizing planting and fertilization approaches, as well as incentive schemes by agro-businesses. Regarding deforestation for **subsistence** agriculture, one underlying driver is a general lack of available land for small-scale farming in Western Uganda (and neighboring countries) which leads to migration to the project region where land is 'available' to be converted. This also facilitates a growing influx of immigrants from war-disturbed areas of northern Uganda and DR Congo who convert the forest patches, which are considered to be unclaimed, to agricultural production. In addition, population growth in the area itself puts pressure on land for subsistence farming. It is furthermore possible that traditional production practices (e.g. regarding crop rotation, crop types and combinations, spacing, organic fertilization) do not optimally use and promote the fertility of the land.

Private forests are mostly on land under customary tenure. Under customary tenure the use of forests and woodlands is virtually open-access. There are therefore strong incentives for conversion to agriculture, which infers a stronger basis for claims to private tenure. Another aspect appears to be that private forestland owners are frequently not aware of the exact boundaries of their properties. In other cases, agricultural conversion through immigrants is permitted or encouraged in order to secure tenure claims by the owners who enter into an informal lease agreement with these immigrants.

3. Main degradation drivers (p. 21, 22)
The main **proximate driver** for the degradation of remaining forests outside protected areas is unsustainable harvesting for timber. Although logging used to target only a few species in the past, it has become increasingly indiscriminate and affects a wide range of species and tree age classes. The **underlying driver** for degradation through logging is an insufficient supply of sustainably produced timber. There are no sizeable plantations in the project region and no established practice of managing private forests sustainably.

Depending on the forest definition being used, the other main degradation driver is small-scale agriculture on plots too small to be classified as deforestation in land-cover change analyses carried out to date (or taking the form of sub-canopy agriculture). Access for these farmers is often facilitated through previous timber removals. In addition, pole cutting appears to be extensive enough to further prevent regeneration of logged-over forests.

Project proponents

Lead organizations: Jane Goodall Institute, Katoomba Group Wildlife Conservation Society, Nature Harness Initiative. *See section on Actors' roles and responsibilities.*

Implementation timeframe

Note: It is not clear as of May 2011 whether a commitment to implement the project has been made. The project feasibility assessment uses a 20-year timeframe for its calculations.

Project goals

The desired project outcome is that project activities in addition to direct carbon payments will create sufficient incentive for individual landholders and communities to engage in conserving their remaining forest areas. This is expected to result in an overall reduction in deforestation and forest degradation, as well as regeneration of currently degraded forests. (p. 11)

Implementation activities

For the purposes of the feasibility analysis, it is assumed that a REDD-plus project would seek to use carbon incentives to implement activities that slow down the rate of conversion of forested patches to agricultural land uses. The land-use change drivers tackled would mainly be land/tree tenure uncertainty, demand for agricultural land due to low productivity, and unsustainable timber harvest. The project is assumed to mainly focus on private forest patches. (p. 11)

A key ingredient will be the formation of networks among forest owners in partnership with the Jane Goodall Institute. Through partnership with other local partner(s) yet to be identified and building on the forest owner network, the project may, among other things, support acquiring land titles for forest owners, support improved agricultural practices to increase production on existing land, promote woodlot establishment, agroforestry and forest-based [enterprises?] (p. 11). See table below for an overview of proposed potential activities.

Potential Project Activities to Reduce Deforestation and Degradation (p. 12)

Activity	Potential key implementing partner(s)	Stakeholders
Promoting improved agricultural practices to lessen the need to expand farmland	District National Agriculture and Advisory Services (NAADS) and Farm Income Enhancement and Forest Conservation project (FIEFOC) programs; others tbd	Farmers expanding farm area and new settlers looking for land
Support registration of private forests, community forests and communal land associations	Tbc: Community Development and Conservation Agency (CODECA), Nature Harness Initiative (NAHI), Forestry Sector Support Department (FSSD)-FIEFOC	Private forest owners; district land boards
Implement forest management plans addressing DD drivers through: • Diversifying income sources for farmers by supporting forest-based enterprises such as apiary management, tree nursery management, timber production and crafts • Promoting agroforestry • Promoting establishment of woodlots for firewood	Tbc: National Forestry Authority (NFA), FSSD-FIEFOC, ECOTRUST, CODECA /CARE	Private and communal forest owners
Organizing forest patches and owners into a networks for implementing project activities and channeling incentive payments	Jane Goodall Institute (JGI)	Private and communal forest owners
Building governance and administrative capacity of local and community institutions especially to ensure good accountability, transparent and equitable sharing of benefits.	CODECA /CARE, NAHI	Private and communal forest owners
Integrating project activities into the national REDD process	NFA	

