NORTH PIKOUNDA REDD+ PROJECT

PROJECT DESCRIPTION

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List of Abbreviations & Acronyms

AAC	Annual Allowable Cut
AFOLU	Agriculture, Forestry and other Land Use
ALM	Agriculture Land Management
ALP	Annual Logging Plan
AGB	Above Ground Biomass
ARR	Afforestation Reforestation and Revegetation
ASL	Above Sea Level
BAU	Business as usual
BCEF	Biomass Conversion and Expansion Factor
BEF	Biomass Expansion Factor
BOD	Biological Oxygen Demand
CAT	*Convention d'Amenagement et de Transformation*
°c	Celcius degree
CC	Carbon Conservation Pte. Ltd.
CCB	Climate, Community and Biodiversity Standards
CDM	Clean Development Mechanism
CF	Carbon Fraction
CIB	*Congolaise Industrielle des Bois (also includes Olam International Limited, the sole owner of CIB)*
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CO_2	Carbon dioxide
COMIFAC	Central African Forests Commission
CTI	*Convention de Transformation industrielle*
dbh	Diameter at Breast Height
DME	*Diametre Minimum d'aménagement*
EIA	Environmental Impact Assessment
FAO	Food and Agriculture Organization of the United Nations
FIR	Forest Inventory Report
FLU	Forest Logging Unit
FMO	Forest Management Organization
FMU	Forest Management Unit
FPIC	Free, Prior and Informed Consent
FSC	Forest Stewardship Council
GHG	Greenhouse Gas
GIS	Geographic Information System
ha	Hectares
HCVF	High Conservation Value Forest
IFM	Improved Forest Management
IGN	*Institut National de l'Information Géographie et Forestière –*

	French national Institute of Geographic Information
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
LOA	Logged over area
ltHWP	Long Term Harvest Wood Products
LtPF	Logged to Protected Forest
m	Meters
m^3	Cubic Meters
mm	Milimeters
MAI	Mean Annual Increment
MEFDD	*Ministère de l'Economie Forestière et du Developpement Durable* - Ministry of Forestry Economy & Sustainable Development
NGO	Non Governmental Organization
OLAM	Olam International Limited
PDD	Project Design Document
PD	Project Document
PRC	Peat Rewetting and Conservation
PSP	Permanent Sample Plot
QA/QC	Quality Assurance/Quality Control
REDD	Reducing Emissions from Deforestation and Degradation
REDD+	Reducing Emissions from Deforestation and Degradation Plus conservation, sustainable management of forests and enhancement of forest carbon stocks
RIL	Reduced Impact Logging
RoC	Republic of Congo
R-PP	(REDD+) Readiness Preparation Proposal
SOP	Standard Operating Procedure
SFM	Sustainable Forest Management
tCO_2e	Tonnes of Carbon Dioxide Equivalent
UFA	*Unité Forestière d'Aménagement* – Forest Management Unit
UFE	*Unité Forestière d'Exploitation* – Forest Exploitation Unit
UFP	*Unité Forestière de Production* – Forest Production Unit
UNFCCC	United Nations Framework Convention for Climate Change
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
WSG	Wood Specific Gravity

1 PROJECT DETAILS

1.1 Summary Description of the Project

The **North Pikounda REDD+ Project** (the Project) is a reducing emission from deforestation and degradation plus conservation and sustainable forestry (REDD+) project designed to protect 92,530 hectares (ha) of unlogged native Congolese forest, legally designated as a selective logging concession. The area is comprised of 60% of dry land mixed forest and 40% of areas designated as wetlands. The anticipated selective logging would normally have been undertaken on the dry lands, consisting on an area of 55,950 ha. Those dry lands constitute the project crediting area.

The concession is owned by Congolaise Industrielle des Bois (CIB) which has been established as a timber operator in the North of Congo since 1968. The company currently has five active sawmills, dryers and moulding units in Pokola and Loundoungou and employs over 900 people permanently and more than 100 subcontractors. Four forest concessions are allocated to the CIB and all have been engaged in sustainable forest management for several years. CIB was the first timber company to submit a Forest Management Plan in Congo in 2005 and the first to become FSC certified in 2006. The North Pikounda *Unité Forestière d'Exploitation* or Forest Exploitation Unit (UFE) was allocated to CIB by Ministerial Decree in 2002 and is 92,530 ha (the Project Area).

The Project is located in the Northern Congo region of Sangha, of the Northern Congo forest sector. The UFE is part of Pikounda *Unité Forestière d'Aménagement* (UFA)– a Forest Management Unit (FMU), which is divided in two UFEs:

1. North Pikounda UFE, designated for timber extraction being allocated to CIB, and;
2. South Pikounda UFE, has been decreed to become "Tokou-Pikounda Protected Area."

The main activity of the North Pikounda REDD+ Project is the cancelation of the planned degradation and deforestation activities and the decision to instead protect the forest area, while maintaining and protecting the biodiversity of the area. This is particularly important as the Project Area has considerable biodiversity, including one of the largest known lowland gorilla populations in the Congo basin.

From the implementation of the Project, it is estimated that around 7,869,000 tonnes of GHG emissions will be avoided which would have been emitted into the atmosphere over a period of 30 years in the absence of the Project, not including the Project's Non-Permanence Risk Buffer amount, leakage, if any, which will be accounted for over the life of the project.

1.2 Sectoral Scope and Project Type

Sectoral Scope 14: Agriculture, Forest and other Land Use (AFOLU).

Project Category: Reduction Emission from Deforestation and Degradation (REDD).

Type of Activity: Improved Forest Management – Logged to Protected Forests (IFM-LtPF).

The project is following the steps of methodology VM0011, "*Estimating Greenhouse Gas Emissions Reductions From Planned Degradation (Improved Forest Management)*" developed by Carbon Planet to estimate the emissions that would have occurred if the legal harvesting of the North Pikounda UFE would have occurred.

The project is not a grouped project.

1.3 Project Proponents

Entity	**Congolaise Industrielle des Bois,** a wholly owned subsidiary of **Olam International Limited**
Role	Concession Holder and Project Proponent
Responsible Party	Christian Schwarz
Role in the Company	General Director CIB
Role in this Project	Project Owner
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Table 1 - Project proponent

1.4 Other Entities Involved in the Project

Entity	**Olam International Limited**
Role	Project Proponent
Responsible Party	Lucas Vanderwalt
Role in the Company	Director of Sustainability
Role in this Project	Project Manager
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Table 2 - Other entity involved in the project: Olam

Entity	**Carbon Conservation Pte Ltd**
Role	Technical Lead in Project Development
Responsible Party	Dorjee Sun
Role in the Company	CEO
Role in this Project	Lead Project Manager
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Table 3 - Other entity involved in the project: Carbon Conservation

1.5 Project Start Date

The Project start date is 01 February 2012, which is the date of approval for the North Pikounda UFE Forest Management Plan from the Ministry Sustainable Development, of Forestry Economy & Environment (MEFDD) of the Republic of Congo (RoC).

CIB began the process of drafting the Forest Management Plan in 2010.

1.6 Project Crediting Period

The project has a crediting period of 30 years. The start date of the beginning of the crediting period is first day of February 2012 and the end date of the crediting period is January 31, 2041.

The Project itself will be 30 years, as there will be thirty years of monitoring from the date of initiation of Project Activity, that is, monitoring will continue at least until 2041. Per the VCS guidelines, a mandatory baseline re-evaluation is to be executed at a minimum of every 10 years after project start. Therefore, there will be a planned mandatory baseline re-evaluation on or before December 2021 and on or before December 2031.

The verification events are planned to occur on an annual basis.

Table 4 - Project crediting period

2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
■									■										■										

■ Baseline Validation/Re-evaluation
□ Verification

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

As per VCS guidance on REDD projects (VCS AFOLU v3.3), *ex ante* estimates to determine project scale are provided for only the first 10-year baseline period, through January 2021 (Table 6). The project is beneath the threshold of mega projects, with less than 1,000,000 tCO2e per year in anticipated emissions reductions generated.

Project (Less than or equal to 1,000,000 tonnes of CO_2e per year)	**Yes**
Mega-project	**No**

Table 5 - Project scale

Deduction or the Non-Permanence Risk Withholding Buffer percentage, which will

Years	Estimated GHG emission reductions or removals (tCO2e)
2012	105 127
2013	148 065
2014	184 453
2015	215 403
2016	241 834
2017	255 413
2018	271 050
2019	284 812
2020	297 016
2021	307 924
Total estimated ERs	**2,311,097**
Total number of crediting years	**10**
Average annual ERs	**231,109.7**

Table 6 - Estimated GHG removals for the first 10 years

It is important to note that Table 6 above represent the estimations for the parameters $C'_{baseline,t}$ of VM0011, which are the annual total GHG emissions associated with the baseline scenario in year t. These figures do not take into account the Leakage, the Uncertainty and the Non-Permanence Risk Buffer which will be estimated at each Verification event.

1.8 Description of the Project Activity

The main objective of the North Pikounda REDD+ Project (the Project) is the conservation of the forest area of the North Pikounda UFE. The main activity of the North Pikounda REDD+ Project is the complete cessation of selective logging or any other harvesting activities in the entire North Pikounda UFE for the duration of the project lifespan, that is 30 years. Instead of mechanized selective logging of the area that would have otherwise occurred without carbon finance, the area will become a non-harvested protected forest area where the substantial biodiversity will be able to remain intact for future generations.

In order to reach this objective of conservation, the project will implement a series of actions that are described in more detail in the monitoring plan (see chapter 4.3). These actions will be structured into for main sub-activities, namely:

1. **Carbon stock monitoring** through the implementation, monitoring and upkeep of a network of Permanent Sample Plots;

2. **Remote Sensed monitoring**: Spot 5 satellite has been calibrated to provide high-resolution images of the Project Area on an annual basis. In the future, Spot 6 and 7 images could even be used to monitor the forests of North-Pikounda REDD+ project. This has been possible

thanks to the partnership between Astrium, The Portal For the Satellite Observation of Congo Basin Forests[1] and IGN[2];

3. **Field Monitoring**: regular field missions will be organised to control identified "hot spot" for illegal logging in North Pikounda concessions. Additional missions will be organized depending on results of remote sensing monitoring or additional information;

4. **Social Activities**: a development fund will be financed through VCU sales. This fund will be managed by the North Pikounda REDD+ Steering Committee.

Figure 1 - View of the Sangha River from the Pokola Concession

[1] http://bassinducongo.reddspot.org/?langRedir=1
[2] *Institut National de l'Information Géographique et Forestière* – French Institute for Geography and Forest Data

1.9 Project Location including Geographic and Physical Information

The Project is located in the African country of the Republic of Congo (see Figure 2) and within the Sangha Department in the northern part of the country near the border with Cameroon. The largest nearby city is Ouesso, which is located on the Sangha River and the border with Cameroon. The Project is located less than a degree north of the equator and within the north-western portion of the Congo River Basin which is renowned for its large stands of tropical rainforests and extensive biodiversity.

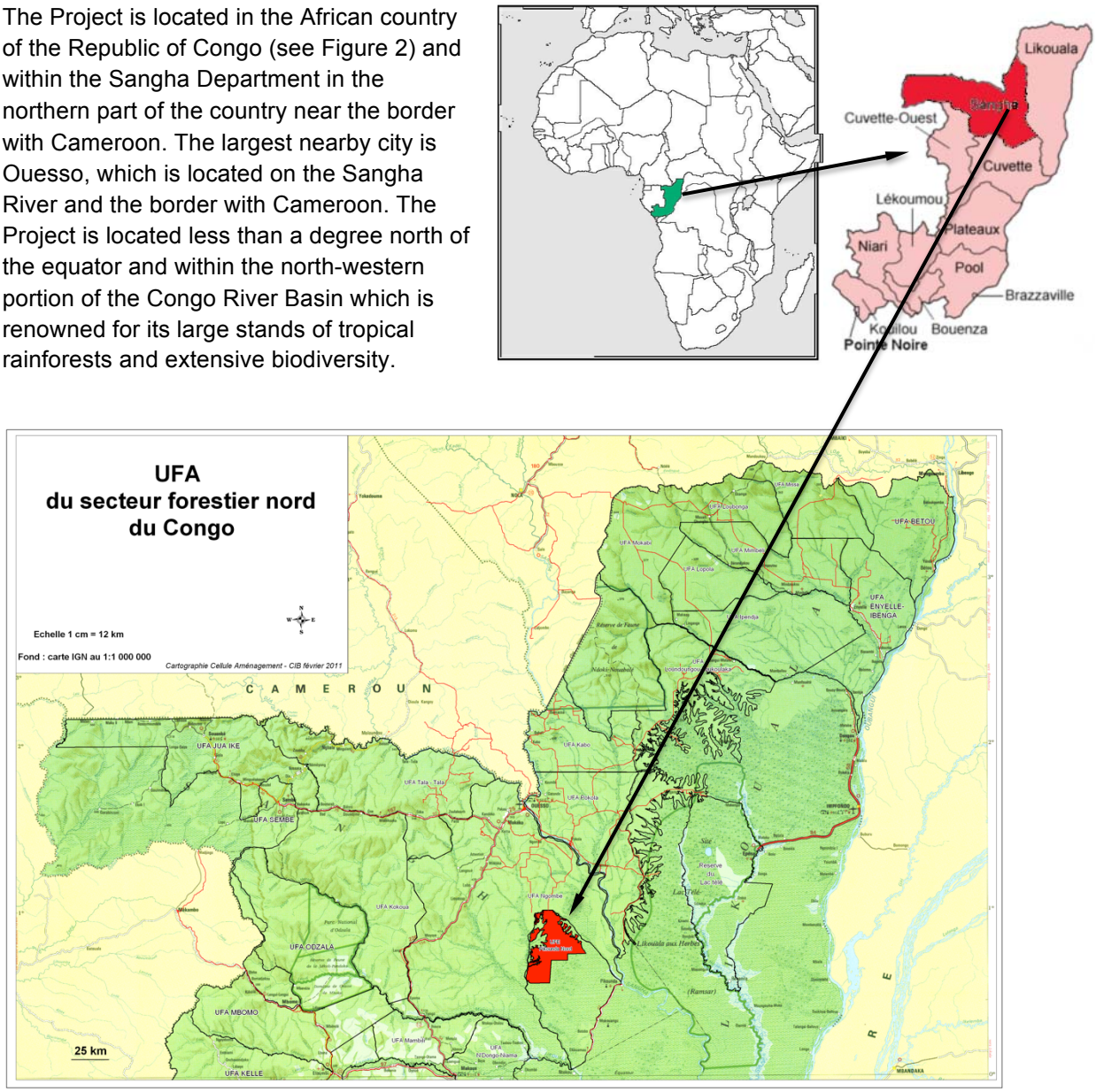

Figure 2 - Project location

The North Pikounda UFE is a logging concessions controlled by CIB in the north of the Republic of Congo (RoC), whose local operational headquarters are down-stream of Ouesso in the town of Pokola.

1.9.1 UFE localisation

The limits of North Pikounda UFE are defined by ministerial decree (decree n°8233/MEF/CAB approved 05th October 2006) and are described below. The UFE is delineated by:

- On the West: from the 0°33'42'' N parallel, the limit follows the flooded forests of the Kandeko river, then the Ebangapélé river up to the 1° N parallel;
- From North to North-Est and Est: the limit correspond to the 1°N parallel till the Ebangui river. There, it follows the Ebangui river flooded forests until the 16°25'07''E meridian;

- From South-East to West: the limit follows 0°44'13''N parallel between meridian 16°25'07''E and meridian 16°18'35''E. Then it follows the later meridian to the South until crossing the 0°41'56''N parallel, then this parallel straight to the West until it crosses the meridian 16°12'38''E. There, it follows a line oriented at 186° until the points of geographic coordinates 0°33'42''N – 16°12'03''E. From there, the limit follows the 0°33'42''N parallel until it crosses the Kandeko river.

According to the decree, the project area is 93,970 ha, but in fact the GIS corrected area (which is retained for this project) is 92,530 hectares.

Figure 4 next page presents the localisation of the North Pikounda UFE and its boundaries.

The project crediting area consists of all of the "dry land (*terra firma*) of the North Pikounda UFE. The exact localisation of those dry lands is provided in Figure 5 below.

1.9.2 Climate

The climate of the Northern part of Congo is equatorial (Vennetier, 1965). According to Leroux (1983), the project area belongs to the Congo Basin climatic region and to the domain of the permanent Atlantic monsoon. North Pikounda UFE is located 70 km south-east from Ouesso meteorological station.

Annual mean rainfall in Ouesso is 1686 mm (1961-1990). The Rain regime is bimodal with two rainfall peaks, one in May (187 mm) and one in October (238 mm and 15 days of rain). The main dry season takes place between December and February and there is a small dry season around July.

Mean temperatures are slightly oscillating around 25°c, with a minimum of 24°c in August and a maximum of 25,7°c in March. Daily temperatures differences are small, generally less then 10°c. Annual mean hygrometry is 85%, with monthly means varying from 80% in February to 87% in October during the primary rain season.

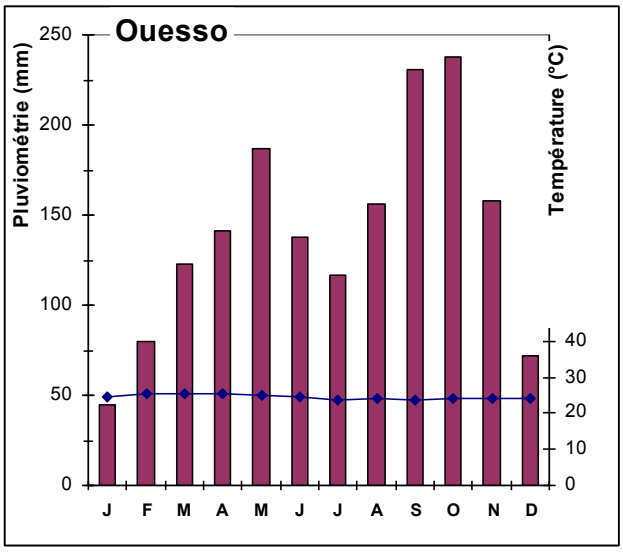

Figure 3 – Average Rainfall and Temperature based on monthly means for a 30 years period (1961-1991) at Ouesso (*ASECNA*)

