



Bukaleba Forest Project

Uganda



Project Idea Note

March 2010

1. Basic Information

PIN Date

March 2010

Participants' information

Address: Strandveien 35, 1366 Lysaker; Oslo, Norway

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Company's core business: Green Resources AS (GRAS) is a Plantation, Carbon Offset, Renewable Energy and Forest Products Company. The company was established in 1995 and is a private Norwegian company with 60 shareholders operating in Mozambique, Sudan Tanzania and Uganda. It employs more than 3,000 people and has invested NOK 300 million (USD 55 million) in its African operations since its inception.

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2. Project Characteristics

Project Standard

The project is being developed to meet the requirements of the American Carbon Registry; a voluntary carbon offset standard founded in 1997 as the GHG Registry by the Environmental Defense Fund and Environmental Resources Trust, and which joined Winrock International in 2007. As the first private voluntary GHG registry in the United States, ACR has set the bar for transparency and integrity that is the market standard today.

GRAS has decided to pursue development of the Bukaleba Forest Project (BFP) under the ACR due to limiting eligibility start date criteria with the CDM; however, as ACR allows project developers to use approved CDM methodologies, BFP will be developed inline with the same requirements.

Scale of Project

The proposed ACR project is an A/R ACR project activity (reforestation) on 9,165 hectares (ha) of degraded land, of which approximately 5,780 ha will be reforested for carbon sequestration, and the remaining 3,385 ha maintained for conservation purposes.

The reforestation project will utilise the CDM approved methodology AR-AM0004 "Reforestation or afforestation of land currently under agricultural use" (Version 04).

Project type

The project is a land use/ forestry project that will fall under the ACR's A/R category. In particular, the project entails the reforestation of degraded land that has been deforested prior to 1986 – more than 10 years prior to the project start date.

Brief Description

Present Situation at Project Site and Objective

The Bukaleba Forest Project (BFP) is established on land within the Bukaleba Central Forest Reserve (BCFR). The area has been leased to Busoga Forestry Company Ltd (BFC), a Ugandan subsidiary of GRAS, for 50 years (1996 – 2046) from the National Forest Authority (NFA) of Uganda. The project area is predominantly grassland with a few scattered primary trees with less than 10% of crown cover. The reserve is in a state of degradation due to encroachment activities from local communities, such as cultivation, grazing, bushfires (during land opening for crop cultivation) and charcoal production. Conservation areas have been identified, including wetlands, ridgeline remnant woodland and the forest of the Imanyiro peninsular.

The area lies between 1000 m and 1,346 m at the highest point. The temperatures are generally hot with daytime temperatures averaging 28° C and nighttime temperatures of 18° C. The rainfall varies between 1000 mm – 1500 mm a year and comes in two rainy seasons: March – May and September – October. Soils are mostly sandy loams and have been heavily eroded with many rocky outer crops. Part of the land is highly fertile agricultural land, but, in accordance with Ugandan law, agricultural activities in central forest reserves are prohibited. The BCFR is located in Mayuge district, 40 km from Jinja where the headquarters of BFC are located and 120 km from Kampala, the capital of Uganda.

Tree planting by BFC began in 1996 as a pilot, with ~40 ha of *Eucalyptus Grandis* planted. In 1997 and 1998, a total of more than 500 ha were planted with the exotic species *Pinus caribaea* and *Eucalyptus grandis*, and the indigenous species *Maesopsis eminii*, *Gmelina arborea*, *Terminalia Everensis*, Mahogany (*Khaya anthocea*) and *Grevellia robusta*. The remaining area will be planted with approximately 75% *Pinus caribaea* and 25% *Eucalyptus Grandis*.

3. Project objectives

- To sequester carbon dioxide through the planting and maintenance of commercial forests in areas of grassland and shrubland that meets the requirements for CDM eligibility. This primary activity shall generate efficient greenhouse gas (GHG) emission reductions that can be measured, monitored and verified. The project participants shall demonstrate that carbon sequestration through the development and sustainable management of commercial forest plantations is a viable instrument to encourage private

investment in the forestry sector, with a particular emphasis on degraded lands.

- To establish and manage commercial plantations to meet the growing demand for quality wood products emanating from sustainable forest management. This will be achieved through certification of the project plantation by the Forest Stewardship Council (FSC).
- To promote environmental protection, through the conservation of soil resources, the protection of water sources and the enhancement of biodiversity and indigenous species.
- To develop a commercial scale nursery for the provision of indigenous species, to reduce the reliance on exotics, and promote the transfer of local knowledge.
- To facilitate socio-economic development of the local communities through:
 - The creation of direct and indirect employment opportunities
 - Income generation from the sale of carbon credits. BFC will commit 10% of carbon funds to community development projects, to be decided upon by village committees
 - The promotion and development of community forest plantations by provision of free seedlings and technical advice, thus reducing pressure on existing forestland
 - Supporting infrastructure development within the region, including the construction of roads, bridges and the provision of clean water sources

Proposed Activities

Conversion of degraded grass and shrubland to managed forest ecosystems involving the use of latest available technology and knowledge.