Actors' roles and responsibilities

This analysis assesses the potential of a, so far, hypothetical project to generate carbon revenues from reducing deforestation and, possibly, from carbon stock enhancements via assisted natural regeneration (enabled through reducing degradation pressures). The results are intended to form a useful starting point for a potential REDD project led by the Jane Goodall Institute, in partnership with American Electric Power and the Katoomba Incubator, as well as for a planned REDD feasibility study for the Albertine Rift landscape to be undertaken under the lead of the Wildlife Conservation Society. (p. 11)

Lead organizations (p. 77-79)

Jane Goodall Institute (JGI)	Support network formation among forest owners to implement a series of coordinated forest management plans in critical chimpanzee habitats with high potential for carbon sequestration; Use remote sensing and GIS map analysis to assess carbon, land-cover and the value of forest patches for chimpanzees and habitat connectivity; Use updated information to assess the feasibility of applying carbon incentives for conserving forest patches and biodiversity value within the project area; Facilitate the use of GPS-enabled Google Android mobile phones using the Open Data Kit (ODK) data collection system, to collect carbon, forest, biodiversity, social and economic data within the context of community-based forest/carbon projects; Assist forest owners to acquire land titles, rehabilitate degraded forests, establish woodlots, introduce agroforestry and establish forest-based enterprises; Expand ongoing projects such as promoting improved agricultural practices and spreading education and awareness amongst communities on the value of appropriate land-use practices.
Katoomba Group	Provide technical support to JGI and its partners for the development of a Project Identification Note as well as start the process of consolidating information in a Project Design Document (PDD); Advise on building project-level/ sub-national efforts into national accounting.
Wildlife Conservation Society (WCS)	Identify key stakeholders involved in financing of conservation and their roles and responsibilities in the Northern Corridor Forests of the Albertine Rift in Uganda; Identify possible financial instruments that provide positive incentives for encouraging conservation and sustainable use of forest diversity on public and private forest patches and suggest a plan of action to investigate and implement financing initiatives for the corridors; Compilation of biological, socioeconomic, and carbon measurement data; Building upon on-going GIS/mapping work with the latest 2010 satellite imagery with ground truthing.
Nature Harness Initiative	Coordinate with JGI to assist forest owners to form networks, register their land, develop forest management plans, rehabilitate degraded forests and monitor forest carbon

Community participation

- A key ingredient will be the formation of networks among forest owners in partnership with the Jane Goodall Institute. (p. 11)
- The project may, among other things, support acquiring land titles for forest owners, support improved agricultural practices to increase production on existing land, promote woodlot establishment, agroforestry and forest-based [enterprises?]. (p. 11)
- The project is intended to build onto on-going community based forest management work by

various partners. (p. 12)

- A proposed activity is to build governance and administrative capacity of local and community institutions. (p. 12)
- Participatory project design and implementation could make the proposed project attractive to buyers or investors but still needs to be ensured. (p. 73)
- Next steps outlined in the feasibility assessment: A first step could be to map the landscape of potential participants, including NGOs, government institutions, community organizations, and even key individual landholders. A thorough consultation of community members and landholders should be conducted early on to determine sufficient and sustainable interest in this type of project. (p. 82)

Project financing

The projection of potential net carbon revenues indicates that, under most of the scenarios analyzed, the net carbon finance potential of the project would be relatively modest. This is especially true in the case that regeneration benefits cannot be translated into carbon credits and revenues. Under all of the scenarios considered, the project would generate net carbon revenues in the 3rd year of implementation. Under the current assumptions, this occurs after the credits resulting from the first verification are sold. Carbon revenues continue to be generated at a relatively constant rate under current assumptions which should be another positive outcome. This is mainly a result of regeneration benefits increasing as avoided deforestation benefits are slowly diminishing. (p. 75, 76)