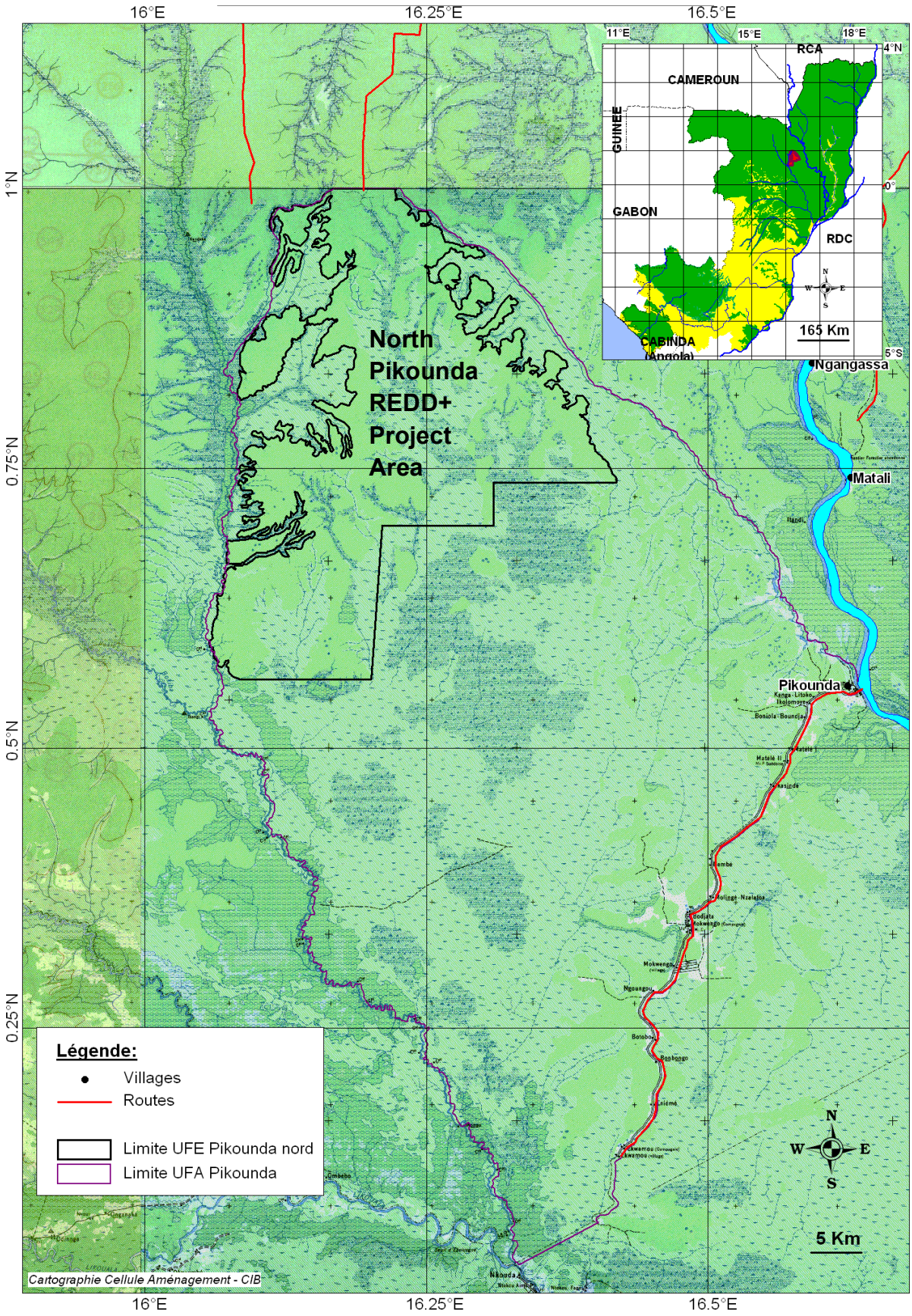

Figure 4 - Map of North Pikounda UFE and the REDD+ Project Area

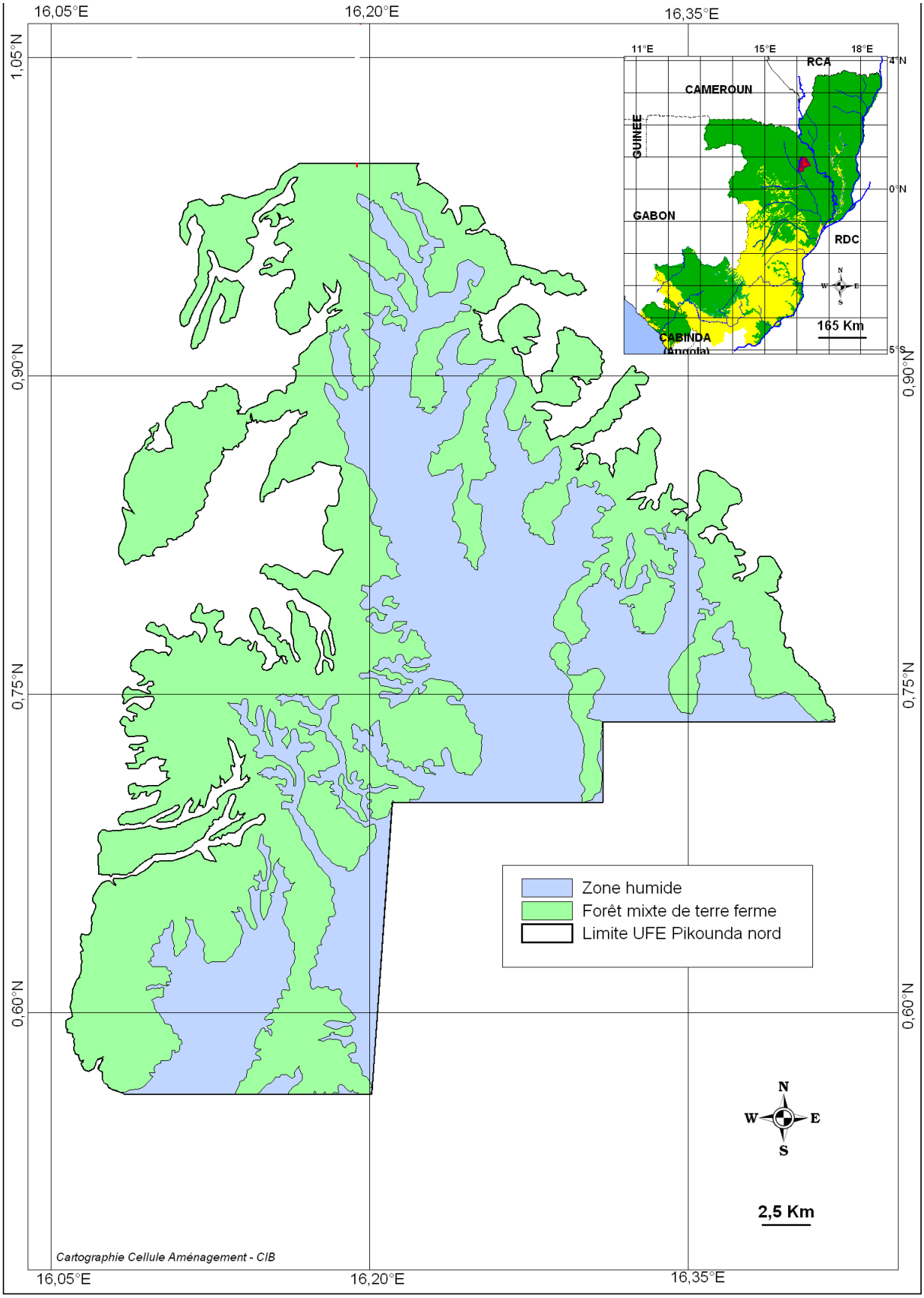

Figure 5 – Map of the crediting area: Dryland mixed forests (in green)

1.9.3 Topography and hydrology

The North Pikounda Project Area is generally flat, with only a small variation in elevation change: from 325m above sea level (ASL) to 350m ASL. The Ebangui River drains the Northeast part of the UFE and drains into the Sangha River. The western side of the project area feeds the Ebangapélé, Kandeko and Bokiba Rivers which in turn feed the Likouala River, also eventually draining into the Sangha River. All of these watersheds feed into the Congo River and make up a portion of the greater Congo River Basin.

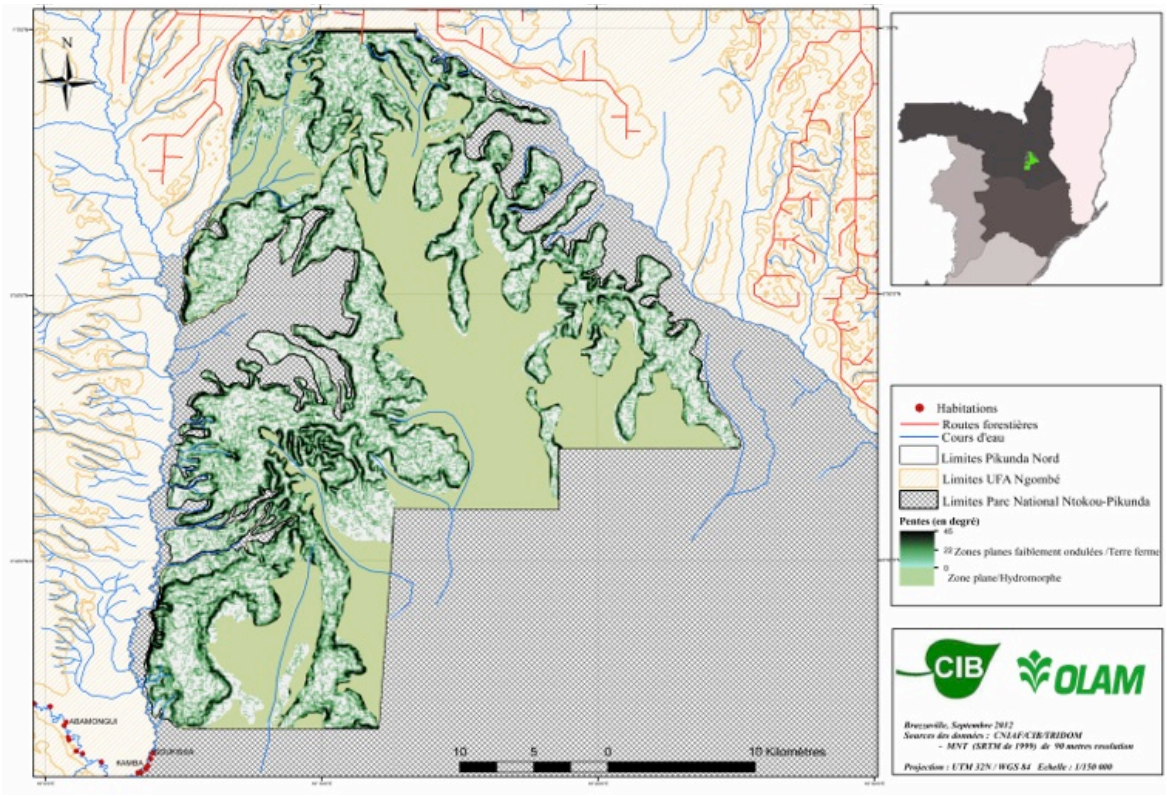

Figure 6 - Lands elevation / Slopes map

1.9.4 Geology and Pedology

The project area is almost completely covered by quaternary clayey or sandy alluvium deposited by the Sangha river (ORSTOM, 1983).

Soils located on dry lands are of ferallitic types, with red to yellowish colors, ranging from silty-clayey-sandy to sandy. They present substantial depth, with little difference between successive layers, very acid and greatly desaturated (Gillet, 2008).

Hydromorphic soils, oligotrophic, peaty or semi-peaty are occupying the permanently flooded lowlands and swamps depressions. These soils are not part of the crediting area and would not have been disturbed by the logging activities under the baseline scenario

The geological map of Congo, produced by ORSTOM, is provided in ***Appendix 01***.

1.10 Conditions Prior to Project Initiation

The North Pikounda UFE has been allocated to the CIB by Ministerial Decree in 2002 in a *Convention d'Amenagement et de Transformation* (CAT), that is a Convention of Management and Transformation.

CIB has approved Forest Management Plans for all of its other concessions.

Within a Forest Management Plan of the RoC, forest can be divided in different "management series" which correspond to their respective objective or purpose of management. These objectives can be:

a. **Production Areas**: allocated to timber harvesting;
b. **Conservation Areas**: preservation& research of the various different ecosystems;
c. **Protection Areas**: buffer zones and swamp areas that are not allowed to be logged; and
d. **Community Development Areas**: for local population use only (farming, hunting, fishing and harvesting of non-timber products).

In accordance with concession management practices in the RoC, CIB, in the development of the proposed management plan, has classified the concession into production areas and non-production areas. Production areas are dry land mixed forest areas while the wetland areas (constituted of flooded forests, riverine and riparian forests, swamps) will be included in the Protection Area management series.

Forest Type	Area (GIS)	
	(ha)	(%)
Dry land mixed Forest (Production Area)	55,950	60,5
Wetlands areas (Protection Area)	36,570	39,5
Total North Pikounda UFE	**92,530**	**100**

Table 7 - Proportion of forest types in the North Pikounda UFE

1.10.1 Forest Management Plan for Selective Harvesting

On or about the 13th November 2002, CIB was issued a CAT for Pokola UFA and North Pikounda UFE by the MEFDD, as the CAT was signed on behalf of the RoC by Minister Henri Djombo and by Director General Jean Marie Mevelec for CIB.

In 2011/2012 CIB produced a forest management plan entitled "*Plan d'Amengement De L'Unité Forestière D'Exploitation De Pikounda-Nord (2012-2031) version 2*" which was submitted to the MEFDD in February 2012 and approved in February of 2012

The Forest Management Plan for Pikounda Nord UFE includes different studies: a forest inventory report, an environmental impact study, a socio-economic study, a large-mammal survey and a cartography report. The initial inventory work began in 2003 with the forest resource inventory.

1.10.2 Human Habitation

For the preparation of the Management Plan, CIB has undertaken studies with international consultants (Pierre, 2004 ; Leclerc, 2004 ; Pierre *et al*., 2010), which have been completed by CIB's own social team. Those studies concluded that there are no people living within the concession area, nor have local communities been believed to be residing in the area for the past 50 years. It is further understood that in general, the local population does not enter the North Pikounda area3 due to natural barriers that surrounds the area. The closest community (Molenda) is over twenty kilometers away, and access to the concession would require crossing the Ebangue River and then trekking twenty kilometers overland through dense and mostly swampy forest with no paths, let alone roads. This lack of access is ideal for a forest protection project of this type.

The socio-economical studies that has been undertaken for the Forest Management Plan preparation have shown that Molenda community traditional land use does not overlap with CIB concession (see Figure 7 next page).

Currently, road access to the North Pikounda UFE is only from a single forest access road through the IFO concession, to the North of the project area. This road has been reopened solely for the purpose of the Project (carbon inventory and control). The access to this road is controlled by eco-guards under the responsibility of IFO (this company is FSC certified). Within the concession itself, there are no roads whatsoever.

Illegal logging, forests fires, slash and burn agriculture or other reversals have not occurred on the property in the past.

[3] Socio-economical study for North Pikounda UFE, Etude socio-économique de l'UFE Pikounda Nord

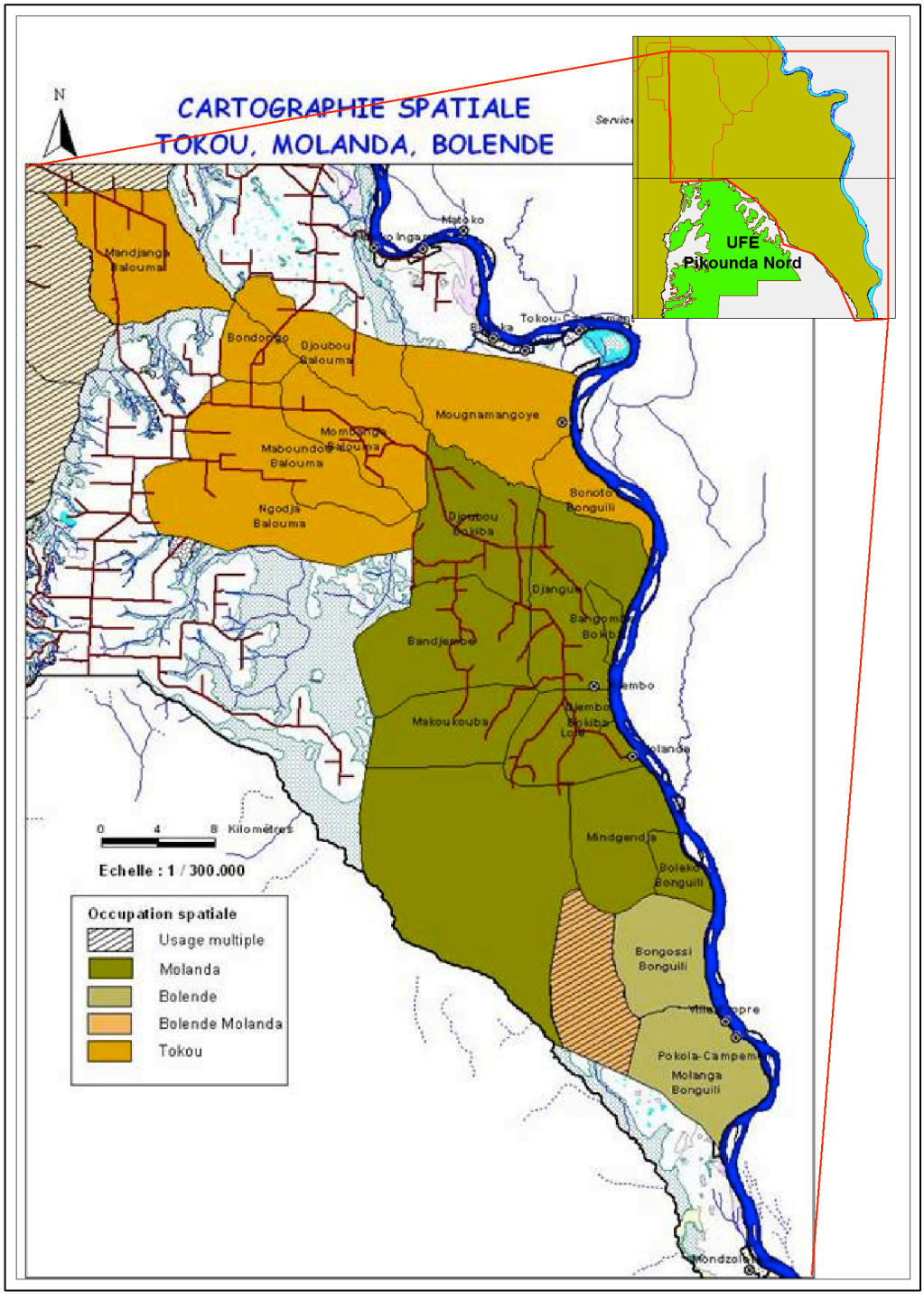

Figure 7 - Local communities land use map (Management Plan – 2012)

1.10.3 Biodiversity Condition

The North Pikounda UFE are old-growth forests, as it has never been commercially logged and its remoteness as indicated above means that habitation and hunting in the past has been extremely limited. This remains true today.

A. Flora

Northern Congo forests formations can be included in the tropical semi-evergreen forests (de Namur, 1990), which correspond to a transition formation between evergreen and semi-deciduous forests (Vivien and Faure, 1985; White, 1986).

The project area is stratified into two stratum: production forests (dry land mixed forests) and protection forests (wetlands). Table 7 summarize the superficies per strata. For more explanation about the stratification process, please refer to ***Appendix 02***, chapter 1 and Lembe (2012) report.

Figure 8 represents the general stratification of North Pikounda UFE.

Dry land mixed forests

Dry land mixed forest represents 55,950 ha or around sixty percent (60%) of the North Pikounda UFE.

These forests are characterised by a complex structure, a high vegetal diversity and a heterogeneous physiognomy. The under-storey is very dense, made of liana-like giant herbaceous species such as *Hamania, Marantaceae* (i.e. *Megaphrynium, etc.), Zingiberaceae* (i.e. *Aframomum, Costus, etc.)* and *Commelinaceae* (i.e. *Palisota*, *etc*.) and hereafter designated as *Marantaceae*. The *Marantaceae* are generally 3 meters in height and can reach 6 meters around trees. Tree height can be greater than 50 meters and the diversity in tree species is high. The forests contains most of the key commercial species such as *Sapelli* (*Entandrophragma cylindricum*) *Sipo* (*Entandrophragma utile)* and *Wengé* (*Millettia laurentii*).

Depending on the canopy opening and the under-storey structure, it is possible to distinguish three different forests structures:

1. "**dense**" canopy forests, where tree crowns are adjoining and the under-storey generally open to dense;
2. "**light**" canopy forests, with a discontinuous canopy and a dense understory difficult to penetrate; and
3. "**open**" canopy forests with a very dense under-storey of *Marantaceae* (generally Megaphrynium).

The various formations compose a forest mosaic and the variations between the 3 structures are progressives (i.e. they act as a continuum). It is often difficult to differentiate them in the field or by the use of remotely sensed imagery (Laporte, 2002 ; Laporte & Lin, 2004 ; Gillet 2006 ; rapport d'inventaire d'aménagement).

Wetlands

Wetlands, depending on the degree of hydromorphy, include: (1) swamp forests perpetually flooded; (2) periodically flooded forests of the alluvial plains; (3) riparian forests bordering the rivers; and (4) swamps.

Tree height varies between 15 and 30 meters. Vegetation in wetlands is dominated by some species such as *bahia* (*Hallea ciliata*), water *padouk* (*Pterocarpus osun*), water *bubinga* (*Guibourtia demeusei*), water *ilomba* (*Pycnanthus marchalianus*), *limbali* (*Gilbertiodendron dewevrei*), *rikio* (*Uapaca* spp.), *eyoum* (*Dialium* spp.), *ayinda* (*Anthocleista* spp.), *ossol* (*Symphonia globulifera*), *Sterculia suaviolacea*, etc.

Wetlands are not logged under normal condition and thus will not be part of the crediting area.

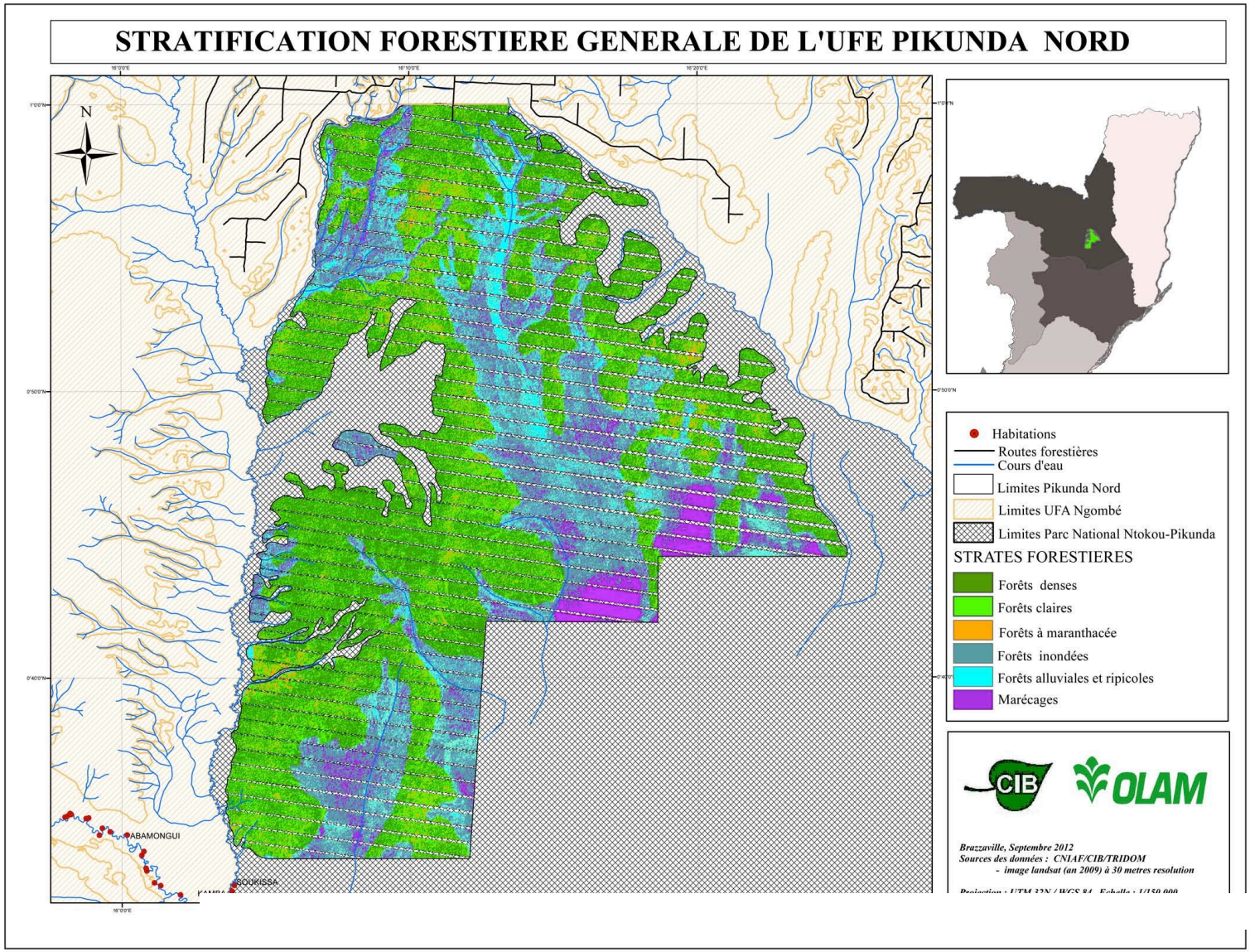

Figure 8 - General stratification map

Protected Species

The table below provides the protection status of the rare species inventoried (as part of the forest management planning process) as considered by both the International Union of Concerned Scientists (IUCN) and the Convention on international Trade in Endangered Species of Wild Fauna and Flora (CITES).

