


Environmental Aspects

Name of the Project: Kikonda Forest Reserve
Project code: UG-KFR

Only this part of the document has to be filled out if your project is CCBS certified.*

Please insert the page numbers of the PDD certified and published by the CCBA where the information about the environmental aspects can be found:

Pages: e.g. 2-12; 15; 34-37

 The project owner must describe the following parameters of the project.

- | | | | |
|---|--|--|---|
| a. Soil | b. Water | c. Biodiversity | d. Climate |
| <ul style="list-style-type: none">• Nutrients• Erosion | <ul style="list-style-type: none">• Quality• Quantity | <ul style="list-style-type: none">• Plants• Animals | <ul style="list-style-type: none">• Temperatures• Rain |

a. Soil

Nutrients

The rock formation underlying the project belongs to Singo series rock of the old basement complex. They are made up of grit and sandstone with basal conglomerate shale facies. As in many areas of Uganda, sheet laterite rock can be found as can be seen at the base of Kawuka Hill which is found in the north of the project area.

The parent rock materials weather to red-brown soils not differentiated into clearly defined horizons. They are mainly loam in the south, sandy clay loams on broad flat valleys and peat in the waterlogged swamps.

The broad valleys occupied by seasonal swamps consist of hydromorphic soil types, whose development and characteristics have been influenced by water logging. Such soils tend to have a high level of cation saturation. They are also locally saline.

Erosion

Since no major slopes occur in the project area, erosion is very limited.

If the information above has any references, please state their title(s).

Reference documents must be uploaded in the respective attachment folder, reference pictures on the project specific website.

For the slopes, see the topography map on the projects website

For general information on soils see "Kikonda initial management plan.pdf" by Prof. Peter Karani page 9.

b. Water

Quality

The groundwater has drinking water quality. The surface water has not major biotic or abiotic contamination.

Quantity

The whole project lies in the catchment of the Kafu river. The area is drained by two rivers Kinawoga and Nankende, and their numerous tributaries. The two rivers drain into Kafu to the west and north-west. However, on the upper reaches of Kinawoga the land is flat causing the stream to stagnate. Water only moves along such streams immediately after heavy storms.

* CCBS = Climate Community Biodiversity Standard: www.climate-standards.org/projects

average annual rainfall between 1,000 to 1,300 mm associated with the inter-tropical convergence zone with two rainy peaks generally falling between mid-March and mid-May and from September till early October, the first peak generally being higher than the second. However, the peaks are not well defined and considerable variations occur from one year to another. During the intervening dry periods light showers or even heavy rain storms are not infrequently experienced and this accounts for a relatively favourable distribution of rain throughout the year. Of the two intervening dry seasons in December to February and June to July, the former is more severe than the latter.

The temperature is typical of West Central Uganda and characterized by a mean annual temperature of around 26°C. The maximum temperatures vary between 30 to 35°C and the minimum temperatures between 15 to 20°C.

As there are weather recording instruments at the Forest Station only since few years, the climatic data is taken from Kiboga town some 40 km to the east, where it is recorded since several decades.

The climate chart shows the mean annual rainfall and the mean annual temperature recorded at Kiboga for 30 years. It is known that the climate at the project area is the very same to that of Kiboga.

Month		J	F	M	A	M	J	J	A	S	O	N	D
Mean monthly temperature(°C)	26.2	27.1	27.3	24.2	23.9	27.9	28.1	26.5	28	26.1	26.2	24.8	24.8
Mean monthly rainfall (mm)	1080	29	52	95	176	137	51	72	13	127	157	107	64

Source: From E.K Serwanga working plan for Mubende FRs 1969-1999.


Rain

In recent years there have been changes in the weather with rains coming earlier (February) than expected and dry seasons also starting as early as May instead of June. Nevertheless, the rainfall of over 1,000mm per year is adequate to support the trees planted.

If the information above has any references, please state their title(s).

Reference documents must be uploaded in the respective attachment folder, reference pictures on the project specific website.

For more information on the climate see "Kikonda initial management plan.pdf" page 11

 Evidence must be given that positive impacts are enhanced and negative impacts are mitigated - respectively avoided, if they are not essential for the *project* activities.