Near-Term Funding Outlook/Seed-Funding
The key project partner, Jane Goodall Institute Uganda (JGI), will be supported financially by American Electric Power. JGI work will be complemented by the Wildlife Conservation Society (WCS) Albertine Rift Forest Corridor initiative in the Bugoma-Semiliki landscape under World Wide Fund for Nature (WWF) – Global Environmental Facility (GEF) sub-grant already secured. NAHI work is supported as part of the UNEP/GEF supported work under the National Environment Management Authority. The involvement of the Katoomba Incubator has currently been supported by the Norwegian Agency for Development and United Nations Development Programme / GEF. (p. 79)

Benefit sharing

The feasibility assessment identifies the following potential co-benefits: local development (income for rural poor, diversification of economic activities), community involvement (participatory project design and implementation – which still needs to be ensured), and biodiversity value (corridor in threatened wildlife habitat). (p.73)

No explicit legislation on carbon property rights, including for forests, exists in Uganda at present. It might be possible to infer a certain right for private forest landholders to produce and trade carbon credits from the national forestry legislation. However, this would need to be ascertained, and it would need to be clarified whether any rights only refer to land that is formally titled or also land under customary ownership. The Budongo-Bugoma project is probably unable to establish a clear legal basis for carbon rights held by the various project participants at present. (p. 16, 17)

Emissions and removals with and without project

1. Project boundaries
The geographic scale of the project intervention, along with the project boundaries, is yet to be determined. Depending on the specifications of an eventual REDD methodology, the formal project boundaries may nonetheless include all forest patches of a certain kind in the delimited landscape. It

yet needs to be determined whether the respective requirements of having “control over the project area” and of “planning to implement activities across the project area”, as stipulated by draft Voluntary Carbon Standard (VCS) guidelines, would allow for this approach. For modeling purposes, it is assumed that around 30% of the remaining high forests outside protected areas in Hoima, Kibaale, and Kyenjojo districts, i.e. 27,000 ha, would participate in the project initially. It is too early to say how many households this area figure would represent. If the project prioritizes engaging with the largest landholders then this would be much less than 30% of the total. Nevertheless, the figure would most likely be in the thousands. Whether it is realistic to reach agreements with this many landowners and integrate them in incentive structures and project activities, and in what form, is an important question that will need to be thoroughly explored during the implementation planning phase. (p. 19)

All protected areas are excluded at this preliminary stage of analysis. (p. 19)

2. Baseline scenario

The feasibility study constructed a baseline or reference scenario of emissions based on an analysis of deforestation and degradation drivers and agents, the historical deforestation trend, and forest carbon stocks affected across different carbon pools. Guidance from the VCS was used wherever appropriate. (p. 19)

In the absence of any clear indication of significant recent or future changes in land-use dynamics in the region, the historical trend of land use and land-use change is assumed to continue in the project areas. The validity of this claim has to be confirmed, however, as it is possible that deforestation trends have slowed down or picked up in different areas in recent years. (p. 22)

Based on available data on forest cover change from two studies (NEMA 2008, WCS & MUIENR 2008) either 1990-2005 or 2000-2005 could be chosen as a historical reference period for a preliminary analysis. It is important to note that both assessments include protected forests along with private and communal forestlands in total area estimates. Relative deforestation rates are likely to be significantly higher for forests outside protected areas. (p. 23)

According to NEMA (2008), significant forest loss seems to have occurred across Hoima, Kibaale, and Kyenjojo districts during the period of 1990-2005. The highest annual rates were observed in Kibaale (3.3 % or 3,700 ha annually), followed by Kyenjojo (2.4 % or roughly 2,000 ha), Hoima (1.4 % or 1,100 ha). The average rate across all 3 districts was 2.5% or 6,800 ha annually. WCS & MUIENR (2008) provide roughly similar figures for the period of 2000-2005. Most forest cover loss appears to have occurred in Kyenjojo (5.9 % or 3,400 ha annually), Kibaale (3.8 % or 2,000 ha), and Hoima (1.2 % or 700 ha). Average total forest loss in the 3 districts according to this analysis was 4.5 % or 6,200 ha annually. If one were to assume that most or all of the forest loss occurred outside of protected areas, then the relative rate across the 3 districts could be as high as 5.1 %. (p. 23)