These conservation areas will be accorded maximum protection, with BFC working with all stakeholders including local communities, sub-county and district local governments, and NFA to implement this management prescription.

Community Development

As part of Green Resources' company policy, BFC is committed to reinvest at least 10% of carbon revenues into improving the infrastructure of the surrounding villages, including the building of schools, dispensaries, water-supply and roads. Prioritisation of inputs will be carried out through community counsels, which are already in the process of being formulated. These councils also provide an ongoing mechanism for communication between communities and project staff.

Applied Technology

GRAS and BFC utilise the latest available technology during all aspects of project development. Specific silvicultural technologies are tested through trial periods, with

those found to be most efficient continuing to be employed during forest establishment and development, plantation monitoring and verification.

Global positioning systems (GPS) and global information systems (GIS) are being utilised for the assessment of land eligibility. These techniques will continue to be used for verification and continued monitoring of the proposed A/R ACR project activity. A combination of satellite imagery and field observations are going to be used for the stratification of ecosystem types, and intensive field work and sampling will be combined with laboratory analysis for the determination of baselines and project scenarios.

Furthermore, within the proposed A/R ACR project activity, modern plantation technologies available for forest management and the latest silvicultural practices will be used. In addition to the requirements laid out under the ACR, the approved methodology and associated monitoring plans of the following standards will be adhered to and certification sought where appropriate:

- Forest Management Plans
- Forest Stewardship Council's Principles and Criteria
- Climate, Community & Biodiversity Alliance
- Environmental and Socio-Economic Impact Assessment reports
- Monitoring Plans in line with the approved methodology
- ISO 9001 and 14001 approaches will be introduced corporate wise

The A/R ACR project activity will rely on the company's own trained staff and professionals, as well as collaboration with local and regional forestry departments. Local NGOs will be involved in providing technical consultation and guidance, including training courses and quality control checks. BFC shall also seek advice from local, national, and international forestry, sustainable forest management and climate changed experts where required.

4. Greenhouse Gas (GHG) Emission Reduction (ER)

The estimated total removal by sinks is 511,945 tCO₂e by 2012. The annual average storage during the crediting period of 25 years is estimated to be 47,815 tCO₂e.

Major GHG Abated

Carbon dioxide (CO₂)

Crediting period

Following the ACR rules on crediting periods, the project will have a renewable crediting period of 25 years. The expected operational lifetime of the proposed ACR project is expected to be at least 50 years – the length of the current lease – though the project proponents hope to extend the lease beyond this period.

5. Methodology

The CDM methodology is approved and is titled as follows: “**Reforestation or afforestation of land currently under agricultural use**”.

It is identified by the reference number: AR-AM0004, version 4

Justification and applicability of the choice of methodology

The areas selected for project development are applicable under this methodology for the following reasons:

- The project site is largely covered by grass and shrubland vegetation. Satellite imagery indicates that the area underwent deforestation prior to 1986, and since this time has continued to degenerate into dense grassland.
- The majority of the area underwent deforestation for conversion to agriculture and was later abandoned, giving way to grass and shrubland.
- Current land use has resulted in low soil organic matter resulting from frequent burning of vegetation making it unsuitable for profitable agriculture.
- Site preparation will not lead to significant longer term net decrease of soil carbon stocks.
- Soil drainage and disturbances are minimal, thus non-CO₂ GHG emission are likely to be insignificant.

Identification of the baseline scenario

The approved baseline and monitoring methodology AR-AM0004 version 4 is applied to the proposed A/R CDM project, “**Reforestation or afforestation of land currently under agricultural use**”. The following steps are followed in selecting the baseline scenario:

- Demonstration of the most likely land use at the time the project start:

Satellite imagery combined with extensive field visits indicates that the most likely land use at start of project is unmanaged grassland. Detailed ecological assessments carried out by local experts indicate that these areas were converted to grassland through a combination of fire and land use practices. The colonisation and competitive properties of the major grass species has resulted in a stable grassland ecosystem with small remaining patches of shrubland. Field visits and assessment confirm the area classified as grassland as a mosaic of abandoned agricultural land with small patches of areas of less than one hectare each currently under subsistence cultivation.

- Assessment of national and sector policies and legislation:

There are no existing plans to change the land use of the project area and BFC has legal right to the land for a period of 50 years.