Common Name	Scientific Name	CITES Status	IUCN Status
Mukulungu	*Autranella congolensis*	Not Listed	CR
Afrormosia	*Pericopsis elata*	Appendix I	EN
Agba	*Prioria balsamifera*	Not Listed	EN
Ebène noir	*Diospyros crassiflora*	Not Listed	EN
Pao rosa	*Bobgunnia(=Swartzia) fistuloides*	Not Listed	EN
Wengué	*Millettia laurentii*	Not Listed	EN
Acajou	*Khaya anthotheca*	Not Listed	VU
Azobé	*Lophira alata*	Not Listed	VU
Bilinga	*Nauclea diderrichii*	Not Listed	VU
Bosse clair	*Guarea cedrata*	Not Listed	VU
Dibétou	*Lovoa trichilioides*	Not Listed	VU
Doussié	*Afzelia bipindensis*	Not Listed	VU
Eyong	*Eribroma oblongum*	Not Listed	VU
Iroko	*Milicia excelsa*	Not Listed	VU
Kanda	*Beilschmiedia spp*	Not Listed	VU
Kosipo	*Entandrophragma candollei*	Not Listed	VU
Koto	*Pterygota spp.*	Not Listed	VU
Sapelli	*Entandrophragma cylindricum*	Not Listed	VU
Sipo	*Entandrophragma utile*	Not Listed	VU
Tiama	*Entandrophragma angolense*	Not Listed	VU
Ayous	*Triplochiton scleroxylon*	Not Listed	LC
Iatandza	*Albizia ferruginea*	Not Listed	LC

Table 8 – IUCN / CITES status for species present in Congo

(LC : Least Concern; VU: Vulnerable; EN: Endangered; CR: Critically endangered)

B. Fauna

Nearly 60 mammal species are present in North Congo, including the African Forest Elephant, lowland gorillas, chimpanzees, bongos, leopards and hippopotamuses, many of which are known to be within the North Pikounda concession. It should be further noted that 13 species are integrally protected in Congo species and also have IUCN status and/or CITES status (see below).

Common Name	Local name (Lingala)	Scientific Name	CITES Status	IUCN Status[4]
Bongo	*Mbongo*	*Tragelaphus euryceros*	Not Listed in Congo	NT
Water Chevrotain	*Mbenguéné*	*Hyenoschus aquaticus*	Not Listed	LC
Hippopotamus	*Ngoubou*	*Hippopotamus amphibius*	Appendix II	VU
Leopard	*Koyi*	*Panthera pardus*	Appendix I	NT
Honey Badger	*Kwokwoto*	*Mellivora capensis*	Not Listed in Congo	LC
Giant Pangolin	*Kélépa*	*Manis gigantea*	Appendix II	NT
Agile Mangabey	*Tamba*	*Cercocebus galeritus agilis*	Appendix I	LC
Robust Chimpanzee	*Soumbou*	*Pan troglodytes*	Appendix I	EN
Guereza	*Kalou*	*Colobus guereza*	Appendix II	LC
Uhehe Red Colobus	*Niaou*	*Colobus badius*	Not Listed	EN
Lowland Gorilla	*Ebobo*	*Gorilla gorilla gorilla*	Appendix I	CR
African Forest Elephant	*Njokou*	*Loxodonta cyclotis*	Not listed but may be coverd under Appendix II	VU
Aardvark	*Kpigna*	*Orycteropus afer*	Not Listed	LC

Table 9 - Protected Large Mammals Present in the North of Congo (Poulsen and Clark, 2005)

The North Pikounda concession provides shelter for important large mammal populations, particularly lowland gorillas and elephants. The lowland gorilla, a charismatic and critically endangered species, lives within the concession with high concentrations found to the south. Inventories have shown that the lowland gorilla population density in Pikounda is one of the highest in Central Africa (Poulsen and Clark, 2005) with more than 10 nests/ km, i.e., almost 6,000 individual in the concession, located mostly in the north and eastern part of the Project Area.

To compare, the table below indicates different nest densities from different studies in the Northern Congo.

Figure 9 - Lowland gorilla

(credit: CIB)

[4] IUCN Red List of Threatened Species, Version 2011.1.

Area	Gorilla density (ind.km^{-2})	Sources
UFA Pokola	2,2	Poulsen & Clark, 2005
PN Odzala-Kokoua	3,7	Blake, 2006
UFA Ngombé	4,2	Kiminou *et al*, 2007
Ntokou	4,6	Malonga *et al*., 2007b
UFA Pikounda	4,7	Malonga *et al*., 2007a
UFE Pikounda-Nord	**10,6**	Poulsen & Clark, 2005
PN Odzala-Kokoua	11,3	Bermejo, 1999
Lac Télé	12,2	Poulsen & Clark, 2004

Table 10 - Gorilla Density Comparison in Northern Congo

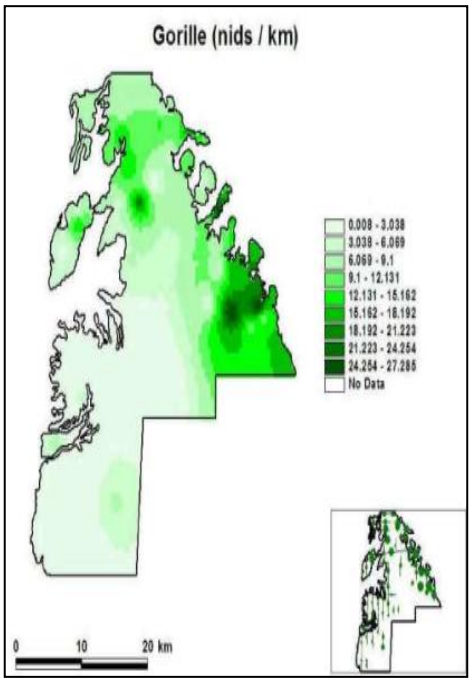

Figure 10 – Gorillas nest concentration in Pikounda

Elephants are also classified as a vulnerable species on the IUCN Red List.[5] Their density is relatively high in Pikounda with 0.81 to 1.38 capita per km², mostly in the northern part of the concession[6]. These densities are high compare to densities observed in neighbouring Nouabalé-Ndoki Park[7,8] of 0,6 elephant / km² and 0,9 elephant / km².

Figure 11 - African forest elephant on a logging road

(credit : CIB)

[5] Blanc, J. 2008. *Loxodonta Africana*, in IUCN, IUCN Red List of Threatened Species, Version 2011.1.
[6] Poulsen J.R. & Clark C.J. (2005), supra
[7] Blake 1994 *in* Poulsen & Clark, 2005, supra
[8] Carroll, 1988 et Faye & Agnagna 1991 *in* Poulsen & Clark, 2005, supra

1.11 Compliance with Laws, Statutes and Other Regulatory Frameworks

Overview

CIB, CIB-OLAM, Olam International and Carbon Conservation will comply with all applicable local, district and national laws, regulations and standards. Within the Project area, none of the proposed Project Activities violate any law. The government of the Republic of Congo owns the land in the Project Area but North Pikounda UFE is defined by ministerial decree and CIB, as the Project Proponent is the legal concessionaire of the UFE. CIB has an approved Forest Management Plan for the Project Area. The Project Proponent owns the rights to the sequestered carbon in the project area.

1.11.1 Forestry Laws and Regulations

The Forest Management requirements and planning of the North Pikounda UFE is provided by Congolese Forestry Law, on the one hand it is a tool for planning and management of industrial forestry activity and, on the other hand it is the legal frame of reference for the development and harvesting plan of forest as well as the entire management arrangements needed to ensure the integrity of the private domain of the State. The management plan is approved by decree of the Council of Ministers. The North Pikounda UFE Management Plan was approved in this way in February of 2012.

The legislative and regulatory framework, which supports and regulates the development and management plan of a UFA or UFE is based on the following texts:

• Law No. 16-2000 of 20 November 2000 Forest Code and its implementing regulations, including Decree No. 2002-437 of 31 December 2002 establishing the conditions for management and use of forests; this Act is being revision.

• Law No. 003-91 of 23 April 1991 on environmental protection;

• Law No. 37-2008 of 28 November 2008 on wildlife and protected areas;

• Law No. 10-2004 of 26 March 2004 laying down general principles applicable to a plan Land Law, including the rights of individuals and legal entities on land.

1.11.2 Corporate Laws

Loi N° 19-2005 of 24 November February 2005“ regulates commercial activity in the Republic of Congo.

Congolaise Industrielle des Bois (CIB), is a Limited Company with a Board of Directors duly registered in the Republic of Congo as of 30th May 1968 and the company registration number is CG-OUE-RCCM-05-B-179.

CIB-Olam is authorised to engage in forest production activity based on the Certificat DÁgreement No 005 /MEFDD/CAB/DGEF/DVRF-SIB singed on 15 January 2013

1.11.3 Labor Laws

The mutual rights and obligations that govern the relations between CIB, the holder of the Forest Management Plan, and the company personnel, their dependents (wife (s) and children living under the roof) are defined within the following texts:

• Labor Code of the Republic of Congo, Law 45/75 of March 15, 1975 and Law No. 6/96 of 6 March 1996;

• Collective Agreement logging and agricultural dated 23 April 1974, revised March 7, 1992;

• Order No. 0780/MTPSI.DGT.DRTSS.3/3 of 24 February 1975 extending in the People's Republic of Congo to the collective agreement for agricultural and forestry operations on 23 April 1974.

The regulations concerning the rights and mutual obligations of the company and its employees do not directly govern the Forest Management Plan, but constitute a regulatory framework annex, that serve to underpin the guidelines for socio-economic development linked to the living conditions and activities of employees and their dependents (MOU, worker rules, amendment of the management of hunting, activity, etc.).

1.11.4 International Agreements

The Republic of Congo is party to the United Nations Framework Convention on Climate Change, being a signatory as of 12 June 1992, where the Convention was ratified on 14 October 1994 and entered into force on 12 January 1997. On 12 January 2007, the Republic of Congo ratified and acceded to the Kyoto Protocol.

Internationally, the Republic of Congo has also ratified several international conventions on the protection of the environment and is a signatory to the following other relevant international agreements dealing with the environment and the protection of biodiversity:

Table 11 - Applicable International Agreements list

Convention or Agreement	Date of Entry / Ratification
Paris Convention on World Cultural and Natural Heritage, UNESCO, 1972	12 October 1987
Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1973	31 January 1983
RAMSAR Convention on Wetlands of International Importance, 1971	18 October 1998
Bonn Convention on Migratory Species of Wild Animals, 1979	01 JANUARY 2000
International Agreement on Tropical Timber, January 26, 1994 (adoption Geneva, 2006)	31 Jul 2008
Convention on Biological Diversity, Rio, 1992	11 June 1992
United Nations Convention on Action against Desertification in Countries Experiencing Serious Drought and / or Desertification, Particularly in Africa, Paris, 1994	12 July 1999

Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora, 1994	10 December 1996
COMIFAC Treaty, Yaounde, 2002	05 February 2005

Further, Congo is a member of the International Tropical Timber Organization (ITTO), the African Timber Organization (ATO), the Conference on Forest Ecosystems in Central Africa (CEFDHAC), the Organization for Wildlife conservation in Africa (OCFSA) and the International Union for Conservation of Nature (IUCN).

The North Pikounda REDD+ Project aims to attain its objectives in term of climate change, biodiversity, fauna, flora wetlands conservation and sustainable use of forests ecosystems, in part through the application of rule of law and the MEFDD process of the RoC.

1.11.5 Legal Agreements between CIB and the Republic of Congo

Extraction and Carbon Rights

The North Pikounda UFE is part of the private domain of the state which has been established and having as its main purpose the undertaking of forestry production activities by regulations (Articles 10 and 65 of Act 16-2000). The limits of North Pikounda UFE are defined by ministerial decree (decree n°8233/MEF/CAB approved 05th October 2006)

The Agreement of Development and Processing - No 12/MEFPRH/CAB/DGEF/DF-SGF 13/11/2002 signed between the Congolese government and Congolese Industrielle des Bois (CIB) and Order No. 5856/MEF / CAB / DGEF / DF-FMS 13/11/2002 approving the agreement to assign the Unit of Forest Exploitation (UFE) Pikounda North for a period of 15 years from the date of signing of the order of approval.

As such exploitation (Articles 65, 66, 67, 68 and 72 of Act 16-2000) includes the Convention itself that determines the rights and obligations of the parties, and the particular specifications that specify the details of the tenderer, in particular regarding the forest management plan, operations, industrial facilities, vocational training and social infrastructure.

The Government of the Republic of Congo, through his Excellency Henri DJOMBO, Minister of Sustainable Development and the Forest Economics of the Environment contracted, together with CIB, on 24 May 2012,in order that CIB might undertake the “development and implementation of the Pilot REDD+ North Pikounda UFE” signed a REDD+ project development agreement. The project was to be a “REDD+ pioneer project for the improvement of sustainable forest management of natural tropical forests in the Congo Basin including [for CIB,]the right to hold and commercialize the carbon credits from this Project.” The Agreement agreed to a 30 year Project timespan and a corresponding grant to CIB to maintain the North Pikounda UFE license for the same period.

Moreover, the agreement signed, required the establishment of a Republic of Congo led “North Pikounda REDD+ Project Steering Committee.

The agreement transfers the obligation of project development and of the underlying carbon rights to CIB, and states the roles and obligations of the two parties to that agreement, the project time period, as well as revenue sharing with the government and local communities,

The North Pikounda UFE Concession License

On 13 November 2002 CIB was issued its "*Convention d'Amenagement et de Transformation, pour la mise en valeur des Unites Forestiere d'Amenagement Polola et de l'Unite Forestiere d'Exploitation Pikounda Nord situees dans la region de la Sangha*" (CAT) (Which translates as: Convention of Installation and Transformation, for the development of the Units Forestiere d' Amenagement Pokola and the Unit Forestiere d' Exploitation Pikounda North situated in the area of Sangha) The CAT was signed on behalf of the RoC by Minister Henri Djombo of the MEFDD and by Director General Jean Marie Mevelec for CIB.

On the same day, both Pokala and North Pikounda were issued, by Minister Henri Djombo, their "*Cahier de charges particulier relatif a la convention d'amenagement et de transformation conclue entre le gouvernement congolais et la congolais industrielle des bois, pour la mise en valeur de l'UFA Pokola et de l'UFE Pikounda Nord, situees dans la region de la Sangha*." (Which translates as: Specifications relating to the convention of installation and transformation concluded between the Congolese government and the CIB, for the development of the UFA Pokola and of the UFE of North Pikounda, situated in the area of Sangha.)

1.11.6 Forestry and Environmental Taxes

The various forest and environmental taxes (Articles 48, 87 to 100, 179 and 180 of the Act 2000-16) currently in force in the Congo and which could potentially impact the North Pikounda UFE site are presented in Table 12.

Table 12 - Forestry and Environmental taxes in North Congo (Zone IV)

Type of tax	Rate	References:
Surface Tax	350 FCFA /ha	Order No. 6382 of 31/12/02
Deforestation Tax	50,000 FCFA / ha (based life and roads)	Order No. 6380 of 31/12/02
Harvesting Tax	3% of FOB value of the gross volume	Order No. 6378 of 31/12/02
Export tax of logs	8.5% of FOB value	Order No. 6383 of 31/12/02
Export tax on sawn wood	dried lumber: 1.5% of FOB value sawn wet: 3.5% of FOB value	Order No. 6383 of 31/12/02
Tax control of forest products for export	1% of FOB value	Decree 2002-436 of 31/12/02 (Article 18)
Taxes on forest products accessories	(pm)	Order No. 6379 of 31/12/02

Areas of forestry taxation are determined by Order No. 6386 of 31/12/02. FOB values for calculating the harvesting tax and export tax of wood are fixed by Order No. 7840 MEF / MEFB of 14/09/09.

These taxes, remain in effect despite the Project being an Avoided Deforestation Project and no harvesting is taking place; CIB is still required to pay the Surface Tax.

1.12 Ownership and Other Programs

1.12.1 Proof of Title

The Congolese forestry domain consists of the state forest estate and the private forest estate[9]. The State forest estate is divided between the non-permanent forest estate and the permanent forest estate. The permanent forest estate includes land allocated for forests and wildlife habitat[10] and also includes private state forest estates, municipal, local community or territorial forest estates and forest estates owned by legal persons[11].

Forests in the private domain of the State include gazetted forests for protection, natural forest conservation, recreational forests, experimental forests and ***production forests***[12].

CIB holds the Pikounda UFE (among others) production forest concession as a forest owner in the private domain. It holds the license through a number of legally issued agreements with the RoC so that CIB may exploit the forest product, specifically the timber, within the licensed concessions. CIB has been a concession holder in RoC since 1968 when it integrated two timber firms: SFS (Société Forestière de la Sangha, Forest Sangha Society, created in 1953) and IBOCO (a sawmill in Brazzaville) created in 1961; with its head office is located at Ouesso

On the 13th November 2002, the CAT for Pokola FMU and North Pikounda FLU by the MEFDD was signed, as the CAT was signed on behalf of the RoC by Minister Henri Djombo and by Director General Jean Marie Mevelec for CIB.

The formal license granted is entitled:

"*Convention d'Amenagement et de Transformation, pour la mise en valeur des Unites Forestiere d'Amenagement Pokola et de l'Unite Forestiere d'Exploitation Pikounda Nord situees dans la region de la Sangha*"

Which translates as: Convention of Installation and Transformation, for the development of the *Units Forestiere d' Amenagement Pokola* and the *Unit Forestiere d' Exploitation Pikounda Northern situees* in the area of Sangha.

On the same day, both Pokala and North Pikounda were issued by MEFDD Minister Djombo, through the "*Cahier de charges particulier relatif a la convention d'amenagement et de transformation conclue entre le gouvernement congolais et la congolais industrielle des bois, pour la mise en valeur de l'UFA Pokola et de l'UFE Pikounda Nord, situees dans la region de la Sangha*." (Which translates as: Specifications relating to the convention of installation and transformation concluded between the Congolese government and the CIB, for the development of the UFA Pokola and of lUFE Northern Pikounda, situated in the area of Sangha.)

This document sets forth in Article 2 the fifteen (15) year duration of the production license and further requires the adoption of a management plan that is in line with the RoC forestry law.

Currently the CIB-Olam North Pikounda management plan envisions that it will harvest as mentioned above at a somewhat accelerated rate and then allow for the forest to recuperate. This 30-year management plan will require CIB –OLAM to have its license renewed during the Project term, as a concession license is only granted for 15 years at a time in RoC. This type of relicensing every 15 years is normal and something that CIB has conducted many times without issue in the past; after all CIB has been operating in that part of Northern Congo for quite a significant amount of time, with the original concession licenses spanning back to 1963.

[9] Article 3, Forestry Code
[10] Article 5, Forestry Code
[11] Article 6, Forestry Code
[12] Article 8, Forestry Code

As part of the written agreement between CIB-OLAM and the MEFDD, singed in May of 2012, the RoC through the MEFDD agreed to allow CIB to conduct the North Pikounda REDD+ Project for 30 years, granting an extension of the licence until the end of the Project.

In addition to having exploitation rights for the timber on the Pikounda CIB has received further explicit confirmation from the MEFDD in the 24 May 2012 agreement of CIB's right to conduct the REDD+ project and maintain legal title and ownership of any carbon credits originated from the Project.

1.12.2 Emissions Trading Programs and Other Binding Limits

The Republic of Congo is a non-Annex I country under Kyoto Protocol and does not have any GHG reduction commitments under the Convention. Moreover, CIB does not have any project related to carbon credit generation under the Clean Development Mechanism (CDM) or other regulatory scheme within the Project Area.

1.12.3 Participation under Other GHG Programs

This is the first and only application for this project to a Greenhouse Gas (GHG) program. No participation in any other GHG programs is contemplated at this time.

1.12.4 Other Forms of Environmental Credit

This is the first and only application for this project to a to any type of environmental credit programme, GHG or otherwise. No participation in other GHG programs is contemplated at this time.

The project may or may not become certified under the Forest Stewardship Council and/or the Climate Community & Biodiversity Alliance standards. In any case, neither of these programs issues any type of environmental credit.

1.12.5 Projects Rejected by Other GHG Programs

Not Applicable

1.13 Additional Information Relevant to the Project

Eligibility Criteria

The Project is not a grouped Project.

Leakage Management

The Leakage Management Plan and associated leakage and risk mitigation measures are set forth in the Leakage Assessment Report in ***Appendix 03***.