For the purpose of this assessment report, an annual deforestation rate of 3.5 % is assumed, based on a conservative interpretation of the WCS/MUIENR data for 2000-2005 (excluding Masindi district) and accounting for potential decreases in deforestation rates due to constraining factors (e.g. suitability for agriculture). (p. 24)

It is more difficult to give a useful estimate regarding degradation rates or biomass losses. Historical timber and wood extraction rates are not known considering that logging did not follow forest management plans. Legal transport permits certainly do not reflect timber volumes actually removed from these forests and, moreover, wood consumed locally (e.g. for construction, fence poles, fuel) does not feature in these. Data for degradation caused by small-scale agriculture and other drivers is similarly not available at present. However, it seems reasonable to assume that harvesting and other degradation pressures on the shrinking remaining forests would in all likelihood increase, or, at a minimum, stay the same in future years. For the purpose of this assessment, potentially avoided emissions from degradation itself will be conservatively neglected. (p. 25)

Carbon pools considered
This project assessment only considers above-ground biomass; it conservatively excludes below-ground biomass, litter, and soil carbon; and it does not consider deadwood and harvested wood products, both of which would need to be revisited at a later stage. (p. 26)

Carbon stocks affected
Carbon stock measurements have neither been carried out on the proposed project sites themselves nor in similarly affected degraded forests in the region. However, it is possible to infer very approximate carbon values from Uganda's National Biomass Study which indicates average carbon stocks of undisturbed forests of the type found in the project area ('normally stocked' 'Tropical High Forest' (THF), which seem to include several classes of low- medium- and high biomass forests) of 112 tC/ha (within a range of 23-303 tC/ha). For comparison, the IPCC default value for undisturbed 'Tropical moist deciduous forest' in Africa is 130 tC/ha (within a range of 80-215 tC/ha) (IPCC 2003). Significantly, it is assumed that riverine forests, which form an important part of remaining forests, are well-represented in the THF category. (p. 26)

Considering the poor state of many of the project forests which have been degraded by logging and other activities, the value for 'depleted' or 'degraded' or 'encroached THF' from the same study may be more representative for a large part of the project area. This value is given as a mean of 47 tC/ha (within a range of 7-103 tC/ha) and a relative decrease in stocks in this range is judged as realistic by local experts. (p. 27)

The relative distribution of normally stocked versus degraded high forests in the potential project area cannot be determined at present. The preliminary assumption for this assessment, backed by local expert opinion, is that at least 70% of high forests in the landscape may count as significantly degraded. In the absence of more site-specific data, this value is conservatively assumed to be 80%, resulting in average carbon stocks of 60 tC/ha, which is used for this assessment. (p.27)

Overall baseline emissions
Based on the assumptions above, total baseline emissions are projected to be roughly 173,000 tCO2/year in year 1, falling linearly to 126,000 tCO2/year in year 10 and 88,000 tCO2/year in year 20. Baseline emissions are assumed to decrease as less forest area remains and the relative rate of loss is assumed to remain stable. (p. 28)

3. Project scenario and net carbon benefits

a. Project performance risk
In this assessment, it is assumed that project activities would only be 60% effective at preventing deforestation initially and would gradually reach 80% effectiveness after 5 years and thereafter. (p. 29)

b. Leakage
Potential sources of leakage in the project context are **activity shifting** (displaced deforestation) by local **residents** and land-owners, activity shifting by **immigrants**, as well as **displaced timber harvest** and displaced **woodfuel production**. Suppressing illegal logging could cause leakage by reducing the supply of long-lived **harvested wood products**. (p. 29, 30)

Leakage through activity shifting
In order to be cautious, it is assumed that 20% of the deforestation caused by participating farmers and communities for expansion of their agricultural lands, both for subsistence and commercial production will be displaced to 'non-engaged' forests. No further leakage discount for activity shifting, e.g. associated with immigrants is applied in the projection in addition to that for resident landowners. (p. 30, 31)