- Assessment of demand and supply of wood resources for industrial and commercial purposes:

Current assessments show that current demand is greater than supply, placing considerable and increasing pressure on natural forest resources.

- Assessment of land-use practices and the prevailing land uses in the project region:

A combination of satellite imagery and historical data from local stakeholders has been used to indicate the prevailing land uses within the project area.

- Identification of plausible and credible land use alternatives:

The plausible land use alternatives are further degradation of the land through encroachment of illegal activities.

Description of the baseline scenario

Since no natural regeneration of trees can be identified within the project area and there has been continued degradation of the land through clearing of vegetation to make way for agricultural land, the baseline carbon stocks would be expected to decrease in the absence of the project activity. The net baseline emissions would therefore be negative, but the project, inline with CDM EB decisions, will conservatively set the baseline emissions as 0. Areas that are currently classified as forest, or on which deforestation has occurred post 1986 are excluded from the project area.

Documentation of the baseline scenario

Satellite imagery from 1986 has been combined with field observations to stratify the current land use into the following classifications:

- Grassland
- Shrubland
- Woodland

A time series of satellite imagery from 1986 through to 1996 indicates that the trend in land use change has been a gradual degradation from shrubland to grassland.

Additionality

Key assumptions and rationale for demonstrating additionality

The lands to be reforested within the project boundary are unmanaged grasslands with areas of shrubland. Due to the multiple barriers in establishing commercial forests plantations in Uganda, the only realistic alternative land use is the continuation of further degradation of the grass and shrublands.

In this scenario, natural regeneration is not expected to occur due to the continued encroachment of activities such as clearing of vegetation to make way for agriculture, cattle grazing and charcoal production, the lack of seed sources capable of dispersing within the project boundary, and the ecological advantage of the current grass cover - the grass exhibits high competitive advantage for light and resources, and prevents the survival of any emerging seedling. Evidence for this includes the

fact that regeneration of natural woodlands across the project area has not occurred over the past decades since forest clearance.

The continuation of the current situation therefore represents the “business as usual” scenario. Within this scenario, barriers to commercial plantations, not expressly for the purpose of carbon storage are numerous and have been identified as follows:

Investment barriers: Commercial forestry operations require significant upfront capital, while revenues do not begin to occur until several years after the start of the project. It is therefore hard for local people to finance the investment required, particularly as commercial local loans are not easily available due to the perceived high market risks and short term economic unattractiveness of reforestation projects. Such loans, if available, will not be possible for financing the additional requirements for success, including sustainable development objectives. Only with the anticipated additional support from carbon financing, as a potential CDM project, can the project developers raise the necessary short term financing needed and commit to the long wait for timber revenues.

Technological barriers: Good quality seedlings are virtually unavailable, particularly for indigenous species. Creation of own seed nurseries requires high silvicultural ability and capacity, and is costly and therefore only viable if the plantation area is to cover a large area, and is therefore difficult for local people to achieve.

Institutional barriers: These exist at every step of the way for local people who do not have the knowledge or access to information on how to manage the different aspects of a multi-faceted business such as commercial forestry, from finance, to silviculture and plantation management, to harvesting, timber production and finally sales.

Market risk: Timber prices are highly volatile and the investment period is typically 25 to 30 years. The guaranteed fixed element of income from an A/R CDM project reduces the perceived investment risk by providing a steady and upfront income stream. This provides the project with an element of independence from having significant amount of capital tied to global and local timber markets.

Documentation of additionality

The A/R CDM tool for the assessment of additionality will be applied, following the investment analysis procedure to ensure the proposed reforestation activity is additional.

6. Emission reductions

Key inputs

$C_a = A * I * BEF * D * CF$ (for above ground carbon pool)

$C_b = C_a * R$ (for below ground carbon pool)

C = carbon content (t C)

A = Area of land under forest (m²)

I = mean annual increment (m³/ha)

D = basic wood density (t/m³)

BEF = biomass expansion factor

CF = carbon fraction

R = root-to-shoot ratio

Assumptions in determining ex-ante calculations

- No significant displacement of activities within the project boundary
- Village afforestation is enhanced and supported
- Emission from baseline scenario conservatively assumed to be zero
- Soil disturbance is minimal

Methodological choices

Due to the degrading nature of the project site from shifting agriculture and grazing, the baseline net GHG removals by sinks are expected to be neglected following guidelines from CDM EB 50, Annex 21.