For point d. no description of impacts must be given.

a. Soil

Impacts on soil (Nutrients)

Soils differ in their ability to supply the nutrients necessary to sustainable forestry. Nutrients are added through natural processes such as weathering of primary and secondary soil minerals, mineralization of organic matter, fixation of nitrogen (primarily through symbiotic microorganisms), and natural or induced atmospheric deposition.

Nutrients become unavailable for plant uptake through immobilization by soil microorganisms. At the Kikonda Forest Reserve soils are fertile and sandy. This enables especially pine trees to grow.

A study which analysed the soils in 2007 refers that currently no additional fertilization is necessary. If at a later stage such fertilisation would be applied, calculation of CO₂ will be adapted accordingly.

Impacts on soil (Erosion)

This document will be made publicly available. CO₂-buyers will be able to use this for marketing purposes.

The land use of fuelwood for charcoal burning, and grazing activities led to a decrease of forest and bushland. Due to this also the soil started to become more exposed and gained a higher risk of erosion. Within the project area only sites with a higher declination are partly affected, hereby the planting of trees will counteract.

During the first 2 to 3 years the planted trees need to be maintained. This maintenance uses so called "slashers" (little hand scythe) as well as environmental friendly herbicides to reduce the grass between the trees. It is necessary as without this treatment the trees would be overgrown and die. Using this technique of maintenance it is essential to apply it in an appropriate way. If not the possibility of bare soils and therewith erosions occur. This must be avoided as soil exposed to direct sunlight can heat up and destroy precious nutrient and insect habits. As well it would lead to erosions in form of little runnels which can lead to the destruction of other young plants.

Overall the profile of the project is very limited in its slopes which restricts the possibility of erosion to few parts of it.

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b. Water

Impact on water (Quality)

As no fertilizers and only environmental friendly herbicides are being used, the water quality is not affected by the tree planting activities. In contrast, the root system of growing trees acts as a natural filtering system and actively participates to enhance the quality of water.

Impact on water (Quantity)

Although trees absorb water for living, there is no indication that the trees within the project will have a significant impact on the ground level of the water.

If the information above has any references, please state their title(s).

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c. Biodiversity

Impact on biodiversity (Plants)

Biodiversity within the project area has declined steadily due to the illegal activities of charcoaling and cattle grazing during the last decades. Especially due to the deforestation process within the project area many species have been extinguished or were forced to change their natural habitats. Species of grassland habitats were reduced in abundance or estinguised by regual illegal cattle grazing and fires set by cattle keepers. With the start of the project activities, the company has started to fight such illegal activities. The aim is to protect the project area step-by-step with the expansion of the planting activities.

3.575 ha (app. 30%) of the overall project area will not be used for forestation purposes. If species with relevant importance to the natural biodiversity are found which habitats are disturbed by the planting of the trees, the management system will be adapted to create habitative corridors. This approach is expected to yield a stabilization of the overall biodiversity in the project area if not an increase.

To avoid relevant disturbance of fauna and flora due to the planting activities, land preparation is being executed with minimal environmental impacts. For that goal only limited use of tractors is being made and the holes for the trees are being excavated by manual labours.

The infrastructure of the planting area is based on a grid of fire lines which does not disturbe wetland areas.

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Additional positive effect on the biodiversity will be reached through the production of timber. This is due the fact, that all timber will be sold on the national market and will lower herewith the pressure on the unsustainable exploitation of the natural forests in Uganda and surrounding countries.


The document "Biodiversity paper on IUCN red list species in the Kikonda Forest reserve.pdf" gives an overview of both the total figure of plant species found in the project area as well as the amount of red list species. The information was compiled by the research division of global-woods at the Kikonda Forest Reserve supported by the University of Makerere, Kampala.

Impact on biodiversity (Animals)

The grass and bushland of the project area historically inherited most animal species typical for the East African Savannahs. The forest once common in the project area increased that range of animals by those species specialized to live in forest lands. Similar to the flora, also the variety of the fauna decreased over the last decades mainly due to human induced land use change. Additionally poaching activities within the project area and in its vicinity affected specifically those animals that are of hunting value. Elephants, antelopes, lions and other great herbivores and predators were significantly reduced in numbers or extincted. Human settlement around the project area stoped migrating animals such as zebras and wildbeast from including the area in their travel corridor. The research division of global-woods in Kikonda in co-operation with the University of Kampala has conducted a survey that gives an overview of the animal species currently found in the project are. The document "Biodiversity paper on IUCN red list species in the Kikonda Forest Reserve.pdf" above that gives an overview on the animal species found that are mentioned in the IUCN red list.