Leakage through displaced harvests
Avoiding deforestation and avoiding degradation could lead to leakage from displaced timber and wood harvests. With respect to degradation, in principle, this risk could be effectively avoided, in carbon accounting terms, by not claiming any credit for avoided degradation itself. It could be argued

that degradation occurs in a similar way both in project forests and in non-participating forests (i.e. in a potential leakage belt). In this case, even if all of the degradation pressure is displaced from project forests to other areas – i.e. in a case of 100% leakage of this type – these carbon losses would not exceed the gains made by preventing degradation in the project area. By suppressing degradation which is currently preventing regeneration the project could enable 'assisted' natural regeneration. If no net carbon losses are created through leakage from avoiding degradation – because avoided degradation benefits are conservatively neglected – any regeneration enabled by the project should represent a net carbon gain. Regeneration benefits should therefore not be subject to any leakage discount. (p. 32)

However, whether this combined degradation and regeneration scenario is true depends on the overall dynamics of land-use change in the project area, as well as in a potential leakage belt. At least 4 scenarios are possible: 1. The affected forest areas – both forests within project boundaries and non-participating forests – are in a continuous state of degradation; 2. Logging and other forms of degradation are ongoing but only to the extent that a 'steady state' is maintained in the already degraded forests; 3. Forests are already so logged out that no further logging would be commercially attractive; 4. The degraded forests are 'doomed' for conversion. Scenarios 1 (continuing degradation) and 4 (impending conversion) seem to be the most likely for the majority of forests in the project region. This would imply that the only potential source of significant leakage from displaced wood harvest would be from depriving timber markets of their traditional supply from converted areas, which would be created either just before or after clearing occurs. (p. 32, 33)

The second, and more likely, source of leakage could be created by **suppressing wood supply from converted areas** (market leakage). In order to estimate leakage from suppressed timber harvest, the timber volume typically extracted from conversion area would have to be estimated, as well as the harvestable timber stocks in areas to where timber extraction may be displaced. At present, neither of these parameters is known. (p. 38)

One could also conservatively assume that all of the standing timber (of commonly harvested species) would be harvested upon conversion and sold on national markets. Assuming similar carbon densities of forests in leakage areas, under VCS draft methodologies a 40% leakage factor would be applied to the harvestable volume and this would be multiplied by a logging damage factor (LDF) and a logging infrastructure factor (LIF). In the absence of almost any data on the various parameters outlined above, an additional leakage factor of 10% from displaced wood harvest is applied to carbon benefits from avoided deforestation. This value is highly uncertain (p. 38, 39).

Leakage from reducing harvested wood products

For leakage from reducing harvested wood products, following available draft guidance, only a small percentage of harvested volumes would be assumed to persist in long-lived wood products. The resulting leakage is considered to be insignificant at this stage of the project assessment but would need to be evaluated in more detail in the future. (p. 39)

Leakage from displaced fuelwood and charcoal production

No leakage discount is applied. Not claiming avoided degradation credits should result in very conservative accounting in this case, and no net leakage in this category should occur. Woodfuel production is not considered to be a significant degradation driver in the project landscape with supply being created mainly through deadwood, clear-cut areas, and from woodlands. (p. 40)

Project emissions

Potential emissions from project implementation include fossil fuel emissions from transport and machinery use during project implementation activities, fertilizer application (e.g. to boost agricultural productivity), and, in the case of tree planting activities (implemented as part of leakage prevention measures or as an incentive to communities) soil disturbance (erosion) and removal of pre-project vegetation. All of these emissions are likely to be either insignificant or they can be neglected under applicable methodologies. (p. 40, 41)

c. Carbon benefits from avoided deforestation

Under assumptions that overall leakage discount for avoided deforestation benefits is 30% and that the project performance discount is 40% initially and 20% from year 5 of project implementation, avoided deforestation could generate average net benefits of 88,000 tCO_2 annually during the first 10 years, and on average 75,000 tCO_2 annually during the first 20 years. A further discount for non-permanence risks will be applied. (p. 41)

d. Carbon benefits from avoiding degradation (p.42, 43)

By engaging forest owners to protect remaining forests on private land, the project would address not only avoided deforestation but would ideally also prevent further degradation of these forests. This would be achieved primarily by suppressing ongoing unsustainable harvest and small-scale agricultural conversion and by providing alternative sources for timber, woodfuel and other products. Reducing degradation could lead to 3 types of potential carbon benefits: 1. Reduced emissions from avoided degradation itself; 2. Preventing discounts to avoided deforestation benefits due to decreasing carbon stocks in baseline deforestation areas; 3. Allowing for regeneration which is suppressed under baseline conditions.