Commercially Sensitive Information

Some annexes contain commercially sensitive information. All necessary supporting information shall be provided to the validator but may not necessarily be distributed publicly.

Further Information

None

2 APPLICATION OF METHODOLOGY

2.1 Title and Reference of Methodology

Version 1.0 of VM0011 ***Methodology for Improved Forest Management – Logged to Protected Forest: Calculating GHG Benefits from Preventing Planned Degradation***13 by Carbon Planet Limited (referred to hereafter as VM0011).

2.2 Applicability of Methodology

Table 13 below presents the methodology applicability conditions and its corresponding justifications.

Table 13 - Applicability of the methodology

Criteria	Description of Applicability Condition	Justification of Applicability
Project Type	Improved Forest Management - Logged to Protected Forest; with no removals (e.g. harvesting, planned biomass burning) occurring in the Project Area upon implementation of the actual project	The Project is avoiding legally approved and planned selective harvesting of commercial tree species and, instead, as part of the Project Activity will not remove any timber from the Project Area but will conserve, protect and monitor the Project Area for the 30 year duration of the Project
Condition of the Forest	Intact forest or previously logged forest (also known as forest degraded due to logging) Land within the Project Area must have qualified as forest at least 10 years before the project start date	Forests in the Project Area are unlogged old-growth forest and has qualified as a forest for over 10 years: 1. North Pikounda UFE has been granted to CIB in 2002 (CAT) which prove that the area is legally defined as forest in RoC. No previous administrative or logging title has been granted for this area in the past; 2. Remote sensing data (Spot 4-5 images) dating from 2010 shows no sign of past or current human activities (legal or illegal logging, slash and burn agriculture, commercial agriculture) or natural disturbances that could have changed the land status from forest to non-forested land (See Spot images provided in

[13] http://www.v-c-s.org/sites/v-c-s.org/files/VM0011%20IFM-LtpF%20Carbon%20Planet%20FINAL%2021%20MAR%202011.pdf

		Appendix 04); 3. Socio-economical studies undertaken in 2010 and further meetings with Molenda community show that the actual community territory doesn't overlap with the UFE and that this situation has been the same for the past decades (J-M Pierre, 2010; see Figure 7 p.**Error! Bookmark not defined.**); 4. 2003 forest resources inventory and 2012 carbon stock inventory has shown no evidence of human presence or of areas that would not qualify as "Forest" (except for river areas where some limited fishing and collection of non-timber products can occur).
Type of Forest	Tropical forests including evergreen tropical rainforests, moist deciduous forests, tropical dry forests and tropical upland forests, except peat swamp forests.	The Project Area is comprised entirely of tropical semi-evergreen forests and none of the area is comprised of peat swamp forests (Lembe, 2012).
Forest Product Type	Harvested wood products i.e., sawn log, pulplog and commercially harvested fuelwood (See Appendices A and B.9).	The license for North Pikounda UFE held by CIB is for the harvesting of commercial wood products, specifically round logs to be converted to sawn timber.
Drivers of Degradation	Legally sanctioned logging (timber and commercially harvested fuelwood) undertaken in accordance with the relevant laws, regulations and codes of practice of the country in which the Methodology is being applied.	Legally sanctioned commercial selective timber extraction conducted according to an approved forest management plan is the only driver of deforestation and degradation in the Project area; there are no nearby human activities that cause deforestation or degradation.
Baseline Activities to be Displaced	Legally sanctioned selective logging for specific forest product types presented above	The without project or business as usual (BAU) scenario is legal commercial selective timber extraction conducted according to the Forest Management Plan approved by MEFDD
Project Area	Must be designated, sanctioned or approved by the relevant authority in	Pursuant to the 13th November 2002, CIB was issued a "*Convention*

	the host country for the selective logging	*d'Aménagement et de Transformation, pour la mise en valeur des Unites Forestiere d'Amenagement Pokola et de l'Unite Forestiere d'Exploitation Pikounda Nord situées dans la région de la Sangha*" (CAT) for Pokola UFA and North Pikounda UFE by the MEFDD, as the CAT was signed on behalf of the RoC by Minister Henri Djombo and by Director General Jean Marie Mevelec for CIB. The CAT license granted CIB the legal right to conduct selective logging following an approved Forest Management Plan.
Carbon Pools	Carbon Pools considered: • Aboveground biomass (AGB) of all trees as defined by the relevant authority in the host country; • Harvested wood products (HWPs) based on domestic production not domestic consumption; • Deadwood (DW). Carbon Pools not considered: • Aboveground biomass (non-trees); • Belowground biomass; • Soil; • Litter.	The Project will only consider the following Carbon Pools: • **Aboveground Biomass (AGB)** of all trees as defined by the relevant authority in the host country; • **Harvested Wood Products (HWPs)** based on domestic production and on volumes granted and estimated in the approved Management Plan; • **Deadwood (DW)** as defined in the methodology, that is: 1. Carbon from residual stand damage; and 2. Carbon in branches and trimming left after harvesting of the merchantable logs. The following Carbon Pools as set forth in VM0011 are not considered: • Aboveground biomass (non-trees); • Belowground biomass; • Soil; and • Litter.

2.3 Project Boundary

2.3.1 Physical Project Boundaries

Please refer to paragraph 1.9.1 for a description of the North Pikounda UFE Project Area.

The total area for the Project Area given by GIS data is 92,530 ha. Of this, 55,950 ha are considered production area and will constitute the project crediting area. The remaining 36,580 ha are wetlands that would have seen no disturbances under the baseline scenario.

2.3.2 Stratification of the Project Area

An initial stratification of the project area has been proposed in the Management Plan. As seen in previous chapters, and in particular in paragraph 1.10.3 A/ Flora, the project area was stratified into two stratum consisting of dry land mixed forests dedicated for harvesting and wetlands designated for conservation.

For the purpose of the present project, a new stratification study was undertaken to try to indicate with greater precision the sub-stratum for the already identified main stratum (G. Lembe, 2012). Based on an analyse of 2010 SPOT4/5, 2009 LANDSAT 7 ETM+ and 2007 ASTER images, together with analyse of topographic maps, data of the forest resources inventory and other data, the report concluded that it was not possible to determine additional strata and confirmed that the strata already identified were the best to describe the state of the forests and the different forest cover types in North Pikounda UFE.

The stratification strategy and results are provided in ***Appendix 02***. Figure 8 p.24 present the general stratification of the North Pikounda UFE.

Error! Reference source not found. next page presents the two strata retained for the baseline scenario for North Pikounda UFA:

- In black, the wetlands covering 39,5% of the project area, that are excluded from the crediting area, as they would not have been impacted by harvesting under the baseline scenario;
- In gradation of green and orange, the dryland mixed forests, covering 60,5% of the project area, which constitute the crediting area. For this stratum, we have represented the variations of forest structure: Dense canopy forests in dark green, Light canopy forests in light green and Open canopy forests in orange.

2.3.3 Leakage area

Forest zones in the Congo are separated into two different entities: Northern forests and South Western forests. The concessions installed in the Northern forests are similar in regards to forest type and climatic region, size, and the concessions are all operating with a similar kind of management plan. The operations in the South-Western forests are local companies with smaller size concessions, and the forests have been harvested several times through history as they are coastal forests and have a close proximity to the Congo River for log transport. The Northern Forests are divided further into two departments or regional administrative structures, i.e. the Likouala and the Sangha. All concessions pertaining to these departments are included as part of the Market Leakage area for the IFM-LtPF Project. All of CIB concessions are included in this area.

2.3.4 Temporal Boundaries

The Project Area has been a forest for more then ten (10) years prior to the initiation of the Project.

The Project will have a thirty (30) year crediting period.

Verification and subsequent origination of VCUs will occur annually.

Re-assessment of the projects baseline will be done every 10 years from the Project Start Date.

The Project Baseline is a foreword looking baseline (i.e. no historical baseline needed) based on an RoC approved Forest Management Plan.

The Leakage Assessment assessed its baseline over a period of five (5) years.

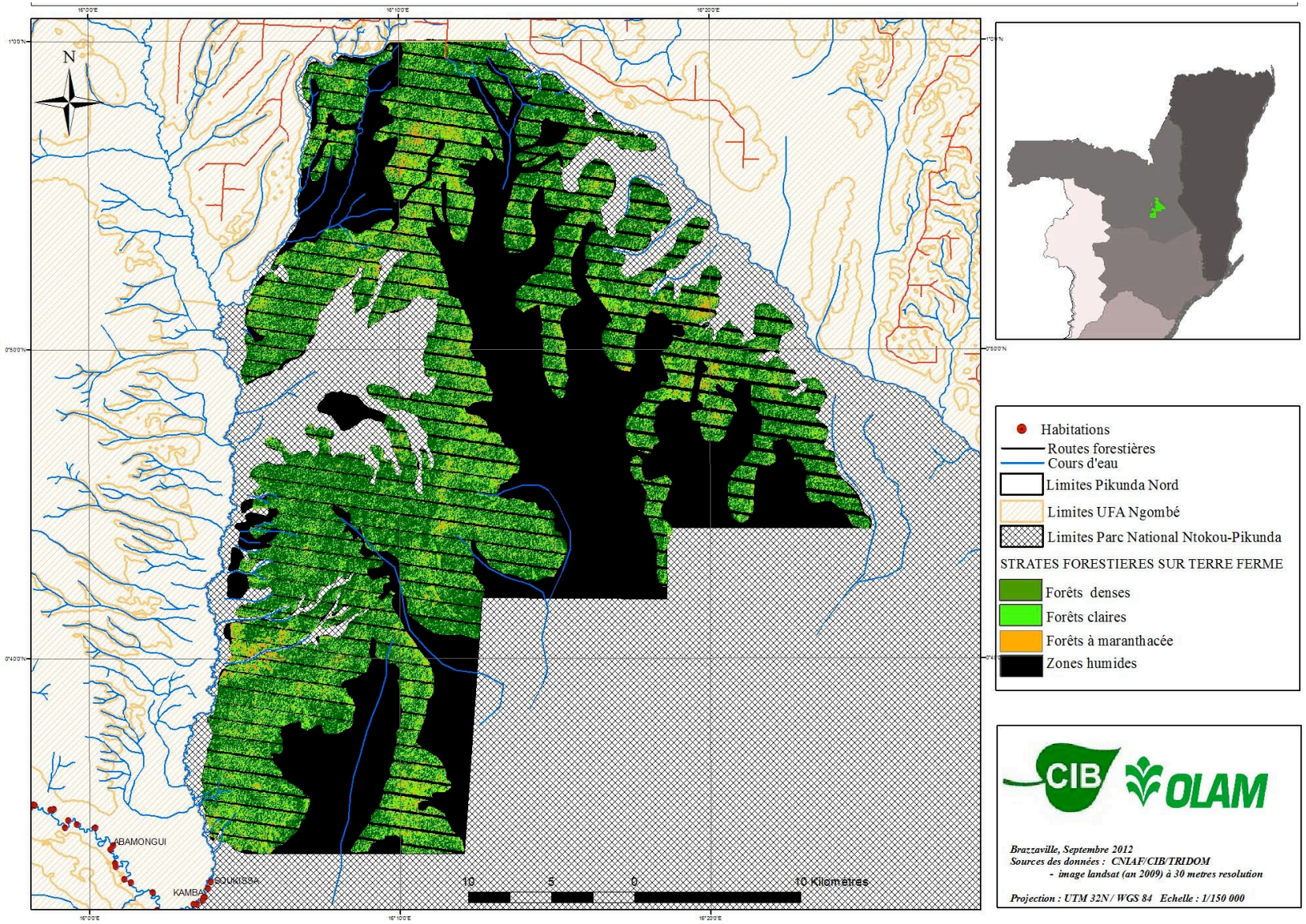

Figure 12 - Strata retained for the baseline scenario

2.3.5 Greenhouse Gas Boundaries – Baseline, Project and Leakage

The North Pikounda REDD+ Project has numerous GHG sources and sinks within the Project Area. They are set forth below in Table 14.

Table 14 - Greenhouse Gas boundaries

Source		Gas	Included?	Justification/Explanation
Baseline	**Forest Degradation**	CO_2	Yes	Since selective logging is the baseline activity. It will be determined through carbon stock assessment.
		CH_4	No	
		N_2O	No	
		Other	No	
	Fossil Fuel use in Machinery	CO_2	Yes	Since logging is the baseline activity it is included but it is subject to significance
		CH_4	Yes	
		N_2O	Yes	
		Other	No	
	Electricity Consumption	CO_2	Yes	Included while no sustainable source of electricity is installed (such as wood pellet generator)
		CH_4	Yes	
		N_2O	Yes	
		Other	No	
	Forest Fires	CO_2	No	Not included as it is not part of the methodology and forest fires do not occur in the baseline scenario as the landscape remains too moist and the vegetation is too undisturbed to support natural forest fires.
		CH_4	No	
		N_2O	No	
		Other	No	
	Commercially harvested fuelwood	CO_2	No	Not included as no local community has its territory within the project area boundaries and CIB is not harvesting timber for the purpose of producing fuelwood
		CH_4	No	
		N_2O	No	
		Other	No	
	Harvested Wood Product	CO_2	Yes	Included, as HWP are part of the normal baseline scenario that is the processing of the round logs into sawn timber that will have a significant life span.
		CH_4	No	
		N_2O	No	
		Other	No	
	Deadwood	CO_2	Yes	Included, Deadwood is part of the baseline scenario and is a normal result of harvesting activity (branches and trimmings, residual stand damage)
		CH_4	No	
		N_2O	No	
		Other	No	
	Biomass burning in the course of land use conversion	CO_2	No	Not included, as it is an unlikely scenario. No local community has its territory within the project area boundaries and the only settlements are 20 km far from the project area with no access roads
		CH_4	No	
		N_2O	No	
		Other	No	

Project Activity	**Travel (flights, ground travel)**	CO_2	No	Not significant and therefor not monitored (see paragraph 3.2)
		CH_4	No	
		N_2O	No	
		Other	No	
	Natural disturbances	CO_2	Yes	Included but subject to significance as violent flood, natural fires and hurricanes are not occurring in this area
		CH_4	No	
		N_2O	No	
		Other	No	
	Illegal logging/agriculture	CO_2	Yes	Included but subject to significance as no local community has its territory within the project area boundaries and the only settlements are 20 km far from the project area with no access roads
		CH_4	No	
		N_2O	No	
		Other	No	

2.3.6 Carbon Pools

Table 15 presents the justification for inclusion or exclusion of carbon pools in the Project, based on the VM0011 Methodology.

Table 15 - Carbon pools considered

Carbon Pool	Status for IFM-LtPF Methodology	Justification
Aboveground Biomass (tree)	Included	Anticipated to significantly increase under the project activities, or decrease due to the baseline
Aboveground Biomass (non-tree)	Not included	Unlikely to decrease as a result of the project activities, or increase due to the baseline
Belowground Biomass	Not included	Unlikely to decrease as a result of the project activities, or increase due to the baseline
Deadwood	Included	Anticipated to significantly decrease under IFM-LtPF
Litter	Not included	Unlikely to decrease as a result of the project activities, or increase due to the baseline
Soil	Not included	Unlikely to decrease as a result of the project activities, or increase due to the baseline
Harvested Wood Products (HWP)	Included	Anticipated to significantly decrease under the project activities

2.4 Baseline Scenario

The Project is required to Identify and justify the baseline scenario. This has been conducted according the VM0011 Methodology ”Project Baseline Justification” requirements as set forth in Section 2.1.1 – "Selection of Baseline Amongst Alternative Scenarios.”

The procedure in VM0011 has been adapted from Steps 1 and 2 of the *Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities* (CDM-EB 2007b, pp. 2-7)[14].

Selection of Baseline Amongst Alternative Scenarios per VM0011 Requirements

Step 1: Identify credible alternative baseline scenarios to the proposed VCS IFM-LtPF project activity.

Step 1a: Identify all realistic and credible alternative baseline scenarios to the proposed VCS IFM-LtPF project activity.

Alternative 1. Continuation of the Pre Project Land Use - FSC RIL Selective Harvesting: The North Pikounda Concession is logged according to the requirements of Congolese forestry regulations and also according to FSC certification standards as practiced by CIB.

The proposed scenario of selective harvesting with the application of the FSC Forest Stewardship standard for the Congo Basin Region[15] (in North Pikounda UFE). This is the same method and standard, currently existing in all of the other CIB concessions in the Republic of Congo, as well as one other concession bordering and mostly surrounding North Pikounda UFE.

The credibility of the proposition that selective harvesting would take place under the FSC standard is supported by the following six (a-f) points:

Table 16 – Alternative 1 credibility

No.	Source of Credibility	Explanation
a.	National Forestry Policy	The Republic of Congo has had as a matter of national forestry policy a written Forestry Code in place since the turn of the century, including the Law N° 16-2000 of 20 November 2000. Further, the Forestry Code, Decree N°. 2002- 437 of 31 December 2002, which establishes conditions pertaining to the management and use of the forest including conventional selective harvesting.
b.	Economic Trends	Forestry as a sector is the second largest commercial sector in the RoC after oil, and in 2010, the ITTO estimated that the export value of Industrial Roundwood was valued at USD $85,919,500 resulted and sawnwood was valued at USD $50,786,380. The World Bank indicates that timber exports to China are increasing and that the Congo Basin now has surpassed demand from Italy, France and Spain.[16]

[14] Approved VCS Methodology VM0011, Version 1, Carbon Planet 2011
[15] FSC Forest Stewardship Standard for the Congo Basin, FSC-STD-CB-01-2012-EN Congo Basin Regional Standard EN, approved April 2012
[16] Blaser, J. A. Sarre, D. Poore, and S. Johnson. 2011 Status of Tropical Forest Management 2011. Technical Series 38. Yokohama, Japan: ITTO.

c.	Land Use Records	The North Pikounda UFE is a recognised forest concession in the RoC.
d.	Current Land Use Activity	Currently, the North Pikounda UFE has been approved for selective harvesting and the CIB concession has owned the licence since 2002 and has had the legal ability to begin harvesting in February 2012. Further, all of CIB's other concessions are FSC certified, and in order to maintain those certifications, North Pikounda would need to be certified if it was to be harvested as well.
e.	Past Land Use Activity	The North Pikounda UFE has never been logged and is primary undisturbed forestland.
f.	Enforced Mandatory Regulations	The government of the Republic of Congo has in place the above mentioned forestry laws and regulations and all of the RoC forestry laws and regulations would be adhered to in order to maintain FSC certification.

Conclusion:

Selective harvesting, conducted according to the national Congolese standards that are currently in effect, and then further supplemented by application of the FSC standard for the Congo Basin Region, is a credible and realistic scenario and should be considered as a plausible alternative scenario to the North Pikounda REDD+ project.

Alternative 2. Conventional Selective Harvesting: The North Pikounda UFE would be logged according to Congolese forestry regulations by CIB (or any other concession holder) up to the maximum legal limit as set forth by Republic of Congo forestry law and regulations. The selective logging would be conducted without using FSC or other third party verified sustainability standards. Carbon emissions from harvesting rates, deforestation and degradation would be higher in this alternative then under FSC guidelines.

The proposed baseline of Conventional Selective Harvesting is credible as it can be shown to currently exit in the country. Much of the Northern Republic of Congo has been allocated to forestry concessions and the domination of the forestry concession industry is demonstrated by the large number of allocated forestry concessions. See ***Appendix 05*** – Status of Forest Concessions in the Republic of Congo (WRI - June 2006).

Table 17 - Alternative 2 credibility

No.	Source of Credibility	Explanation
a.	National Forestry Policy	The Republic of Congo has had as a matter of national forestry policy a written Forestry Code in place since the turn of the century, including the Law N° 16-2000 of 20 November 2000, The Forestry Code, Decree N°. 2002- 437 of 31 December 2002, which establishes conditions pertaining to the management and use of the forest, including conventional selective harvesting.
b.	Economic Trends	Forestry as a sector is the second largest commercial sector in the RoC after oil, and in 2010, the ITTO estimated that the export value of Industrial roundwood was valued at USD

		$85,919,500 resulted and sawnwood was valued at USD $50,786,380[17]. The World Bank indicates that timber exports to China are increasing and that the Congo Basin now has surpassed demand from Italy, France and Spain.[18]
c.	Land Use Records	The North Pikounda UFE is a recognised forest concession in the RoC
d.	Current Land Use Activity	Currently, the North Pikounda UFE has been approved for selective harvesting and the CIB concession has owned the licence since 2000 and has had the legal ability to begin harvesting in 2012.
e.	Past Land Use Activity	The North Pikounda UFE has never been logged.
f.	Enforced Mandatory Regulations	The government of the Republic of Congo has in place the above mentioned forestry laws and regulations. It is unclear how the forestry laws and regulations would be enforced (that is to what degree of enforcement) if the harvesting was not conducted against a third party verified standard.

Conclusion:

Conventional selective harvesting, conducted according to the national Congolese standards that are currently in effect, is a credible and realistic scenario and should be considered as a plausible alternative scenario for the North Pikounda UFE.

Alternative 3. No Harvesting and/or Protection but without being registered under the VCS as an IFM-LtPF project: The North Pikounda UFE concession is retained by CIB, no harvesting activity would take place and CIB would maintain the protection of the concession.

This proposed alternative would see CIB maintain the current forest area of North Pikounda UFE but without any economic gain, while at the same time being required to "maintain & protect" the entire 93,500 ha.

If the project were able to register under an alternative carbon crediting mechanism, it might be able to create enough revenue to pay for protection. However, at the time of this writing, there is no other widely recognised standard that would support an IFM project such as this, let alone a methodology that would further support the activity if it is not registered under the VCS.