Estimated Amount of GHG Abated (CER/ERU)

Year	Estimation of actual net GHG removals by sinks (tCO ₂ e)	Estimation of baseline net GHG removals by sinks (tonnes of CO ₂ e)	Estimation of actual net GHG removals by sinks (tonnes of CO ₂ e)	Estimation of leakage (tonnes of CO ₂ e)	Estimation of net anthropogenic GHG removals by sinks (tonnes of CO ₂ e)
1996	675	0	675	0	675
1997	8,781	0	8,781	0	8,781
1998	24,414	0	24,414	0	24,414
1999	27,005	0	27,005	0	27,005
2000	38,466	0	38,466	0	38,466
2001	47,874	0	47,874	0	47,874
2002	48,995	0	48,995	0	48,995
2003	59,789	0	59,789	0	59,789
2004	51,308	0	51,308	0	51,308
2005	-42,707	0	-42,707	0	-42,707
2006	-73,675	0	-73,675	0	-73,675
2007	-52,782	0	-52,782	0	-52,782
2008	-39,087	0	-39,087	0	-39,087
2009	55,984	0	55,984	0	55,984
2010	80,956	0	80,956	0	80,956
2011	113,735	0	113,735	0	113,735
2012	162,213	0	162,213	0	162,213
2013	177,058	0	177,058	0	177,058
2014	223,891	0	223,891	0	223,891
2015	241,148	0	241,148	0	241,148
2016	54,650	0	54,650	0	54,650
2017	-80,676	0	-80,676	0	-80,676
2018	50,837	0	50,837	0	50,837
2019	-23,321	0	-23,321	0	-23,321
2020	39,833	0	39,833	0	39,833
Average over crediting period (2007-2026) (tCO ₂ e)	47,815	0	47,815	0	47,815
Total for crediting period (2007-2026) (tCO ₂ e)	1,195,363	0	1,195,363	0	1,195,363

7. Expected Schedule and Host Country Approval

Feasibility Study

The feasibility study has been carried out. Project implementation has started.

Environmental Impact Assessment

An Environmental Impact Assessment (EIA) was carried out in October 2007.

Stakeholder Consultations

Preliminary consultations have been carried out, as well as mechanisms via which the community can voice concerns.

Throughout day to day activities the project continuously interacts with the local communities. Some villagers are full time employees of the company and many work as casuals during the planting season and large scale operations in the project. The company also participates in community and district meetings and identifies areas where the company may assist the local communities with improving their livelihoods and social status.

8. Schedule of ACR Related Pre-Investment Procedure

Eligibility screening and certification

ACR

ACR-approved independent third-party verifier

Name of DOE responsible for validation: Not confirmed

Project Design Document

PDD development is underway with an expected completion in 2010

ACR eligibility screening

Assessment by ACR to certify the project against the standard's eligibility criteria – expected 2010

Verification

Independent third-party verification by an ACR approved verifier

9. Environmental impacts and impact on local stakeholders

- Change of land cover type from grassland to plantation forest of exotic species may change the natural habitat of some wildlife species. Mitigation measures include the planting of 700 hectares of indigenous species, as well as the conservation and protection of the remaining pockets of woodland, wetlands, streams and river banks.

- Nutrient export through forest harvesting has the potential to lead to soil nutrient depletion potentially threatening the sustainability of forest plantations. This will be mitigated through minimizing site disturbance, the use of manual techniques for land preparation and planting, and the retention of litter and foliar biomass on site during harvesting and land preparation.
- Accidental forest fires may result in air pollution, release of green house gases, and exposure of soil surface to erosion and soil degradation. This threat is minimised by the creation and maintenance of significant fire belt and the establishment of effective fire fighting systems. Such mechanisms, along with a detailed fire prevention plan are already in place.
- The forest plantation of monoculture stands serve as breeding and spreading points for pests and disease causing agents. The use of a variety of tree species, the interspersing of commercial plantation with indigenous species, and the compartmentalization and blocking system of plantation management will limit the spread of diseases and pests.
- The establishment of forest plantations would necessitate the use of pesticides and herbicides to control certain pests and diseases that might endanger other faunas and human. Care will be taken to use only recommended and possible selective chemicals to control diseases and pests in plantation. To further reduce the risks of human exposure, the strict use of appropriate gears by plantation workers dealing in dangerous substances will be enforced. Also workers will be given appropriate trainings for handling dangerous chemicals and equipments. The project will adhere to the guidelines laid out by the Forest Stewardship Council (FSC) on the use of such chemicals.

Expected positive impacts on local stakeholders / stakeholders

- Promotion of community development through direct or indirect support
- Creation of employment opportunities for the local communities and qualified nationals
- Income from salaries and wages will contribute to improved living standard of the local population
- Creation of economic gain to local companies dealing in goods and services pertaining to the project activities
- Revenue boosting for the host country through various taxes, levies and royalties

Other Standards

In addition to its carbon sequestration capacity, the proposed project activity advocates the highest quality credentials in the support of biodiversity and socio-economic improvements. Furthermore, the proposed plantation is currently working towards FSC and CCBA certification.