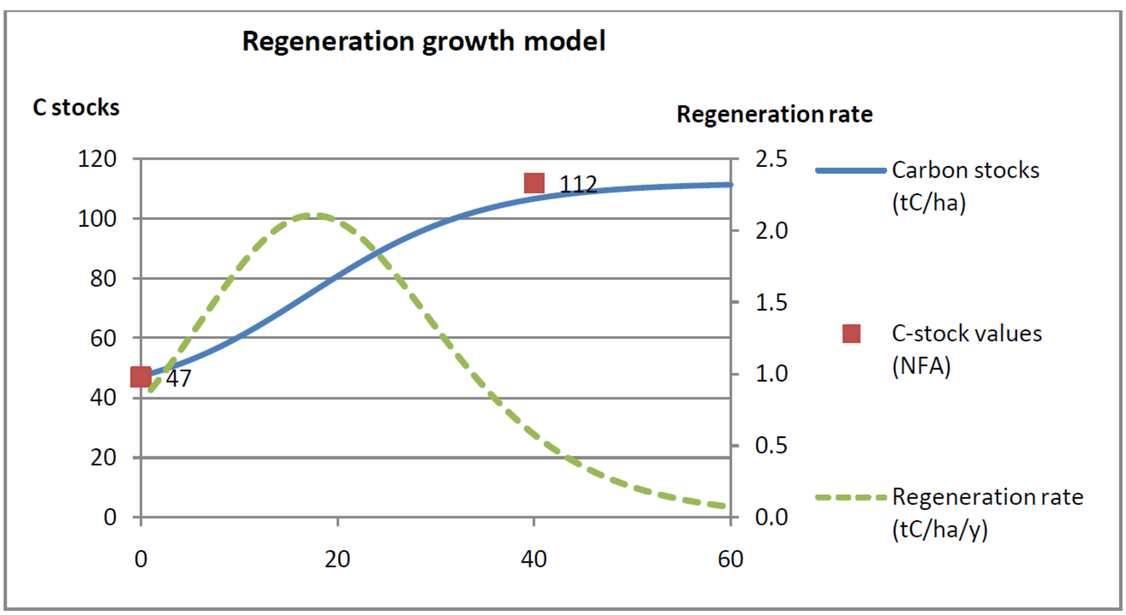
Regarding (1), even with potentially improved future data, the conservative assumption of 100% leakage from suppressed degradation may have to be made.

e. Carbon benefits from regeneration (p. 45, 46, 47)

Preventing degradation would allow for the regeneration of carbon stocks in the remaining forest which in most areas are currently far below their full potential. This means that any carbon stock increases through regeneration which can be demonstrated ex post under an approved methodology could be claimed by the project.

The assumed average carbon stock of 60 tC/ha for the project area (see above) takes into account the heavily degraded state of many forest patches. The potential carbon stocks of undisturbed forests in the area (normally-stocked 'Tropical High Forest') may reach an average of 112 tC/ha according to NEMA estimates. In the long run, assisted natural regeneration (i.e. through preventing ongoing degrading activities – not active restoration) could potentially allow degraded project forests to attain the carbon stocks of undisturbed forests. Regeneration rates for 'Tropical High Forest' in Uganda have been estimated at 6-7.5 tC/ha/y (MWLE 2003); however, such high rates seem questionable.

Regeneration Growth Model for Degraded Forest Patches



A much more cautious growth model (see figure above) is chosen here with initial increments of 0.9 tC/ha/y, peaking at 2.1 tC/ha/y after 15 years and then dropping steadily, the average for the first 20 years being 1.7 tC/ha/y.