Table 18 - Alternative 3 credibility

No.	Source of Credibility	Explanation
	Economic Trends	Forestry as a sector is one of the largest commercial sector in the RoC after oil, and in 2010, the ITTO estimated that the export value of Industrial Roundwood was valued at USD $85,919,500 resulted and sawnwood was valued at USD $50,786,380.

[17] Sourced in May 2013 from the itto.int and its website **http://www.itto.int/annual_review_output/annual**

[18] Blaser, J. A. Sarre, D. Poore, and S. Johnson. 2011 Status of Tropical Forest Management 2011. Technical Series 38. Yokohama, Japan: ITTO.

		The World Bank indicates that timber exports to China are increasing and that the Congo Basin now has surpassed demand from Italy, France and Spain.[19] CIB is required to pay a Surface tax for every hectare regardless if it harvests or not. Without either carbon finance or harvesting, there would be no funding for paying the Surface Tax nor any other protection activity.
	Land Use Records	Currently, the North Pikounda UFE has been approved for selective harvesting and the CIB concession has owned the licence since 2002 and has had the legal ability to begin harvesting in 2012 as per the forest management plan approved by the Ministry of Foresty[20]. The North Pikounda UFE is a recognised forest concession in the RoC.
	Current Land Use Activity	Currently, the North Pikounda UFE has been approved for selective harvesting and the CIB concession has owned the licence since 2002 and has had the legal ability to begin harvesting in 2012 as per the forest management plan approved by the Ministry of Foresty[21]. If no harvesting commences on the UFE, and absent any other agreement to the contrary, the RoC by law can rescind the concessional rights that exist within the North Pikounda UFE.
	Past Land Use Activity	The North Pikounda UFE has never been logged and is primary undisturbed forest land
	Enforced Mandatory Regulations	The Republic of Congo forestry law requires that a concessionaire conduct the logging activity that is set forth in its license agreements. If the concession does not perform to the conditions of the license, the concession could be withdrawn. The RoC and CIB have an Agreement for CIB to develop a VCS REDD+ project in North Pikounda UFE There are no past examples of the government of RoC in allowing a concession to be retained by the concessionaire with no intention to harvest or otherwise create revenue.

[19] Blaser, J. A. Sarre, D. Poore, and S. Johnson. 2011 Status of Tropical Forest Management 2011. Technical Series 38. Yokohama, Japan: ITTO.
[20] North Pikounda Forest Management Plan
[21] North Pikounda Forest Management Plan

Conclusion:

The alternative scenario of "No Harvesting/Protection but without being registered under the VCS as an IFM-LtPF project" is not the most credible scenario as it would:

1. Not provide a financial incentive for CIB to maintain the area while still costing the concessionaire substantial resources
2. Violate the Agreement between CIB and RoC that requires the REDD+ project to be undertaken.
3. Violate the licence agreement and forest management plan and provide an opportunity for the RoC to withdraw the concession license

N.B. However, if an alternative carbon standard could be used, that had a methodology to create a stop-logging project such as under the VCS IFM-LtPF model, and the RoC could be convinced, the alternative might be credible.

Alternative 4. Oil Palm Plantation: Engage in clear-cut harvesting and land-use change in order to plant fast growing oil palm species for production or high quality oil palm for international or domestic use.

The Palm Oil Sector is growing again in the Republic of Congo and there are areas within the Sangha Department that are currently being intensely clear felled and planted with Oil Palm by Malaysian owned entities for domestic use or for International export[22].

Table 19 - Alternative 4 credibility

No.	Source of Credibility	Explanation
	National Forest Policy	The Republic of Congo has a National Forestry policy approach that includes partial development of the nation through the growth of agro-forestry industries, including Oil Palm
	Economic Trends	Oil palm is an industry that is seeing renewed growth in the RoC, and despite oil palm being widely used by indigenous peoples, as a modern industry it is in its small, but set for rapid growth as the world trend for consumption of oil palm increases. The new National Highway from Brazzaville to Ouesso now could assist with the more rapid transportation of oil palm to costal ports. Processing equipment would need to be installed close to the plantation site and passable road would have to be installed to connect to Ouesso.
	Current Land Use Activity	Currently, the North Pikounda UFE has been approved for selective harvesting and the CIB concession has owned the licence since 2000 and has had the legal ability to begin harvesting in 2012 as per the forest management plan approved by the Ministry of Forestry[23].

[22] Etude du Secteur Agricole – Ré[ublique du Congo (2012), CERAPE/SOFRECO
[23] North Pikounda Forest Management Plan

		It is feasible that if a Forest Management Plan for oil palm was submitted to the MEFDD and other legal requirements were adhered, that a concessionaire might be able to use the North Pikounda UFE as an oil palm plantation.

Conclusion:

The alternative scenario of "Oil Palm Plantation" is a feasible and credible scenario, however, it would require the alteration and subsequent approval of a forestry management plan, and it would require the building of substantial infrastructure. As there is nearby precedence of such activity, it is a feasible, although not perhaps the most likely scenario.

The following Alternative Scenarios are deemed to be the most credible and feasible:

Table 20 - Summary of credible potential alternatives to IFM-LtPF project

Alt. No.:	Alternative Scenario:	Description:
Alternative 1.	Continuation of the Pre Project Land Use: FSC Certified Selective Harvesting	The North Pikounda Concession is logged according to the requirements of Congolese forestry regulations and also according to FSC RIL practices by CIB
Alternative 2.	Conventional Selective Harvesting	The North Pikounda UFE is logged according to Congolese forestry regulations by CIB (or others) up to the maximum legal limit and without using FSC standards
Alternative 3	No Harvesting and/or Protection but without being registered under the VCS as an IFM-LtPF project	The concession is retained by CIB or another Concessionaire and becomes an area that is not logged and the protection from deforestation and degradation is not paid for by VCS carbon credits.
Alternative 4.	Eucalyptus or Oil Palm Plantation	Engage in clear-cut harvesting and land-use change in order to plant fast growing oil palm for subsequent palm oil production.

The above Alternative Scenarios are deemed to be the most credible and feasible after conducting the analysis required by Step 1, Sub-step 1a.

Sub-step 1b: Identify realistic and credible alternative baseline scenarios with "enforced mandatory legislation and regulations.

Alternative 1. FSC RIL Selective Harvesting: The North Pikounda Concession is logged according to the requirements of Congolese forestry regulations and also according to FSC RIL practices by CIB.

Alternative 2. Conventional Selective Harvesting: The North Pikounda UFE is logged according to Congolese forestry regulations by CIB (or others) up to the maximum legal limit and without using FSC standards

Alternative 3 No Harvesting and/or Protection but without being registered under the VCS as an IFM-LtPF project: The concession is retained by CIB or another Concessionaire and becomes an area that is not logged and the protection from deforestation and degradation is not paid for by VCS carbon credits.

Alternative 4. Oil Palm Plantation: Engage in clear-cut harvesting and land-use change in order to plant fast growing species oil palm production

Table 21 - Enforced regulations for each alternative retained

Alternative	Scenario	Enforced Regulations
Alternative 1.	FSC RIL Selective Harvesting	The North Pikounda UFE is part of the private domain of the state which has been established and having as its main purpose the undertaking of forestry production activities by regulations (Articles 10 and 65 of Act 16-2000) and subsequent Forest Management legislation, The Forest Management Plan (2012) approved by the government of RoC, which legally sanction selective harvesting, is able to be implemented. FSC harvesting is not a legal requirement, but CIB is required to use FSC certification in all of its harvesting activities.
Alternative 2.	Conventional Selective Harvesting	The North Pikounda UFE is part of the private domain of the state which has been established and having as its main purpose the undertaking of forestry production activities by regulations (Articles 10 and 65 of Act 16-2000) and subsequent Forest Management legislation The Forest Management Plan (2012) approved by the government of RoC, which legally sanction selective harvesting, is able to be implemented.
Alternative 3	No Harvesting and/or Protection but without being registered under the VCS as an IFM-LtPF project	The North Pikounda UFE is part of the private domain of the state which has been established and having as its main purpose the undertaking of forestry production activities by regulations (Articles 10 and 65 of Act 16-2000) and subsequent Forest Management legislation

		There is no example of a concessionaire maintain a harvesting licence and providing protection for an area otherwise subject to selective harvesting.
Alternative 4.	Oil Palm Plantation	The North Pikounda UFE is part of the private domain of the state which has been established and having as its main purpose the undertaking of forestry production activities by regulations (Articles 10 and 65 of Act 16-2000) and subsequent Forest Management legislation

Conclusion:

Alternatives one, two and four all have applicable enforced mandatory legislation and regulation. Alternative three would violate applicable enforced mandatory legislation and regulation as the alternative violates a current law that requires the North Pikounda UFE to be used for forest production activity. Furthermore, it is not possible to demonstrate that there is in the Roc a current practice of a concessionaire protecting the land without deriving any economic gain therefrom.

As the baseline Alternative three, **No Harvesting and/or Protection but without being registered under the VCS as an IFM-LtPF project,** does not comply with mandatory enforced legislation and no widespread non-compliance can be demonstrated it is removed from the list of realistic and credible baseline scenarios.

Table 22 below indicates the remaining realistic and credible baseline scenarios that have enforced mandatory regulations:

Table 22 - Remaining realistic and credible baseline scenarios

Alt. No	Remaining realistic and credible baseline scenarios
Alternative 1.	FSC RIL Selective Harvesting
Alternative 2.	Conventional Selective Harvesting
Alternative 4.	Oil Palm Plantation

STEP 2: Determine Alternative Baseline Scenarios

Sub-step 2a: Identify barriers that would prevent the implementation of at least one alternative baseline scenario.

Table 23 - Identified barriers for each alternative scenario

Alternative. No	Scenario	Identified Barriers
1.	**FSC RIL Selective Harvesting**: The North Pikounda Concession is logged according to the requirements of Congolese forestry regulations and	No barriers identified

	also according to FSC RIL practices by CIB	
2.	**Conventional Selective Harvesting**: The North Pikounda UFE is logged according to Congolese forestry regulations by CIB (or others) up to the maximum legal limit and without using FSC standards	No barriers identified
4.	**Oil Palm Plantation:** Engage in clear-cut harvesting and land-use change in order to plant fast growing eucalyptus species for pulp & paper production	- Because of the remoteness of the North Pikounda UFE, there may be a lack of access to necessary material & infrastructure for implementation. - Absence of nearby facilities to convert and add value to the Oil Palm fruit bunch.

Sub-step 2b: Eliminate baseline scenarios that are prevented by the identified barriers

Alternative 4 – Oil Palm Plantation is eliminated as an alternative baseline scenario as there are barriers to access the necessary material & infrastructure for implementation as well as an Absence of nearby facilities to convert and add value to the Oil Palm.

Sub-step 2c: Determine the baseline scenario

Refined List of Alternative Scenarios	
Alternative 1.	**FSC RIL Selective Harvesting**: The North Pikounda Concession is logged according to the requirements of Congolese forestry regulations and also according to FSC RIL practices by CIB
Alternative 2.	**Conventional Selective Harvesting**: The North Pikounda UFE is logged according to Congolese forestry regulations by CIB (or others) up to the maximum legal limit and without using FSC standards

Although two alternative scenarios remain, which includes FSC RIL Selective Harvesting and Conventional selective harvesting, they are the same baseline except in the amount of deforestation and degradation they would cause. The FSC selective harvesting as practiced by CIB is less emission intensive then non certified conventional selective logging in the RoC. As there is actually only one alternative scenarios, that of Selective Harvesting, VM0011 does not requires that an "investment analysis" be conducted as per Step 3. of the *Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities.*

Establishment of the Baseline Scenario: Selective Logging

The most conservative baseline scenario for the North Pikounda REDD+ is FSC RIL Selective Harvesting.

This is supported by:

(i) Documented history (well beyond 10 years) of the selective logging practices of CIB
(ii) The legal requirement of forest management and land use in the area are met;
(iii) Proof that the FSC Forest Stewardship standard for the Congo Basin Region surpasses the legal requirements of the Republic of Congo.

The Baseline Scenario of Selective Logging represents what would have most likely occurred in the absence of the IFM-LtPF North Pikounda REDD+ Project.

2.4.1 Description of the Baseline Scenario

Species and volumes harvested

The Project's baseline scenario is mechanised commercial selective logging under Forest Stewardship Council (FSC) Guidelines and supported by a Forest Management Plan that has been approved by the MEFDD. This is the harvesting method that is employed in all of CIB's concessions in the RoC, which currently is about 1.4 million ha.

The North Pikounda UFE approved management plan will have a rotation length of 30 years, but with a harvesting period of twenty (20) years only. The final ten (10) years will allow the forest to regenerate itself after harvesting operations.

Table 24 below presents the species from the Management Plan retained for the baseline scenario, together with their respective DMA (*Diamètre Minimum d'Aménagement* – Minimum Diameter of harvesting). It is important to note that the DMA is superior or equal to the legal diameter for harvesting as defined by Congolese legislation. Those species have been selected based on the results of the Management Forest resources Inventory".

Table 24 - List of species retained for harvesting in the Management Plan (2012)

Common name	Scientific name	Botanical family	DMA
Principal species (*Essences objectifs*)			
Azobé	*Lophira alata*	*Ochnaceae*	80
Bilinga	*Nauclea diderrichii*	*Rubiaceae*	70
Bosse clair	*Guarea cedrata*	*Meliaceae*	70
Iroko	*Milicia excelsa*	*Moraceae*	80
Padouk	*Pterocarpus soyauxii*	*Papilionaceae*	80
Sapelli	*Entandrophragma cylindricum*	*Meliaceae*	90
Sipo	*Entandrophragma utile*	*Meliaceae*	90
Tali	*Erythrophleum ivorense, E. suaveolens*	*Caesalpiniaceae*	70
Wengué	*Millettia laurentii*	*Papilionaceae*	60
Promotion species (Essences promotion)			
Acajou	*Khaya anthotheca*	*Meliceae*	110
Dabéma	*Piptadeniastrum africanum*	*Mimosaceae*	90
Dibétou	*Lovoa trichilioides*	*Meliaceae*	80
Doussié	*Afzelia bipindensis*	*Caesalpiniaceae*	60
Ebène noir	*Diospyros crassiflora*	*Ebenaceae*	90
Essessang	*Ricinodendron heudelotii*	*Euphorbiaceae*	80
Etimoé	*Copaifera mildbraedii*	*Caesalpiniaceae*	80
Fraké	*Terminalia superba*	*Combretaceae*	70
Iatandza	*Albizia ferruginea*	*Mimosaceae*	80
Kossipo	*Entandrophragma candollei*	*Meliaceae*	80
Kotibé	*Nesogordonia papaverifera*	*Sterculiaceae*	60
Koto	*Pterygota spp.*	*Sterculiaceae*	80
Lati	*Amphimas ferrugineus, A. pterocarpoides*	*Caesalpiniaceae*	90
Longhi abam	*Gambeya lacourtiana*	*Sapotaceae*	70
Niové	*Staudtia stipitata*	*Myristicaceae*	60
Tiama	*Entandrophragma angolense*	*Meliaceae*	90

The harvestable volumes for the commercial species have been estimated using one entry allometric equations called “Tarifs de Cubage” in French. Those allometric equations estimate the volume of harvested log (merchantable volume) based on the measured diameter at breast height (1.30 m). The study allowing designing those equations is presented in ***Appendix 06*** (MEFDD-CIB, 2010).

Table 25 - Allometric equations retained for merchantable volumes estimation (MEDDFE-CIB, 2010)

Tree species	Allometric equation (*Tarif de Cubage*)	Source
Acajou	$V = -0{,}95804511 + 11{,}6256093 \times D^2$	CIB/CNIAF
Azobé	$V = 11{,}174 \times D^{2{,}2625}$	IFO
Bilinga	$V = 11{,}247 \times D^{2{,}1283}$	IFO
Bossé clair	$V = 10{,}563 \times D^{2{,}0707}$	IFO
Dibétou	$V = 11{,}656 \times D^{2{,}1796}$	IFO
Doussié	$V = 0{,}62680394 + 10{,}0879376 \times D^2$	CIB/CNIAF
Etimoé	$V = 12{,}496 \times D^{2{,}2661}$	IFO
Iroko	$V = -1{,}02219564 + 13{,}1167837 \times D^2$	CIB/CNIAF
Kossipo	$V = 10{,}305 \times D^{2{,}1682}$	IFO
Kotibé	$V = 10{,}753 \times D^{2{,}3638}$	IFO
Koto	$V = 9{,}9749 \times D^{2{,}0446}$	IFO
Fraké	$V = 11{,}338 \times D1^{{,}7845}$	IFO
Longhi	$V = 10{,}158 \times D^{2{,}2886}$	IFO
Niové	$V = 12{,}23 \times D^{2{,}6276}$	IFO
Padouk	$V = 10{,}904 \times D^{1{,}9581}$	IFO
Sapelli	$V = 11{,}361 \times D^{2{,}13}$	IFO
Sipo	$V = 11{,}475 \times D^{1{,}9041}$	IFO
Tali	$V = 8{,}7849 \times D^{1{,}914}$	IFO
Tiama	$V = 9{,}8198 \times D^{2{,}0349}$	IFO
Wengué	$V = 6{,}6039 \times D^{1{,}4859}$	IFO
Others	$V = -1{,}3180336 + 14{,}1061804 \times D^2$	CIB/CNIAF

Based on the Management inventory results (botanical species and diameter) and on the above allometric equations, “Potential Volume” per species are calculated. Those volumes represent the raw standing volumes per species. Then a combination of two coefficients is applied to these volumes to obtain the “Merchantable Volume” per species. Those coefficients are:

- “Coefficient d’exploitabilité” or Coefficient of potentiality of harvesting: represents the proportion of standing trees (of one specific species) that have the necessary quality for being exported/transformed;
- “Coefficient de commercialisation” or Coefficient of “merchantability”: allow estimating the merchantable volumes for one species from the “harvestable” volumes. This coefficient measures the timber losses between the felling of the tree and the export/transformation. In particular, it accounts for:
    - logs or part of logs damaged during felling: wrenching, smashing, etc;
    - timber default: internal rot, bump, bad conformation;

- part of logs left over after on-site preparation (too short, segment of logs with default…).

The study defining those coefficients is the same than the one defining the "Tarifs de Cubage" (MEFDD-CIB, 2010) and is presented in ***Appendix 06***.

The Merchantable Volumes represent the final volumes that can be used by the company whether as round log for exportation or for being transformed at the sawmills.

Volumes retained for the baseline scenario are presented in ***Appendix 07***.

Harvesting and Industrial process

In the Management Plan, four UFP (*Unité Forestière de Production* – Forest Production Unit) are defined. Those UFPs are designed to be divided into 5 Annual Allowable Cut (representing 20 years of harvesting in total). The UFP map is presented in ***Appendix 08***. The area and the volumes harvested each year are considered to be 1/5th of the UFP area/volume under the baseline scenario.

The steps for harvesting, transforming and exporting the timber are presented in Figure 13, next page.

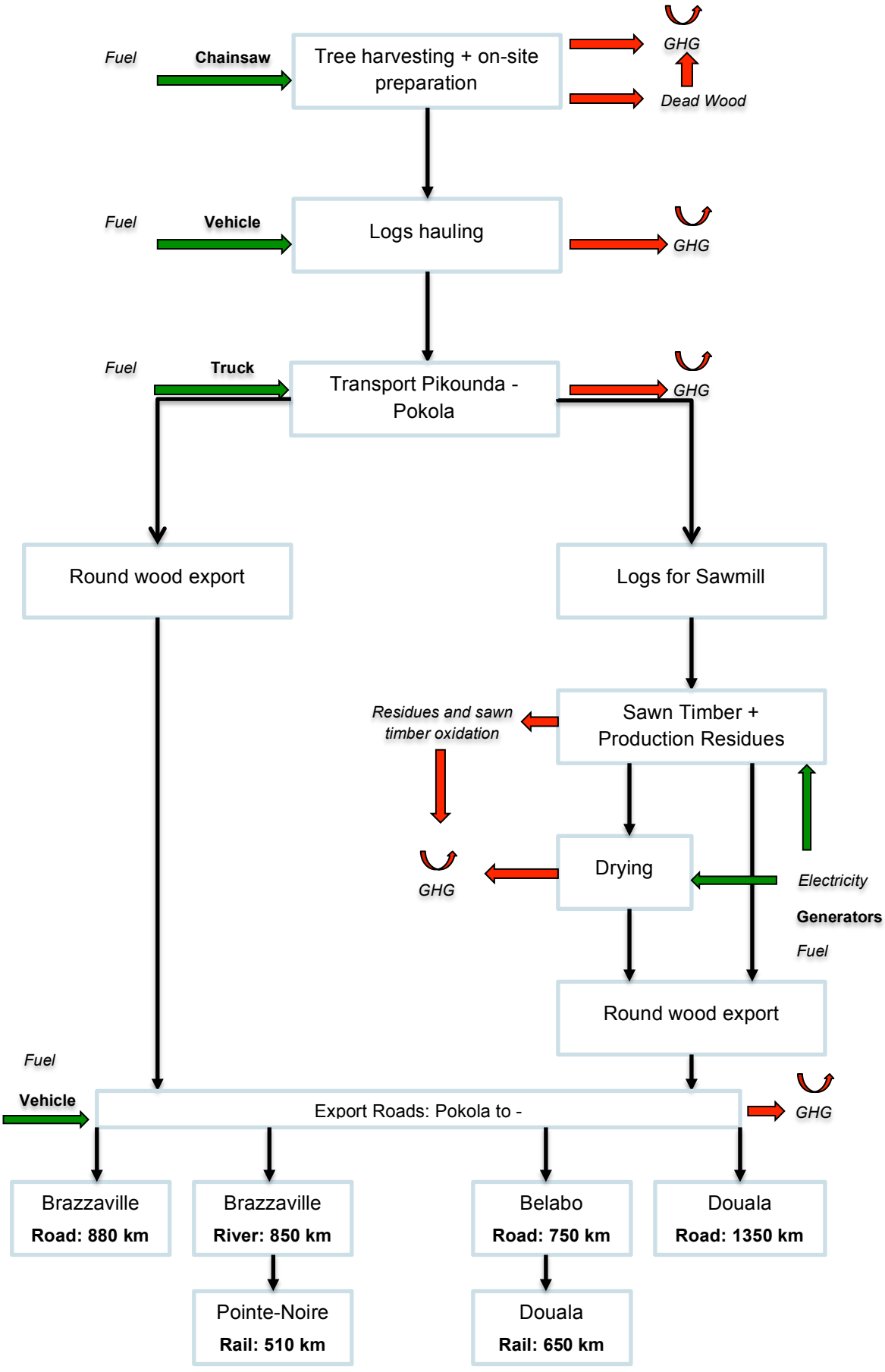

Figure 13 - Harvesting/Industrial process retained for the baseline scenario

2.5 Additionality

2.5.1 Scope and Applicability

Scope

The Project uses VT0001 *Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities* version 3.0 (1 February 2012) as per the instructions within the VM0011 Methodology to uses the latest version of said VCS Tool.