If the information above has any references, please state their title(s).

Reference documents must be uploaded in the respective attachment folder, reference pictures on the project specific website. "IUCN red list species Kikonda Project.xls"; "Biodiversity paper on IUCN red list species in the Kikonda Forest Reserve.pdf" "Kikonda - Environmental Aspects NEMA.pdf"

 Pests must be managed in an environmental friendly way and preferably without the use of chemical products.


Have any pests already appeared in the forest listed in the chapter 'Management of Planting Area'?
Yes

If yes, how do/did you handle it?

Up to today only trees on wrong sites have been lost due to the fungus Armillaria. It was not necessary to fight the disease in any kind of way as plants on good sites were physically stronger naturally resisted the fungus.

If the information above has any references, please state their title(s).

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 The use of herbicides and insecticides must be documented. A list of applied products must be given.

Any use of herbicide or insecticide is documented through the bookkeeping of the company which is executing the management for the project owner. This company is called Sustainable Use of Biomass (SUB) Ltd. and is registered under the Ugandan law.

Name of product	Main ingredient	Purpose
Glyphogan	Glyphosate	Weed controll
-	-	-
-	-	-
-	-	-
-	-	-

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When chemicals are used there must be sufficient training and proper equipment to minimize environmental impacts.

Each working division of the company SUB has an 'Internal Management Plan' which describes in detail the safety requirement and the necessary training for the workers. As the division 'Maintenance' is the main user of herbicides, its division leader is responsible for the training of the contractors and workers.

If the information above has any references, please state their title(s).

Reference documents must be uploaded in the respective attachment folder, reference pictures on the project specific website. "IMP-maintenance.doc".



Waste must be disposed in an environmentally appropriate way.

As there is no waste management system within the rural areas of Uganda. On the project level waste is being separated into biodegradable and non-degradable waste. Degradable waste is decomposed. Non degradable waste is disposed trash pits without contact to the ground water.

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15 meter wide buffer strips along permanent or temporary watercourses (streams, rivers, wetlands, etc.) shall be implemented. These buffer areas are part of the *nature conservation area*.

Are 15 m wide buffer strips along the watercourses respected? **Yes**

If the information above has any references, please state their title(s).

Reference documents must be uploaded in the respective attachment folder, reference pictures on the project specific website.

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No flooding irrigation, regular irrigation or drainage is allowed to be executed.

Is flooding irrigation, regular irrigation or drainage part of the *project* activity? **No**

Comment on the question above:

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If the information above has any references, please state their title(s).

Reference documents must be uploaded in the respective attachment folder, reference pictures on the project specific website.

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For the planting of trees no area-wide ploughing is allowed. Mechanized ploughing must be limited to the purpose of planting.

Is ploughing part of the *project* activity? **No**

Description: -

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Genetically modified* tree species are not allowed.

Are any genetically modified trees planted in the *project area*? **No**

Comment on the question above:

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If the information above has any references, please state their title(s).
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Native species in mixed stands with a selective harvesting method shall be used preferably.

Otherwise, the *project owner* must justify his

- choice of tree species, and/or
- silvicultural system, and/or
- harvesting method.

Are only native species being used? **No**

Justification for not using native tree species only:

At present no reliable information on the cultivation of local species in Uganda is available. Nevertheless the project owner undertook tests with the native species *Maesopsis emminii*. The results were as such that the growth rate and the timber quality are not sufficient for commercial tree planting. Having that in mind the project owner followed the advice of the National Forestry Authority to plant *Pinus caribaea*, a tree of good growth and no negative ecological effects.

If the information above has any references, please state their title(s).
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Are all forests managed in mixed stands? **No**

Justification for not using mixed stands only:

So far no reliable knowledge on how to manage *Pinus caribaea* as mixed stand under Ugandan conditions is available. The leading experts in Uganda from the Sawlog Production Grant Scheme do not recommend to grow *Pinus caribaea* in mixed stands.