The potential maximum regeneration benefits are adjusted for project performance risks and potential leakage. Following these adjustments, across the entire initial project area of 27,000 ha, assisted natural regeneration could therefore add an average of 59,000 tCO2 annually to the carbon benefits from avoided deforestation during the first 10 years, and on average 74,000 tCO2 annually during the first 20 years.

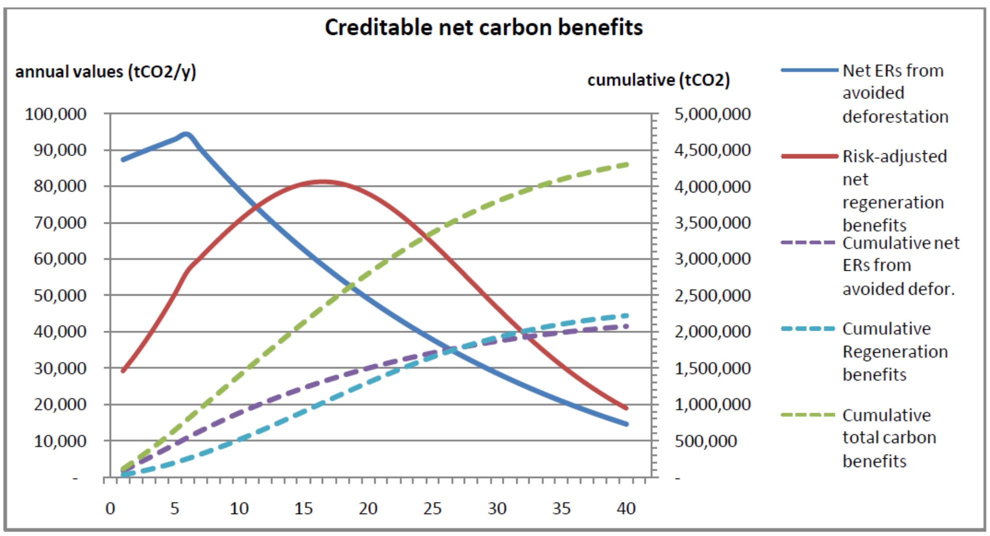
An additional significant risk is that some or even all of the actually occurring regrowth may not be statistically demonstrable. When comparing actual regeneration rates in permanent sampling plots within and outside of the project area, it is possible that confidence intervals in both cases are relatively large, especially if there is a high variability among different plots. Because of the conservativeness approach, the lower bound of the with-project and the upper bounds of the without-project measurements may have to be used. Even if regeneration does occur, it is possible that these confidence intervals overlap and that no regeneration benefits can thus be proven under a conservative accounting approach. These considerations are taken up in the form of a further risk adjustment factor below for the calculation of overall net creditable project benefits.

f. Carbon benefits from planting

At the present stage of project design, active tree planting outside of forested areas is mainly envisioned as an incentive to participating landholders (primarily for fruit and timber production) and potentially as a leakage prevention activity (to counter the displacement of timber and woodfuel production). In principle, the carbon sequestered could be claimed as an additional project benefit. However, it is not yet clear at what scale planting could be undertaken and whether it would be worth incurring the resulting transaction costs and the sustained planning effort. It is likely that such active tree planting would need to be treated as a separate project component under the VCS, applying an A/R methodology. An alternative could be to include these trees in an expanded Plan Vivo scheme as it is already practiced in parts of Masindi and Hoima Districts by EcoTrust. (p. 47)

g. Net carbon benefits of project activities

Net Carbon Benefits from Avoided Deforestation and Assisted Natural Regeneration (p. 48)



Net project carbon benefits for which credits can be claimed are the result of adding up avoided baseline emissions from deforestation and carbon sequestration through assisted natural regeneration. Total net project carbon benefits across the project area of 27,000 ha are projected to be 140,000 tCO_2 annually during the first 10 years (or 5.2 tCO_2/ha/y) and the first 20 years (see figure above). This would total 1.4 m tCO_2 during the first 10 years. (p. 47, 48)

h. Additionality

In the absence of carbon finance, converting forests to agriculture presents the most economically attractive land-use, and this course of action is not prevented by any existing barriers (neither practical nor legal). Protecting forests on private land would also be a first-of-its-kind activity and meet a number of barriers, e.g. social and organizational ones. It is therefore virtually certain that the project, as analyzed in this assessment, would be viewed as additional under the VCS or other standards. (p. 52)

Monitoring

No information.