Applicability Conditions

The Tool (VT001) is applicable because:

a) The Project is proposing similar AFOLU baselines to the proposed project activity and the credible baselines do not lead to a violation of any applicable laws even if the law is not enforced; and
b) The Project has used the baseline methodology to provide for a stepwise approach in justifying the determination of the most plausible baseline scenario.

Overview of the Additionality Assessment

Figure 14 is the "VCS flowchart of the Tool for the Demonstration and Assessment of Additionality in VCS AFOLU Project Activities which indicates the various paths that the assessment can take."

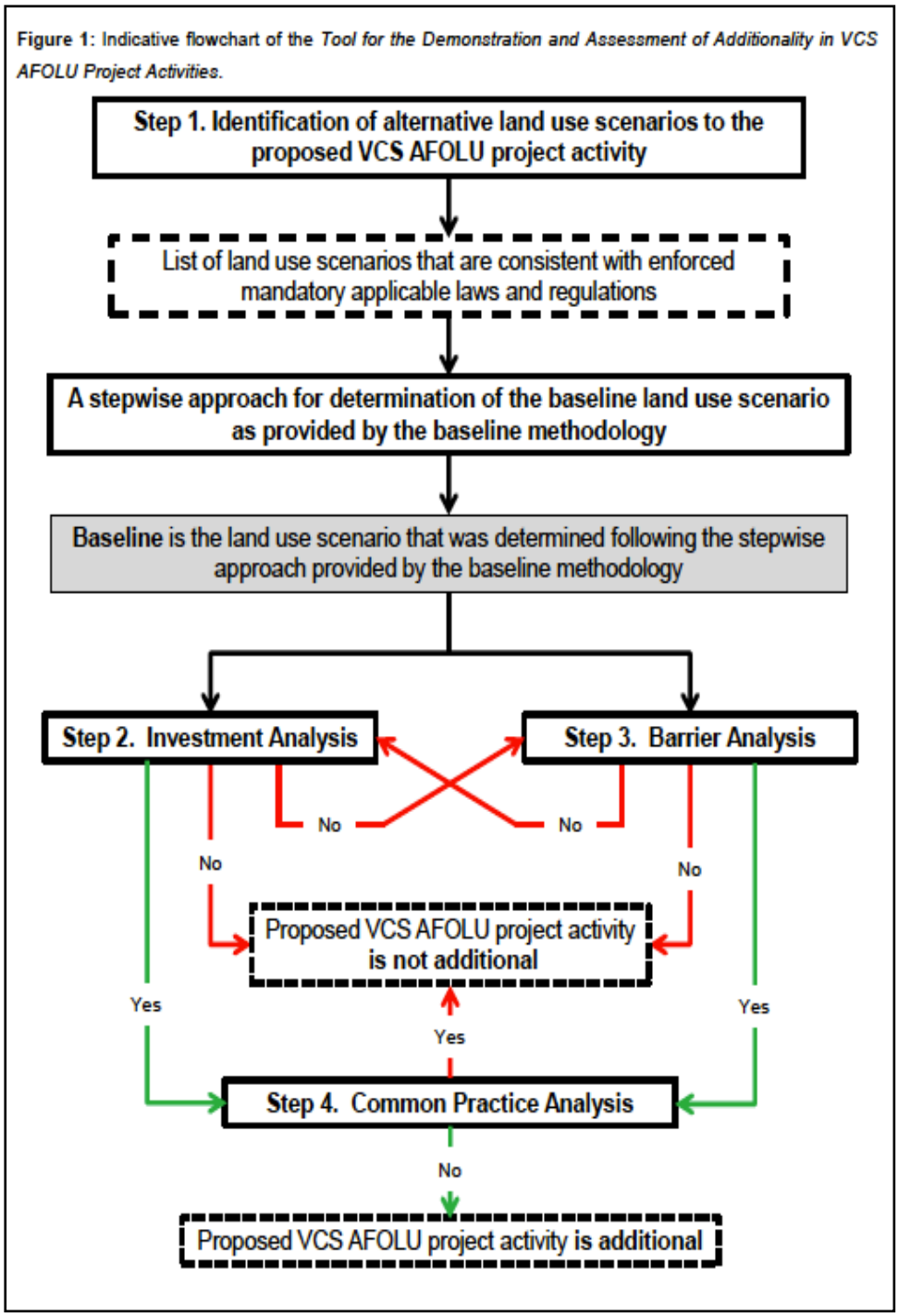

Figure 14 - Indicative flowchart of the additionality tool VT001

Figure 15 is the North Pikounda REDD+ Project flowchart of the Tool for the Demonstration and Assessment of Additionality in VCS AFOLU Project Activities indicating the assessment pathway the North Pikounda Project took.

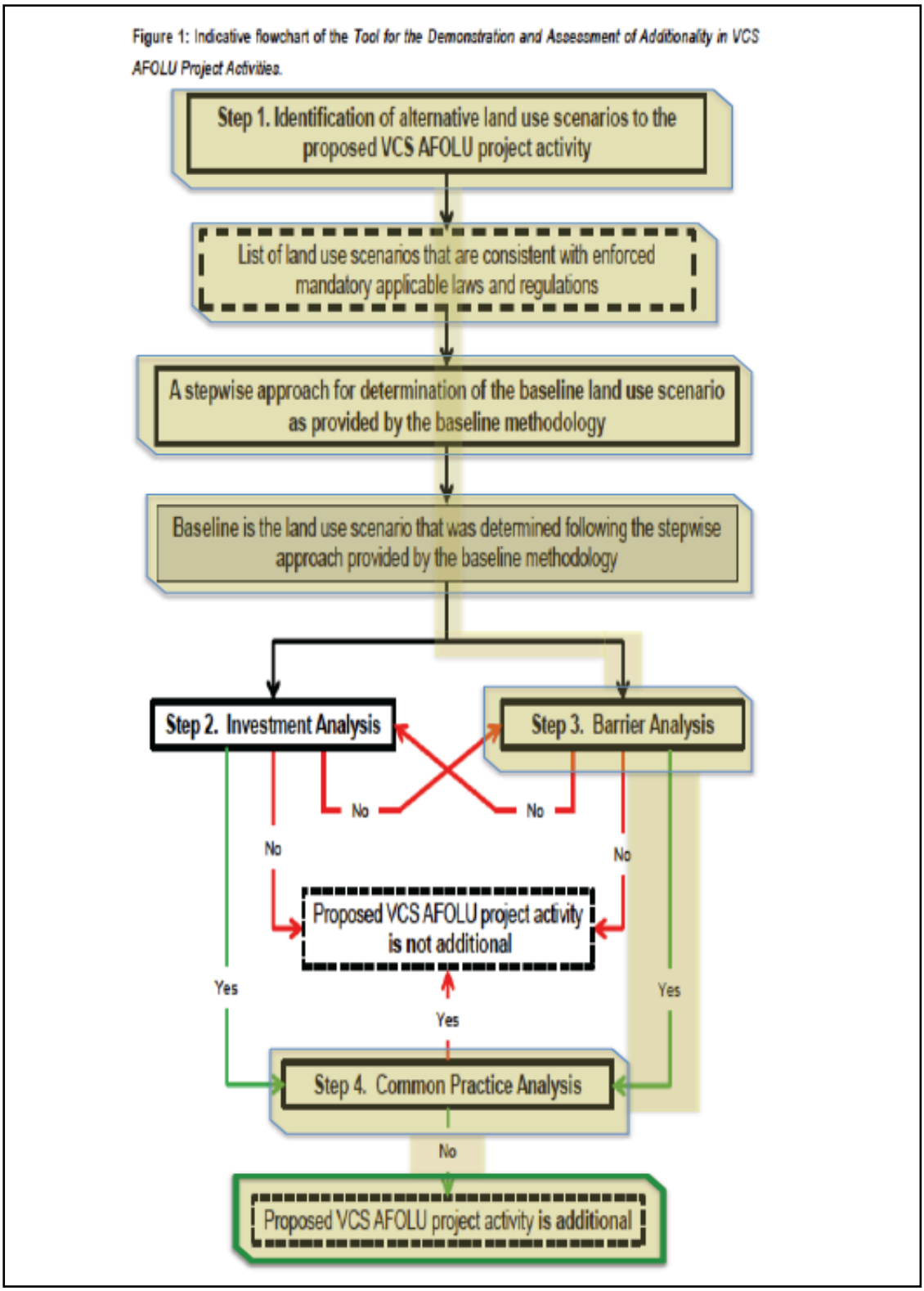

Figure 15 - Path of analysis chosen for the project

2.5.2 Procedure

STEP 1. Identification of alternative land use scenarios to the proposed VCS AFOLU project activity

Step 1a. Identify credible alternate land use scenarios to the proposed VCS AFOLU project activity

Alternative 1. Continuation of the Pre Project Land Use - FSC RIL Selective Harvesting: The North Pikounda Concession is logged according to the requirements of Congolese forestry regulations and also according to FSC certification standards as practiced by CIB.

The proposed scenario of selective harvesting with the application of the FSC Forest Stewardship standard for the Congo Basin Region[24] (in North Pikounda UFE). This is the same method and standard, currently existing in all of the other CIB concessions in the Republic of Congo, as well as one other concession bordering and mostly surrounding North Pikounda UFE.

The credibility of the proposition that selective harvesting under the FSC standard is a supported by the following six (a-f) points:

Table 26 – Additionality alternative 1

No.	Source of Credibility	Explanation
a.	National Forestry Policy	The Republic of Congo has had as a matter of national forestry policy a written Forestry Code in place since the turn of the century, including the Law N° 16-2000 of 20 November 2000. Further, the Forestry Code, Decree N°. 2002- 437 of 31 December 2002, which establishes conditions pertaining to the management and use of the forest, including conventional selective harvesting.
b.	Economic Trends	Forestry as a sector is the second largest commercial sector in the RoC after oil, and in 2010, the ITTO estimated that the export value of Industrial Roundwood was valued at USD $85,919,500 resulted and sawnwood was valued at USD $50,786,380. The World Bank indicates that timber exports to China are increasing and that the Congo Basin now has surpassed demand from Italy, France and Spain (Blaser and al, 2011).
c.	Land Use Records	The North Pikounda UFE is a recognised forest concession in the RoC.
d.	Current Land Use Activity	Currently, the North Pikounda UFE has been approved for selective harvesting and the CIB concession has owned the licence since 2000 and has had the legal ability to begin

[24] FSC Forest Stewardship Standard for the Congo Basin, FSC-STD-CB-01-2012-EN Congo Basin Regional Standard EN, approved April 2012

		harvesting in 2012. Further, all of CIB's other concessions are FSC certified, and in order to maintain those certifications, North Pikounda would need to be certified if it was to be harvested as well.
e.	Past Land Use Activity	The North Pikounda UFE has never been logged and is primary undisturbed forest land.
f.	Enforced Mandatory Regulations	The government of the Republic of Congo has in place the above mentioned forestry laws and regulations. It is unclear how the forestry laws and regulations would be enforced (that is to what degree of enforcement) if the harvesting was not conducted against a third party verified standard.

Conclusion: Selective harvesting, conducted according to the national Congolese standards that are currently in effect, and then further supplemented by application of the FSC Forest Stewardship standard for the Congo Basin Region, is a credible and realistic scenario and should be considered as a plausible alternative scenario to the North Pikounda REDD+ project.

Alternative 2. Conventional Selective Harvesting: The North Pikounda UFE would be logged according to Congolese forestry regulations by CIB (or any other concession holder) up to the maximum legal limit as set forth by Republic of Congo forestry law and regulations. The selective logging would be conducted without using FSC or other third party verified sustainability standards.

The proposed baseline of Conventional Selective Harvesting is credible as it can be shown to currently exit in the country. Much of the Northern Republic of Congo has been allocated to forestry concessions and the domination of the forestry concession industry is demonstrated by the large number of allocated forestry concessions. See ***Appendix 05*** – Status of Forest Concessions in the Republic of Congo (WRI - June 2006).

Table 27 - Additionality alternative 2

No.	Source of Credibility	Explanation
a.	National Forestry Policy	The Republic of Congo has had as a matter of national forestry policy a written Forestry Code in place since the turn of the century, including the Law N^{o} 16-2000 of 20 November 2000, The Forestry Code, Decree N^{o}. 2002- 437 of 31 December 2002, which establishes conditions pertaining to the management and use of the forest, including conventional selective harvesting.
b.	Economic Trends	Forestry as a sector is the second largest commercial sector in the RoC after oil, and in 2010, the ITTO estimated that the export value of Industrial roundwood was valued at USD $85,919,500 resulted and sawnwood was valued at USD $50,786,380. The World Bank indicates that timber exports to China are increasing and that the Congo Basin now has surpassed demand from Italy, France and Spain (Blazer and al 2011).
c.	Land Use Records	The North Pikounda UFE is a recognised forest concession in the RoC

d.	Current Land Use Activity	Currently, the North Pikounda UFE has been approved for selective harvesting and the CIB concession has owned the licence since 2000 and has had the legal ability to begin harvesting in February 2012.
e.	Past Land Use Activity	The North Pikounda UFE has never been logged.
f.	Enforced Mandatory Regulations	The government of the Republic of Congo has in place the above mentioned forestry laws and regulations. It is unclear how the forestry laws and regulations would be enforced (that is to what degree of enforcement) if the harvesting was not conducted against a third party verified standard.

Conclusion: Conventional selective harvesting, conducted according to the national Congolese standards that are currently in effect, is a credible and realistic scenario and should be considered as a plausible alternative scenario for the North Pikounda UFE.

Alternative 3. No Harvesting and/or Protection but without being registered under the VCS as an IFM-LtPF project: The North Pikounda UFE concession is retained by CIB, no harvesting activity would take place and CIB would maintain the protection of the concession.

This proposed alternative would see CIB maintain the current forest area of North Pikounda UFE but without any economic gain, while at the same time being required to "maintain & protect" the entire 93,500 ha.

If the project were able to register under an alternative carbon crediting mechanism, it might be able to create enough revenue to pay for protection. However, at the time of this writing, there is no other widely recognised standard that would support an IFM project such as this, let alone a methodology that would further support the activity if it is not registered under the VCS.

Table 28 - Additionality alternative 3

No.	Source of Credibility	Explanation
	Economic Trends	Forestry as a sector is one of the largest commercial sector in the RoC after oil, and in 2010, the ITTO estimated that the export value of Industrial Roundwood was valued at USD $85,919,500 resulted and sawnwood was valued at USD $50,786,380. The World Bank indicates that timber exports to China are increasing and that the Congo Basin now has surpassed demand from Italy, France and Spain (Blazer and al 2011). CIB is required to pay a land tax for very hectare regardless if it harvests or not. Without carbon finance, there would be no funding for paying the Surface Tax nor any other protection activity.
	Land Use Records	Currently, the North Pikounda UFE has been approved for selective harvesting and the CIB concession has owned the

		licence since 2000 and has had the legal ability to begin harvesting in 2012 as per the forest management plan approved by the Ministry of Foresty. The North Pikounda UFE is a recognised forest concession in the RoC.
	Current Land Use Activity	Currently, the North Pikounda UFE has been approved for selective harvesting and the CIB concession has owned the licence since 2000 and has had the legal ability to begin harvesting in 2012 as per the forest management plan approved by the Ministry of Foresty. If no harvesting commences on the UFE, and absent any other agreement to the contrary, the RoC by law can rescind the concessional rights that exist within the North Pikounda UFE.
	Past Land Use Activity	The North Pikounda UFE has never been logged and is primary undisturbed forest land
	Enforced Mandatory Regulations	The Republic of Congo forestry law requires that a concessionaire conduct the logging activity that is set forth in its license agreements. If the concession does not perform to the conditions of the license, the concession could be withdrawn. The RoC and CIB have an Agreement for CIB to develop a VCS REDD+ project in North Pikounda UFE. There are no past examples of the government of RoC in allowing a concession to be retained by the concessionaire with no intention to harvest or otherwise create revenue.

Conclusion: The alternative scenario of "No Harvesting/Protection but without being registered under the VCS as an IFM-LtPF project" is not the most credible scenario as it would:

1. Not provide a financial incentive for CIB to maintain the area while still costing the concessionaire substantial resources
2. Violate the Agreement between CIB and RoC that require the REDD+ project to be undertaken.
3. Violate the licence agreement and forest management plan and provide an opportunity for the RoC to withdraw the concession license

N.B. However, if an alternative carbon standard could be used, that had a methodology to create a stop logging project such as under the VCS IFM-LtPF model, and the RoC could be convinced, the alternative might be credible.

Alternative 4. Oil Palm Plantation: Engage in clear-cut harvesting and land-use change in order to plant fast growing oil palm species for production or high quality oil palm for international or domestic use.

The Palm Oil Sector continues to grow in the Republic of Congo and there are areas within the Sangha Department that are currently being intensely clear felled and planted with Oil Palm by Malaysian owned entities for domestic use or for International export[25].

Table 29 - Additionality alternative 4

No.	Source of Credibility	Explanation
	National Forest Policy	The Republic of Congo has a National Forestry policy approach that includes partial development of the nation through the growth of agro-forestry industries, including Oil Palm
	Economic Trends	Oil palm is a new industry in the RoC, and despite oil palm being widely used by indigenous peoples, as a modern industry it is in its infancy but set for rapid growth as the world trend for consumption of oil palm increases. The new National Highway from Brazzaville to Ouesso now could assist with the more rapid transportation of oil palm to costal ports. Processing equipment would need to be installed close to the plantation site and passable road would have to be installed to connect to Ouesso.
	Current Land Use Activity	Currently, the North Pikounda UFE has been approved for selective harvesting and the CIB concession has owned the licence since 2000 and has had the legal ability to begin harvesting in 2012 as per the forest management plan approved by the Ministry of Forestry. It is feasible that if a Forest Management Plan for oil palm was submitted to the MEFDD and other legal requirements were adhered, that a concessionaire might be able to use the North Pikounda UFE as an oil palm plantation.

Conclusion: The alternative scenario of "Oil Palm Plantation" is a feasible and credible scenario, however, it would require the alteration and subsequent approval of a forestry management plan, and it would require the building of substantial infrastructure. As there is nearby precedence of such activity, it is a feasible, although not perhaps the most likely scenario.

[25] Etude du Secteur Agricole – République du Congo (2012) CERAPE/SOFRECO.

Outcome of Sub-Step 1a.

The following Alternative Scenarios are deemed to be the most credible and feasible:

Table 30 - Summary of additionality alternatives

Alt. No.	Alternative Scenario	Description
Alternative 1.	Continuation of the Pre Project Land Use: FSC Certified Selective Harvesting	The North Pikounda Concession is logged according to the requirements of Congolese forestry regulations and also according to FSC RIL practices by CIB
Alternative 2.	Conventional Selective Harvesting	The North Pikounda UFE is logged according to Congolese forestry regulations by CIB (or others) up to the maximum legal limit and without using FSC standards
Alternative 3	No Harvesting and/or Protection but without being registered under the VCS as an IFM-LtPF project	The concession is retained by CIB or another Concessionaire and becomes an area that is not logged and the protection from deforestation and degradation is not paid for by VCS carbon credits.
Alternative 4.	Oil Palm Plantation	Engage in clear-cut harvesting and land-use change in order to plant fast growing oil palm for subsequent palm oil production.

The above Alternative Scenarios are deemed to be the most credible and feasible after conducting the analysis required by Step 1, Sub-step 1a.

Sub Step 1b. Consistency of credible land use scenarios with enforced mandatory applicable laws and regulations.

Alternative 1. FSC RIL Selective Harvesting: The North Pikounda Concession is logged according to the requirements of Congolese forestry regulations and also according to FSC RIL practices by CIB.

Alternative 2. Conventional Selective Harvesting: The North Pikounda UFE is logged according to Congolese forestry regulations by CIB (or others) up to the maximum legal limit and without using FSC standards

Alternative 3 No Harvesting and/or Protection but without being registered under the VCS as an IFM-LtPF project: The concession is retained by CIB or another Concessionaire and becomes an area that is not logged and the protection from deforestation and degradation is not paid for by VCS carbon credits.