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www.sawlog.ug


Will all forest types be harvested with a selective harvested method? **No**

Justification for not using a selective harvested method only:

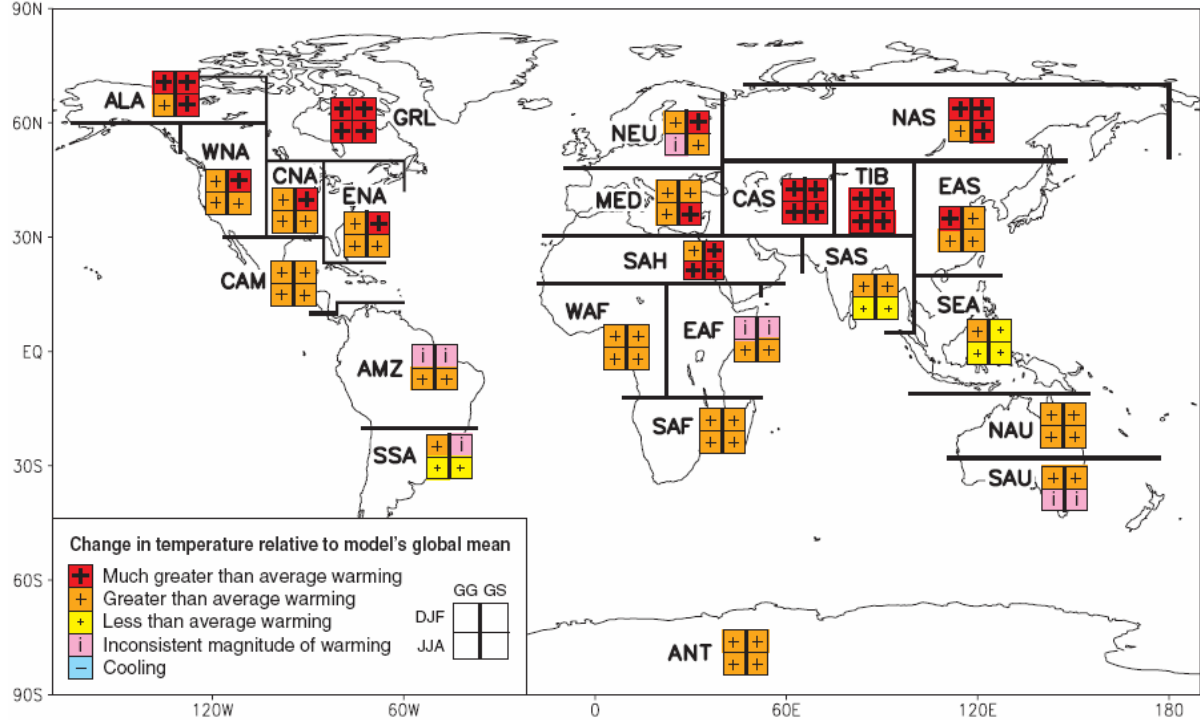
Although selective harvesting is ecologically more desirable, it is not suitable for even aged forest stands.

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 All species must be site-adapted, also under changing climate conditions – considering the latest IPCC report*.

* This footnote is only available in the CarbonFix Standard itself.



The project lies in the region EAF (East Africa). In this region, the temperatures will remain the same during the large dry-season of December-January-February (DJF) and increase during the small dry-season / beginning of small wet-season in June-June-August (JJA).

The prediction of the climate change report shows that the precipitation within the project will have a small increase during the large dry-season (DJF) and a small decrease to the end of the small dry-season (JJA).

The combinations of the above stated developments show that the large dry season will become shorter due to more precipitation. In contrast to this, it is expected that the smaller dry-season will be extended due to higher temperatures and less precipitation.

These developments do not show any hazard to the tree species planted.

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 Source: www.grida.no/climate/ipcc%5Ftar – Report 'The Scientific Basis' – Chapter 10 – Page 596



Two signed statements of

- a. a responsible forestry, wildlife or environmental authority, and
- b. a registered NGO in the environmental sector

must confirm:

- that the *project* operates according to national environmental laws,
- that no native endangered (EN) and critically endangered (CR) species from the 'IUCN Red list'^{*} are being threatened due to *project* activities, and
- that the *project* has a net positive impact on the environment.

"environmental impact assessment NFA.jpg" ; "IUCN red list species Kikonda Project.xls"