Reporting

No information.

Verification

Two applicable standards for the proposed project would be the Plan Vivo standard and the VCS. The feasibility assessment assumes and recommends that the project design follows the VCS guidelines for forestry projects. (p.50)

Although the Climate Community and Biodiversity Standards (CCBS) is not systematically incorporated in this assessment, it would be highly applicable to the project and useful in terms of assuring better market access as well as ensuring a sound and adaptive project design and to minimize non-permanence risks. (p.50)

Risks and risk management *p. 54-60*

Risks to the project's near and long-term success are evaluated through considering how well the project design fits the land-use change trends it aims to address, how much buy in exists by stakeholders whose support is critical for the project's implementation, and how the project may score against the pre-defined list of VCS non-permanence risk categories. Given the very preliminary state of project design and development, a risk assessment is difficult to conduct at present.

1. Fit of Project Design to Land-Use Trends

The project design, in its current preliminary state, attempts to tackle the various deforestation drivers through distinct activities, e.g. titling for land tenure security, improving agriculture to lessen demand for land, promoting sustainable timber harvest to draw revenue from standing forests. It is too early at this stage to tell whether the concrete activities – which still need to be elaborated – and capacity of the project proponents will fulfill this aim. There is an obvious risk, that operationalizing the various activities may prove much more challenging that apparent at present, especially since the project would need to work with thousands of individual landowners (albeit potentially organized in associations). Possible risks identified include:

Land titling: Formally demarcating, registering and protecting forested land may, in the short run, not fit comfortably in the traditional and more flexible systems of allocating land for agriculture and settlement. There seems to be a real risk that the project design and proponents will not sufficiently focus on enhancing and securing agricultural productivity. The primary driver for forest conversion (by immigrants and residents) is agricultural expansion.

Agricultural improvements: There seems to be a real risk that the project design and proponents will not sufficiently focus on enhancing and securing agricultural productivity.

Crop-raiding animals: Part of the reason why local people are willing to deforest by allocating land to immigrants for agriculture is to lessen the problem of crop-destruction by vermin (e.g. monkeys).

Forestry activities: Several of the organizations involved in promoting this project have a strong basis in forestry and forest conservation and, as such, may choose to prominently rely on forestry-based activities to create income incentives for landowners.

Stakeholder Buy-in: The reluctance of government to formalize community forests may have reduced the trust communities have in receiving government backing in managing forests outside protected areas. Some private forest owners may not accept the project or key aspects of its implementation such as forming networks, or developing and implementing joint forest management plans.

2. Non-Permanence

Land tenure: The area is somewhat of a hotspot for land wrangles between local communities and immigrants or absentee landlords.

Opportunity costs of not expanding agriculture: Clearing forests to cultivate sugarcane, tobacco, rice and maize growing and the tenure/ownership rights that come with it is an economically attractive venture. The project may struggle to meet opportunity costs in some cases.

High-value natural resources: The project is located in the Albertine Rift where there seems to be potential for oil exploration in the near term.

Infrastructure construction: Oil exploration could lead to new roads being built in the area which might lead to an influx of immigrants and increased pressure on remaining forests.

Population growth and density: Population growth is relatively high in the region, although population density is probably medium. There is a potential that this will translate into increased agricultural conversion pressure in the future.

For a medium-level overall risk profile the VCS prescribes a discount of around 20% in the case of REDD and about 30% for AR projects. For the purpose of this assessment, a buffer discount of 30% is applied to all credits generated by the project.

Progress and plans

No further information found after feasibility assessment was prepared by the Katoomba Incubator in July 2010.

Links:

Project-related documents

Others

Budongo-Bugoma Landscape Project (Katoomba Incubator)

Biodiversity Surveys of Bugoma Forest Reserve, Smaller Central Forest Reserves, and Corridor Forests South of Bugoma

REDD Readiness Preparation Proposal for Uganda