Alternative 4. Oil Palm Plantation: Engage in clear-cut harvesting and land-use change in order to plant fast growing species oil palm production

Table 31 - Regulations for each additionality alternatives retained

Alternative	Scenario	Enforced Regulations
Alternative 1.	FSC RIL Selective Harvesting	The North Pikounda UFE is part of the private domain of the state which has been established and having as its

		main purpose the undertaking of forestry production activities by regulations (Articles 10 and 65 of Act 16-2000) and subsequent Forest Management legislation, The Forest Management Plan (2012) approved by the government of RoC, which legally sanction selective harvesting, is able to be implemented. FSC harvesting is not a legal requirement, but CIB is required to use FSC certification in all of its harvesting activities.
Alternative 2.	Conventional Selective Harvesting	The North Pikounda UFE is part of the private domain of the state which has been established and having as its main purpose the undertaking of forestry production activities by regulations (Articles 10 and 65 of Act 16-2000) and subsequent Forest Management legislation The Forest Management Plan (2012) approved by the government of RoC, which legally sanction selective harvesting, is able to be implemented.
Alternative 3	No Harvesting and/or Protection but without being registered under the VCS as an IFM-LtPF project	The North Pikounda UFE is part of the private domain of the state which has been established and having as its main purpose the undertaking of forestry production activities by regulations (Articles 10 and 65 of Act 16-2000) and subsequent Forest Management legislation There is no example of a concessionaire maintain a harvesting licence and providing protection for an area otherwise subject to selective harvesting.
Alternative 4.	Oil Palm Plantation	The North Pikounda UFE is part of the private domain of the state which has been established and having as its main purpose the undertaking of forestry production activities by regulations (Articles 10 and 65 of Act 16-2000) and subsequent Forest Management legislation

Conclusion:

Alternatives one, two and four all have applicable enforced mandatory legislation and regulation. Alternative three would violate applicable enforced mandatory legislation and regulation as the alternative violates a current law that requires the North Pikounda UFE to be used for forest production activity. Furthermore, it is not possible to demonstrate that there is in the Roc a current practice of a concessionaire protecting the land without deriving any economic gain therefrom.

Alternative Three is Non-Compliant

As the baseline Alternative three, **No Harvesting and/or Protection but without being registered under the VCS as an IFM-LtPF project,** does not comply with mandatory enforced legislation and no widespread non-compliance can be demonstrated it is removed from the list of realistic and credible baseline scenarios.

Outcome of Sub-Step 1b.

Table below is the list of remaining realistic and credible baseline scenarios

Table 32 - Remaining additionality alternatives

Alt. No:	Remaining realistic and credible baseline scenarios Scenario:
Alternative 1.	FSC RIL Selective Harvesting
Alternative 2.	Conventional Selective Harvesting
Alternative 4.	Oil Palm Plantation

STEP 2: Investment Analysis

In order to maintain a simple yet conservative baseline analysis, the Project has opted to apply the Barrier Analysis instead of the Investment Analysis and thus Step 2 of VT0001 is not utilised.

STEP 3: Barrier Analysis

Sub-step 3a: Identify barriers that would prevent the implementation of type of proposed project activity

Six main Barriers have been identified:

Investment Barriers:

1. In regards to the AFOLU project activities being contemplated by CIB-Olam, a private entity, no such similar REDD+ activity has ever been implemented in the Republic of Congo except with the use of grants or upon non-commercial finance terms. Conventional commercial debt funding in the post global economic crisis is not feasible, particularly with the carbon markets at historical lows and is not available for this type of project activity.
2. The proposed project will have no real access to international finance or credit markets due to the real and perceived risks associated with direct foreign investment in the Republic of Congo, which is ranked by the World Bank/IFC as one of the most difficult places in the world to do business (177 out of 183).[26]

Institutional Barriers:

[26] http://www.doingbusiness.org/rankings

3. The Republic of Congo, since its independence in 1960, has a history marked by a series of political conflicts and civil wars. Its economy had declined drastically since the mid-1980s. Since late 2002, conditions have improved somewhat and political stability might be returning. Further, although the current government has been in power for some time, policies can change swiftly.
4. Although REDD+ is being implemented via the UN REDD Readiness Program no carbon laws exist to date, and the North Pikounda REDD+ Project was at the time of its implementation the leading REDD+ activity in Congo on a project scale.

Technological Barriers:

5. The capacity to implement the carbon component of the project was minimal and the Project undertook numerous training sessions to improve both CIB's own capacity but also that of the Government.

   The national forest university has not been running since the civil war and current forestry cadres, that did have forest management degrees, are rapidly approaching retirement (or have retired already).

Barriers due to prevailing practice:

6. This REDD+ Project acknowledges that generating emission reduction credits from a private forest concession using an IFM-LtPF methodology has never been implemented in the Congo, let alone anywhere in Africa; it is a "first of its kind." In fact, there are no carbon origination projects of any kind (CDM or otherwise) in the Republic of Congo, nor are any others known to be contemplated, i.e. there is no pipeline. The project would be the first REDD+ project in RoC to be part of the VCS.

Sub-Step 3b. Show that he identified barriers would not prevent the implementation of at least one of the alternative land use scenarios (except the proposed project activity):

The six identified barriers from Sub Step 3a. would not prevent at lease one of the alternative scenarios. Selective Harvesting (FSC or Conventional) in the Congo is not affected by the same barrier to entry of the market as a VCS REDD+ IFM-LtPF in Congo is.

Investment Barriers:

1. Selective logging in the RoC does have some access to international finance or credit markets due to the real value associated with timber despite being ranked by the World Bank/IFC as one of the most difficult places in the world to do business (177 out of 183).[27] Timber as an international commodity continues to be in greater demand then forest generated carbon credits.

Institutional Barriers:

2. Selective logging in the RoC has a respected Forestry Code since 2000 and subsequent forest management regulations have allowed it to have substantial compliance with forestry regulations including three FSC certified forestry sector producers.

Technological Barriers:

3. The Roc of Congo has a long history of forest exploitation and there exists sufficient capacity within Congo to conduct large-scale mechanized selective logging.

[27] http://www.doingbusiness.org/rankings

Barriers due to prevailing practice:

4. Selective logging is in theory a long-standing part of the economy of RoC and Selective Logging is not hindered by being a "first of its kind" project. In fact the opposite is true in that RoC has a working Forest Code supplemented by a Sustainable Forest Management Scheme that has been largely implemented in the North of Congo.

Step 4. Common Practice Analysis

The proposed activity is a first of its kind. There are no carbon laws, no CDM carbon projects, no voluntary carbon project and **no-one has ever implemented a VCS IFM-LtPF project in the country** within the last ten years.

As such from the perspective of the Common Practice Analysis, the project is additional.

Conclusion – The North Pikounda REDD+ is Additional

Based on meeting the above additionality requirements, and having implemented the stepwise additionality process **by application of the latest version of the VCS AFOLU Additionality tool as required by the VM0011 methodology, the proposed VCS AFOLU North Pikounda REDD+ project activity is believed to be additional.**

2.6 Methodology Deviations

The deviations from the methodology are listed in the table below.

Table 33 - Methodology deviations list

Methodology chapter	Deviation
3.2.1.1 **Validation of Existing Data**	The methodology states that, to use data from Forest Inventory Resource Management Plan, it should be no older than 5 year old. The actual Management Plan approved in 2012 by the government of the Republic of Congo has been designed based on data collected in the project area in 2003. This data has been acquired following the normal inventory procedures in effect in Congo, and the stratification used for the inventory is similar to the one used for the IFM-LtPF project. This situation is the cause of a deviation for the North Pikounda project. It is not possible not to use the data from the Management Plan because the government has approved it. Therefore, this Management Plan constitutes the legal base for our estimations of degradations under the baseline scenario. It is not possible to consider the options of doing a new Management Plan (chap.3.2.3.2 p.40) as it would interfere with a ministerial decree. Furthermore, it has been possible, using the results from PSPs, to validate data from the management plan using recommendations from VM0011 (chap. 3.2.1.1). The demonstration is presented in ***Appendix 02, chap. V***. We consider that, AGB of both growing stock and merchantable trees having naturally increased during the time left between the

Methodology chapter	Deviation
	Forest Resources Inventory for the management plan and the Carbon inventory for the IFM-LtPF project, it is conservative to use the volumes stated in the Management Plan report.
3.3.1 **Net Carbon from the Dead Wood Pool**	As recommended by the methodology, we have used Brown et al (2005) study to estimate the carbon from residual stand damage. It appeared that this study provided CIB site specific data for both Residual Stand Damage factor (f_{RSD}) and the branches and trimming factor (f_{Branch_Trim}), but that the results where aggregated without possibility of differentiation between f_{RSD} and f_{Branch_Trim}. Therefore a new factor will be used, called $f_{damages}$ and the following equation will replace equations 3.18, 3.19 and 3.20: $C_{DWin,t} = f_{damages} \times V_{merch,t}$ With $f_{damages} = f_{FSD} + f_{branch\_trim}$ $f_{damages}$ is expressed in tC / m^3 harvested.
3.3.5 **Carbon in the Regrowth after Selective Logging**	To calculate the factor called $G_{regrowth,t}$, we have developed a growth model based on the results of the monitoring of PSPs. Based on the difference of growth for all timber species in the PSPs between two monitoring events, we can estimate the difference of AGB for trees between 5-20 cm diameter, which we consider to correspond to the carbon stored in the regrowth that would have occurred in the gaps following logging under the baseline scenario. As this model allow us to estimate the growth between two monitoring events for every tree (taking into account each specific WSG), $G_{regrowth,t}$ is therefore expressed in $tC.ha^{-1}.yr^{-1}$ instead of $(t\ d.m.).ha^{-1}.yr^{-1}$. Equation 3-38 is therefore replaced by the following equation: $C_{regrowth,t} = \overline{G}_{regrowth,t} * \sum_{t=1}^{t^*} A_{NHA\_annual,t}$ ***Appendix 02***, chap. 4.2.5 gives more details about regrowth estimation
3.4.1 and 3.4.2 **Emissions Due to Harvesting and On-Site Preparation Operations**	Actually, fuel used for the harvesting operations (i.e., logging, on-site preparation, hauling, etc.) is accounted into two categories: “mixed petrol” (petrol + oil) used for chainsaw and “Gas Oil” used for heavy machinery (skidders, bulldozers, loading machine, etc). It is not possible to differentiate between the mixed petrol used for a chainsaw that has been used to cut a tree or to prepare it. We have therefore decided to combine emissions due to harvesting and on-site preparation in one category. Equations 3.40 (p.61) will therefore be replaced by the following equation: $E_{harvest+onsiteprep,t} = FC_{harvest+onsiteprep} \times EF_{fuel} \times V_{merch,t}$

Methodology chapter	Deviation
	Where , $FC_{harvest+onsiteprep}$ is the fuel consumption of chainsaws employed for felling, snigging and trimming per m^3 of harvested material.
3.4.4 **Emissions due to log transport**	In equation 3-46, trucks Fuel Consumption ($FC_{transport,t}$, in $L.km^{-1}$) has been used instead of trucks fuel efficiency ($Eff_{vehicle}$, in $km.kL^{-1}$). This will not impact the final results.
3.4.5 **Emissions Due to Timber Processing**	Electricity is generated by 6 generators that have different power rating (4x1250 KVa, 1x1275 KVa, 1x1375 KVa) and different load capacity. Those generators are working altogether in synchronization in order to provide electricity with the required frequency. The project transformations units, administrative units, workshops etc are all equipped with energy meters that allow following the electricity consumptions on a daily basis. Each generator fuel consumption is monitored too. It is therefore very easy to link the production of sawn timber with the electricity consumption for each transformation unit, and to link this electricity consumption with the generator fuel consumption? The following equations are replacing equations used to estimate $E_{processing}$ in chap. 3.4.5 of VM0011: $E_{processing,t} = FC_{generators} * EF_{fuel} * V_{sawn\_timber,t}$
3.4.6 **Emissions due to log distribution**	VM0011 only considers distribution of logs/sawn timber by road while, in the baseline scenario, some timber products are transported by river/train. Additional Fuel Consumption and Fuel Emissions factors have therefore been considered in the calculation of $E_{distribution,t}$. For example two new emission factors have been created for boat and train transport, respectively $EF_{distriboat}$ and $EF_{distrirail}$. In the case of distribution by road, we have used the Fuel Consumption instead of the Fuel efficiency for the calculations. Tow specific truck capacity have also been calculated, one for truck travelling to Cameroon ($CAP_{cameroon}$) where there is a legal limit for truck capacity and one for trucks travelling to Congo (CAP_{congo}).

3 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

The approach to quantify GHG emissions reductions is fully based on the VM0011 methodology. The baseline emissions accounting for this project is provided in the documentation provided for monitoring events.

3.1 Baseline Emissions

The annual emissions resulting from the legally sanctioned selective logging is the combination of the degradation of the Project Area ($C'_{degradation,t}$) as well as annual emissions due to selective logging operations ($C'_{emissions,t}$). Equation 3.1 of VM0011 is described as follows:

$$C'_{baseline,t} = C'_{degradation,t} + C'_{emissions,t}$$

3.1.1 Calculation of $C'_{degradation}$

The baseline scenario implies the annual harvesting of merchantable volumes of commercial species (above minimum diameter as specified in the Management Plan). While felled, trees can damage other trees, then they are converted to merchantable logs (by removing tree crown, buttresses, stumps, etc.): the resulting volumes of wood are entering the Dead Wood Pool, which will slowly decay, releasing GHG emissions into the atmosphere. The merchantable logs will be either processed into sawn timber (long term Harvested Wood Products or ltHWPs) or exported as roundwood. In the case of merchantable logs intended to be used in the manufacture of ltHWPs, the proportion of log converted to sawn timber is calculated using species-specific lumber recovery factors. The remaining proportion of merchantable logs are considered to be immediately oxidized while the emissions from ltHWPs are accounted for by applying a rate of oxidation. Please see Figure 13 p.54 for a detailed flowchart of harvesting and industrial activities retained for the baseline scenario.

Finally, during the lifetime of the baseline scenario, in areas damaged by harvesting operations, trees would have experienced regrowth that must be subtracted from the overall carbon losses. On the other hand, logging operations remove trees that would have otherwise experience growth. This loss in growth, defined as the “Growth Foregone”, is to be determined and added to the amount of carbon degradation. The equation 3.2 of VM0011 summarizes the steps described above:

$$C'_{degradation,t} = [(C_{DW_{decay},t} + C_{ltHWP_{oxidation},t} + C_{growth\_foregone,t} - C_{regrowth,t}) \times \frac{44}{12}]$$

$C'_{degradation,t}$ is calculated following the 8 steps described here-after:

1. The areas to be harvested are tabulated on an annual basis, based on the four UFPs described in the management plan. Each UFP area is divided by 5, the results correspond to an Annual Allowable Cut or “*Assiette Annuelle de Coupe*”;

2. The merchantable volumes that would have been harvested are calculated for each commercial species based on the management plan data. In this document, species-specific allometric equations approved in RoC, also called “Tarifs de Cubage”, allow the Project to estimate the volume of merchantable log from DBH. Please refer to Table 25 p.52 for a list of these “Tarifs de Cubage” and to ***Appendix 06*** for the description of their validation.

3. The merchantable volume (dry mass) is multiplied by the density or Wood Specific Gravity (WSG) of each species and by the carbon fraction to find the quantity of carbon removed (see equations 3-3 and 3-4 below);

$$\overline{C}_{merch,j,t=0} = D * CF_{wood} * \overline{V}_{merch,j,t=0}$$

$$\overline{C}_{merch,t=0} = \frac{\sum_{j=1}^{J} (\overline{C}_{merch,j,t=0} * A_{project,j,t=0}}{A_{project,t=0}}$$

The annual total carbon in the merchantable logs in year t is then calculated following equation 3-15a:

$$C_{merch,t} = \overline{C}_{merch,t=0} * A_{NHA\_annual,t}$$

4. The "Total_Damage" factors (calculated by Brown *et al*, 2005) allow to calculate the carbon that enter the Dead Wood pool annually, based on the merchantable volumes harvested (see paragraph 2.6):

$$C_{DW_{in},t} = f_{total\_damages} * V_{merch,t}$$

with $f_{total\_damages} = f_{RSD} + f_{branch\_trim}$

5. The amount of carbon leaving the deadwood pool is then calculated using a rate of decay for dead wood matter using equations 3-21, 3-22a, 3-23, 3,24:

$$F_{DW\_remain,t} = e^{-k_{decay} * t}$$

$$C_{DW_{pool},t} = \sum_{t=1}^{t^*} \left(F_{DW\_remain,t} * C_{DWin,t} \right)$$

$$C_{DW_{out},t} = \sum_{t=1}^{t^*} C_{DWin,t} - C_{DWpool,t}$$

$$C_{DW_{decay},t} = C_{DWout,t} - C_{DWout,t-1}$$

6. Based on the past years of productions, average species-specific lumber recovery factors and export ratios (% of merchantable volumes that are exported as round wood or as sawn timber) have been calculated. This allow the Project to calculate the volume of logs that would have been directly exported, the volume of logs that would have been transformed, the volume of long-term Harvested Wood Products (ltHWPs) produced and the resulting volumes of ltHWPs residues. A part of the carbon that is

sequestered in wood is slowly emitted each year due to the combination of immediate oxidation of ltHWP residues and delayed oxidation of long-term Harvested Wood Products (equation 3-25). In this scenario, short-term Harvested Wood products (pulplog and harvested fuelwood) are not considered.

$$C_{ltHWP_{oxidation},t} = C_{ltHWP_{residues},t} + C_{ltHWP_{net\_out},t}$$

The carbon emitted due to the immediate oxidation of ltHWPs residues is calculated following equation 3-26:

$$C_{ltHWP_{residues},t} = \overline{C}_{merch,p,t=0} * \left(1 - f_{lumber\_recovery}\right) * A_{NHA\_annual,t}$$

Carbon emitted due to oxidation of the ltHWP pool over project lifetime is calculated following equations 3-27, 3-28, 3-29a, 3-30, 3-31:

$$C_{ltHWP_{in},t} = \overline{C}_{merch,p,t=0} * f_{lumber\_recovery} * A_{NHA\_annual,t}$$

$$F_{ltHWP\_remain,t} = e^{-k_{ltHWP\_ox} * t}$$

$$C_{ltHWP_{pool},t} = \sum_{t=1}^{t^*} \left(F_{ltHWP\_remain,t} * C_{ltHWP_{in},t}\right)$$

$$C_{ltHWP_{out},t} = \sum_{t=1}^{t^*} C_{ltHWP_{in},t} - C_{ltHWP,t}$$

$$C_{ltHWP_{net\_out},t} = C_{ltHWP_{out},t} - C_{ltHWP_{out},t-1}$$

8. The growth foregone, corresponding to the growth of the harvested trees that would have occurred without harvesting, is calculated based on the measurement obtained in the PSPs for merchantable species for two consecutive monitoring events The equation 3-36a presented below as been slightly modified from the one presented in VM0011: there is only one stratum in the project crediting area, therefore, it was not necessary to combine the results from different stratum (that is also why equation 3-36b will not be used).

$$\overline{G}_{growth\_foregone,t} = \frac{\overline{B}_{AGB\_merch,m2} - \overline{B}_{AGB\_merch,m1}}{\Delta m}$$

The carbon in the growth foregone is estimated by multiplying the increase in AGB in merchantable trees by the carbon fraction used for AGB and the annual net harvest area that have been exploited up to year t (equation 3-37a)

$$C_{growth\_foregone,t} = CF_{AGB} * \overline{G}_{growth\_foregone,t} * \sum_{t=1}^{t^*} A_{NHA\_annual,t}$$

8. The methodology suggest to account for regrowth in the gap following logging using equation 3-38, modified following explanation detailed in paragraph 2.6 (Methodology deviations):

$$C_{regrowth,t} = \overline{G}_{regrowth,t} * \sum_{t=1}^{t^*} A_{NHA\_annual,t}$$

VM0011 suggest to select a an annual average growth in the AGB after logging based on (i) published peer reviewed studies for forests with corresponding age, climate region and ecological zone (ii) national growth models and (iii) local growth models. As the two first options were not available, we have developed a local growth model specific for the project area based on the results of the monitoring of the PSPs. For more details on the Regrowth factor modelling, please refers to ***Appendix 02, chap. 4.2.5***. The annual estimation for regrowth is then applied to the percentage of the Annual Net Harvest area that would have been damaged due to logging activities under the baseline scenario. This percentage has been estimated to 12,4% by Meoli (2005) and is specific to CIB reduced impact logging operations.

3.1.2 Calculation of C'$_{emissions}$

To calculate the annual GHG emissions, emission sources associated with the implementation of the baseline activities shall be estimated.

Omission of any of the associated sources is conservative.

The total emissions due to those activities (C'$_{emissions}$) is determined from the summation of the emissions sources presented in equation 3-39 below:

$$C'_{emissions,t} = E_{harvest\_onsiteprep,t} + E_{hauling,t} + E_{transport,t} + E_{processing,t} + E_{distribution,t}$$

As it was not possible to discriminate the emissions due to harvest from those due to on-site preparation, a new factor, $E_{harvest\_onsiteprep}$ has been created, with:

$$E_{harvest\_onsiteprep,t} = E_{harvest,t} + E_{onsiteprep,t}$$

The steps used to calculate C'$_{emissions}$ are described here-after:

1. Harvesting and on-site preparation of merchantable logs in CIB concessions is done using chainsaws. Based on one year of fuel consumption, we have calculated a mean Fuel Consumption factor (L per m^{-3} of merchantable timber produced) and selected appropriate fuel Emission Factor from the literature. $E_{harvest\_onsiteprep,t}$ is calculated using the following equation (which regroups equations 3-40 and 3-42 of VM0011):

$$E_{harvest\_onsiteprep,t} = FC_{harvest\_onsiteprep,t} * EF_{fuel} * V_{merch,t}$$

2. To estimate emissions associated with log hauling from the felling zone to the collection depot, the fuel consumption for all mechanical equipment's used for hauling on CIB concessions during one year has been used to calculate hauling Fuel Consumption factor (L per m^{-3} of merchantable timber produced) and is multiplied by the annual merchantable volume used in the baseline scenario (equation 3-43).

$$E_{hauling,t} = FC_{hauling,t} * EF_{fuel} * V_{merch,t}$$

3. After centralizing logs in a collection depot, they are loaded on to trucks to transport them from the project area to the industrial site (Pokola) where they will be dispatched between exported logs and timber that will be processed in the sawmill. The following equations are used to calculate the emissions associated with log transport (respectively equations 3-44, 3-45, 3-46).

$$N_{trucks\_transport,t} = \frac{V_{merch,t}}{Cap_{truck}}$$

$$KM_{transport\_total,t} = KM_{transport,t} * N_{trucks\_transport,t} * 2$$

$$E_{transport,t} = FC_{transport,t} * EF_{fuel} * KM_{transport\_total,t}$$

Trucks capacity and fuel consumption have been calculated based on one year of transportation within CIB concessions. The annual mean trajectory that would have been covered by trucks has been calculated using provisional road map provided in ***Appendix 08.a***: the provisional total road distance is calculated for each UFP starting from UFP 1 to UFP 4. The mean road distance is then calculated per UFP. The calculation excel document is provided in ***Appendix 08.b***.

4. Electricity consumption is easy to follow in Pokola, as each production/administrative unit is equipped with an electricity meter. Identically, the fuel consumption used for each generator is strictly monitored. Volumes per species entering each sawmill are also closely monitored. It is therefore very easy to combine all those elements to estimate the fuel consumption per cubic meter of sawn timber. This way of calculating $E_{processing,t}$ constitute a methodological deviation (as explained in paragraph 2.6) but remains conservative.

$$E_{processing,t} = FC_{generators} * EF_{fuel} * V_{sawn\_timber,t}$$

$$V_{sawn\_timber,t} = V_{merch,t} * f_{export/sawn}$$

Where:

Factor	Description	Unit
$FC_{generators}$	Fuel consumption of generators employed to produce electricity used by units transforming logs into sawn timber. Here, the volumes considered are volumes of timber **entering** the sawmills	$L.m^{-3}$
$f_{export/sawn}$	Fraction of merchantable volumes that are transformed in the sawmill. This ratio is species-specific, based on 6 years of CIB data (2006-2011)	dimensionless

Fuel emission factor has been selected from the relevant literature.

5. Finally, the emissions due to log distribution are to be calculated. In the baseline scenario, exported volumes are transiting through two different routes (see also Figure 13):

   Congo Route: timber is transported either by road or river from Pokola to Brazzaville. There, a % of timbers remain in the capital for being sold on the local market while the remaining volumes are transported to Pointe-Noire by train to be exported;

   Cameroon Route: timber is transported by road from Pokola to Douala or by road to Belabo where it joins Douala by train.

   Basically, the VM0011 equations remain adapted, they just have to be adapted to take into account the different types of vehicles used to transport each specific volume to each specific destination. Equations 3-52 and 3-53 and 3-54 have been modified slightly to include this specificity:

$$N_{vehicle\_transport,t} = \frac{V_{merch,vehicle,t}}{Cap_{vehicle}}$$

$$KM_{distrib\_total,vehicle,destination,t} = KM_{distrib,destination,t} * N_{vehicle\_transport,t} * 2$$

$$E_{distribution,vehicle,destination,t} = FC_{distrib,vehicle,destination,t} * EF_{fuel} * KM_{distrib\_total,vehicle,destinationt}$$

   More specifically, in the case of transport by rail we have applied directly an emission factor by tons of freight transported:

$$E_{distribution,rail,destination,t} = EF_{rail} * V_{merch,rail,destination,t} * 0,6014 * KM_{distrib,destination,t}$$

   0,6014 represent the average WSG for merchantable tree species harvested under the baseline scenario. EF_{rail} is expressed in kg CO_2-e per tonnes of freight transported per km.

Finally, another equation has been added to calculate the global GHG annual emissions due to ltHWPs distribution:

$$E_{distribution,t} = (E_{distribution\_road,t} + E_{distribution\_river,t} + E_{distribution\_rail,t})_{Congo} + (E_{distribution\_road,t} + E_{distribution\_rail,t})_{Cameroon}$$

Table 34 below summarize the export figures that are retained for the baseline scenario. The percentage of annual round wood and sawn timber are listed per destination. See Figure 13 p.54 for more details about export routes.

Table 34 - Timber export figures retained for baseline scenario

Destination	Distance (km)	Transport	% of annual roundwood exported through	% of annual sawn timber exported through
PKL-BZV	880	Road	0	12,3
PKL-BZV	850	River	7	0
BZV-PTN	510	Rail	Same as above	Same as above
PKL-DOU	1350	Road	50	72,8
PKL-BELABO	750	Road	43	14,9
BELABO-DOU	650	Rail	Same as above	Same as above
			100	100

3.2 Project Emissions

Emissions associated with the actual project implementation are given by equation 4-1, p.73 of VM0011:

$$C'_{actual,t} = E_{projplan,t} + E_{design,t} + E_{monitoring,t} + \left[\left(C_{natdisturb,t} + C_{illegal\_harvest,t}\right) * 44/12\right]$$

1. In the case of this project, for the 3 first parameters of equation 4-1 ($E_{projplan,t}$, $E_{design,t}$ and $E_{monitoring,t}$), we have considered that:
   - The project administration being hosted in already existing CIB administrative buildings in Pokola, no additional electricity is used because of the project, and the electricity consumed by the devices used for the project (computer, light bulbs…) is negligible compare to the overall carbon emissions/removals. Therefore, the parameter $E_{admin,t}$ of equation 4-2 p.74 is considered to be equal to 0, and $E_{projplan,t}$ is consequently equal to $E_{plan\_travel,t}$:

     $$E_{projplan,t} = E_{plantravel,t}$$

   - Emissions of flight or ground transport, whether they are due to project planning, project design or project monitoring (equations 4-6, 4-7, 4-8, 4-10, 4-11, 4-12, 4-13, 4-14) are monitored in the same way and are accounted for in the same way. For this purpose, a travel log as been created, where all trips that have a link with the project are recorded. The travel log for years 2011-2012 is provided in ***Appendix 09***.

The emissions of all travels with a link with the project have been estimated for the year 2011 and 2012 which correspond to the years of project planning, project design and the firs verification event. We consider that these two years have seen much more GHG emissions due to project planning/design that what would be emitted in the future and the total GHG emissions for 2011 and 2012 is lower than 50 tCO2-e (See ***Appendix 09*** for GHG emissions estimations for travels related to the project). **The emissions due to $E_{projplan,t}$, $E_{design,t}$ and $E_{monitoring,t}$, compared to the annual estimated GHG reductions, are totally insignificant (far less than 5 %) and will therefore not be accounted for in the future.** Equation 4-1 therefore becomes:

$$C'_{actual,t} = \left(C_{natdisturb,t} + C_{illegal\_harvest,t}\right) * 44/12$$

2. The parameter $C_{natdisturb,t}$ is considered to be non-existent as historically, the natural disturbances listed in the methodology are not occurring in the project area: there are no volcanoes, the area is flat and not subject to landslides, no windstorms or hurricanes are occurring this close to the equator and could be the cause of reducing the extent of the forests, no fire is naturally occurring or human induced, and, while some parts of the project are naturally flooded during the rain season, those floods are annual and non catastrophic thus not reducing the extent of the forests. However, this assertion will be check at each Verification event, especially in case new human settlements are moving in the project area, and which could evidence in a start of slash and burn agriculture. Please refer to the monitoring Plan in ***Appendix 10*** for more details about Natural Disturbances monitoring. Basically, the steps to monitor Natural Disturbances are the same than those explained here-after for Illegal Harvesting monitoring.

3. For estimation of the parameter $C_{illegal\_harvest,t}$, the project proponent will use the two different methods proposed in the methodology, that is to say, satellite data and field control. While, illegal harvesting is very unlikely in the area (see paragraph 1.10.2), it will be carefully monitored during the whole project lifetime. Please refer to the Monitoring Plan in ***Appendix 10*** for more details about illegal harvesting monitoring.
    - First, if good quality satellite images (i.e. without significant cloud cover), those images will be used to identify and calculate the extent of potential illegally harvested areas (CIB is referenced as a project holder with the Portal of Spatial Observation of Congo Basin Forests and therefore has full access to the catalogue of Spot images – See ***Appendix 11***);
    - Then, whether or not illegal harvesting area is identified through satellite images, the CIB will control if any intrusion has occurred. If they discover illegal logging from field observation or following satellite images monitoring, they will measure the extent of the area harvested, identify the tree species harvested and measure the diameter of the stumps when it is possible.

3.3 Leakage

The North Pikounda REDD+ Project will monitor and measure GHG emissions that arise as a result of the implementation of the Project, that is if they are attributable to the Project, and are measurable, they will be deemed to be leakage.

Two sources of leakage will be considered:

1. Activity Shifting Leakage: carbon emissions from degradation due to the shifting of logging operations to a new forest area or if the baseline activity has shifted from the Project

Area to other areas controlled by CIB (limited to within RoC) i.e. removal of harvested wood products including sawlogs and the associated emissions.

2. **Market Leakage**: carbon from emissions due to shifts in supply and demand of sawlogs, timber and other harvested wood products.

The project leakage is the combined total of the above leakage parameters described as:

$$C'_{leakage,t} = (CL_{activityshifting,t} + CL_{market,t}) \times \frac{44}{12} + CL'_{emissions,t}$$

At the time of this Project Validation, no Activity Shifting Leakage was observed, neither was any Market Effect Leakage observed.

Further details are found in the North Pikounda REDD+ Leakage Assessment.

3.4 Summary of GHG Emission Reductions and Removals

Years	Estimated baseline emissions or removals (tCO2e)	Estimated project emissions or removals (tCO2e)	Estimated leakage emissions (tCO2e)	Assigned to the Pooled Non-Permanence Risk Buffer	Estimated net GHG emission reductions or removals (tCO2e)
Year 2012	105 127	-	0	16 231	88 896
Year 2013	148 065	-	-	23 530	124 535
Year 2014	184 453	-	-	29 717	154 736
Year 2015	215 403	-	-	34 978	180 425
Year 2016	241 834	-	-	39 471	202 363
Year 2017	255 413	-	-	41 920	213 493
Year 2018	271 050	-	-	44 579	226 471
Year 2019	284 812	-	-	46 918	237 894
Year 2020	297 016	-	-	48 993	248 023
Year 2021	307 924	-	-	50 847	257 077
Total	**2 311 097**	**-**	**-**	**377 183**	**1 933 914**

4 MONITORING

4.1 Data and Parameters Available at Validation

See ***Appendix 12***.

4.2 Data and Parameters Monitored

See ***Appendix 13***.

4.3 Description of the Monitoring Plan

The North Pikounda REDD+ Project is required to undertake periodic monitoring of the project and leakage area.

The North Pikounda REDD+ Project Monitoring System uses a dynamic system that seeks to identify, assess and create a mitigation plan for potential risks that might arise in relation to the Project. In order to ensure a process for monitoring Project progress and documenting lessons learned or corrections that may be needed, and incorporating them into project decision-making in future monitoring periods, the Project adopts the system that is already in place and implemented for CIB. The company being FSC certified, it has a set of procedures and systems in place (verified annually during the FSC verification audits) that regulate the documents management, the procedures verification and validation, etc, and for which CIB staff is used to work with. The QA/QC system already in place will serve as a "backbone" for the Project QA/QC system, for example to handle complaints or non-conformities, etc.

The Monitoring Plan described in detail in ***Appendix 10***, is based on 12 main activities that are briefly described below.

1. **PSPs inventory**
   The PSPs network will be monitored before each verification event. Tree parameters and dynamic will be measured, analysed and compiled in order to estimate the Carbon stock variations (AGB), the growth foregone and the regrowth factors.
2. **Remote Sensed Monitoring - Illegal/Natural Disturbances**
   Spot 5 images will be acquired annually through the partnership between CIB and *Portail de l'Observation Spatiale des Forêts du Congo* and Astrium. Those images will be analysed to determine any evidences of illegal activities or natural disturbances.
3. **Field Monitoring - Illegal Activities**
   Illegal logging is not a viable threat in the early stage of the Project, as there are no communities within the Project Area and any nearby communities are at least 20km away. However, much can change in a developing country in 30 years such as RoC, including increased population pressures.
   Annual field control will be organised with CIB teams, during PSPs inventory or if needed after satellite images analyse. Community consultation will also allow monitoring any kind of illegal activities in the area. CIB-Olam's significant community experience from its FSC certification activities will be leveraged in this area to ensure a robust monitoring.
4. **Natural Disturbances Emissions Monitoring**
   If natural disturbances are identified, the associated emissions will be monitored following VM0011 and Monitoring Plan.
5. **Illegal Harvesting Emissions Monitoring**
   If illegal harvesting activities are identified, the associated emissions will be monitored following VM0011 and Monitoring Plan.

6. **Leakage Monitoring**
   Appropriate production data from the Leakage Area will be collected, analysed and compiled upon each verification event to estimate activity shifting and market leakage.
7. **Uncertainty Monitoring**
   Uncertainty linked to the parameters monitored will be automatically calculated using excel models.
8. **Non-Permanence Risk Assessment**
   The non-permanence risk tool will be reviewed upon each verification event and actualised if necessary, in view of the any relevant data collected.
9. **Quality Assurance / Quality Control**
   The Project implement a rigorous quality assurance and quality control (QA/QC) system to ensure the long-term accuracy of the data that is collected, to ensure a robust data storage system and to create a systematic data management structure. This QA/QC systems is entirely integrated in the already existing QA/QC system that has been implemented for FSC certification. This system is reviewed annually during FSC Verification audits, that is a guarantee of the quality and dynamic nature of the QA/QC System.
10. **Training**
    All new personal participating in PSPs inventory/control are trained following PSPs Inventory/Control/Monitoring Procedures specifications and standard CIB practices, as much as is reasonably possible.
11. **Documentation Management**
    All documents are properly controlled managed and stored in a manor that complies with standard CIB practices, or as much as is reasonably possible.
12. **VCU Calculation**
    For each verification event, VCU vintage is estimated and updated based on the parameters monitoring results.

Monitoring Frequency

Annually. See Monitoring Plan in ***Appendix 10.***

Other

The verification report drafted for each Verification Audit will ensure that the 12 points described above have been properly considered and monitored.

5 ENVIRONMENTAL IMPACT

No environmental impact study is required for the project. The Project does not anticipate any negative environmental impacts within the area surrounding the Project since the project scenario consists entirely of protecting the forest as it currently exists.

Offsite impacts will be positive since larger habitat and forest areas will improve the long-term viability of fauna and flora populations offsite by maintaining connectivity and avoiding fragmentation of habitats. Avoiding selective logging also avoids the construction of infrastructure (i.e. roads, logging trails, etc) which in turn avoids bringing more workers into the area in general, an activity that would typically result in increased hunting.

If any negative impacts are identified, the CIB social team and the community representative will address such problems with fast and effective solutions. The issue will be discussed and mitigation

actions will be designed.

The Project is not expected to have negative social impacts on the communities surrounding the Project area since the project maintains the forest as it currently exists and there is no human habitation close to the Project Area. It is not expected that the Project will negatively impact any offsite communities. In the case of any potential negative impacts, representatives of the impacted community will bring it to the attention of the CIB community representative. No unmitigated social or economic impacts are expected from the Project.

Environmental impacts of the project are conservatively projected to be positive for biodiversity, water quality, air quality, and climate impacts.

6 STAKEHOLDER COMMENTS

The North Pikounda REDD+ project met and consulted with a range of stakeholders, for the development of the Project. Stakeholders included, national and local government bodies in the Republic of Congo, International IGOs and NGOs, local communities near the project area and local civil society representatives.

In interacting with communities surrounding the Project Area, the Project would use CIB's *in situ* Social Teams and apply FSC principles to such interactions and the results.

1. REDD+ Technical Meeting with RoC / MDDEFE / CIB-Olam - Singapore.

October 2011

CIB-Olam and the MDDEFE representatives for REDD+ activities in RoC met in order to discus the integration of the North Pikounda REDD+ Project within the RoC's emerging REDD+ Readiness activity. The meetings resulted in an "in principal" agreement for the RoC to pursue REDD+ with CIB-Olam.

2. North Pikounda Awareness Workshop - Ouesso, Dept. Sangah, Republic of Congo

November 2011

In November 2011 the North Pikounda Awareness Workshop was held where two main presentations were made regarding Congo and REDD+ and the North Pikounda Project. The presentation were attended by 99 persons and stakeholders; from local and national government, civil society, private companies, local and indigenous communities, bank services, forest companies, schools manager, etc. After the presentations, the workshop had enhanced on-the-ground understanding of climate change and associated risks, as well as the aim and concept of the North Pikounda Project. The workshop also validated the pursuit of the Project and want to be involved in that process and be aware of the developments of it.

4. Molanda Mission - Molanda, Dept. Sangah, Republic of Congo

October 2012

Molanda is the community that is closest to the Project areas and is thus most likely to be impacted by the Project.

CIB's FSC certified Social Teams as well as local CSO representatives visited with the communities in order to raise their awareness on climate changing. This was done by screening of a movie and subsequent discussion on REDD+ issues and the North Pikounda Project. The Communities support the North Pikounda REDD+ Project and have sent further representatives to the REDD+ Pilot Project Steering Committee.

The outcome was that the villagers understood the concept of climate changing and were able to identify some key changes in their own environment. They further understood and supported the REDD+ project that was happening in their location.

Regular contact is planned with the village for on-going communication and monitoring.

5. Side Event on the REDD+ initiatives in Congo – Durban, South Africa

November 2011
A formal side event was held at the UNFCCC COP/MOP 17 in Durban where CIB-Olam participated with the Congolese delegation in explaining REDD+ readiness activity to international CSO, IGO and climate change negotiators. It resulted in the later approval of the UN RPP, study on the deforestation rate by GAF and other National REDD+ Readiness activity.

Additionally, Senior Management and Timber Executives from CIB-Olam met with RoC MDDEFE Ministry and international stakeholder regarding the North Pikounda REDD+ Project with the ultimate outcome of the signing of the RoC & CIB-Olam North Pikounda REDD+ Pilot Project Agreement in May 2012.

6. REDD+ PILOT Project Steering Committee - Pokola, REPUBLIC OF CONGO

September 2012

On 04 September 2012 the first REDD+ Pilot Project Steering Committee was convened in Pokola, Republic of Congo in order to formally initiate and legalise the North Pikounda REDD+ Project. The following table sets forth an overview of the attendees and the organization they represented. A total of 21 delegates were invited. Included members of local communities and local CSO representatives.

The meeting was presided over by the President of the Pilot Steering committee.

Organismes	Délégués conviés
MDDEFE	DG du Développement Durable(VIP) Représentant de la DGEF Représentant de la DGE Coordonnateur National REDD(VIP)
	DVRF (Sachant)(VIP)
	Conseiller aux Forêts (Sachant)(VIP)
	Conseiller juridique (Sachant)(VIP)
Ministère du Plan et de l'Economie	Représentant du MPE
Ministère des Finances du Budget et du Portefeuille Public	Représentant du MFBPP
Conseil Départemental de la Sangha	Président du Conseil Départemental de la Sangha
Préfecture de la Sangha	Secrétaire Général de la Préfecture de la Sangha
	Directeur Départemental Economie Forestière Sangha
	Directeur Départemental Environnement Sangha
Sous-Préfecture de Pikounda	Sous-Préfet de Pikounda
Village Molanda	Président du Comité de village de Molanda Représentant des populations autochtones de Molanda
Plateforme REDD+ Sangha	Représentant Plateforme REDD+ Sangha
CIB/OLAM	4 Représentants
TOTAL	21 personnes

Table 35 - Attendees at the REDD+ Pilot Steering Committee

The meetings resulted in the formal Initiation of the steering committee and approval of the project time line. Budget issues remain under discussion.

7. World Bank Carbon Fund / UN-REDD Meetings - Brazzaville, Republic of Congo

October 2012
The North Pikounda REDD+ Project was invited by the World Bank and UN-REDD to attend concurrent meetings attended by the majority of the Congo Region's primary stakeholders. The meetings were attended by the entire spectrum of REDD+ stakeholders.

The North Pikounda REDD+ Project took part in a side event hosted by the UN REDD+ Program on the evening of Thursday 25 October. The UN-REDD+ Program formally hosted the event entitled Congo Basin MRV Side Event and had presentations from UN REDD+, Democratic Republic of Congo, Panama, World Bank and the North Pikounda REDD+ Project.

Participants and stakeholders of this regional REDD+ meeting were able to learn about the project and what its impacts might be in Congo and the Congo Basin.

The Project, in conjunction with the RoC, also organised a filed trip for the participants and delegates and as a result, nearly 70 persons were able to see first hand the activities of CIB in Pokola.

8. Ongoing Meetings with Republic of Congo National REDD+ Coordination Team

On-going

CIB-Olam and Carbon Conservation are in continues contact with the RoC National REDD+ Coordinator. The teams meet regularly in order to ensure the integrity and longevity of the project, and to further ensure that Congolese forestry directives and norms are adhered to, especially in respect of the MRV aspects of the Project.

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