CHINKO CONSERVATION AREA REDD+ PROJECT, CENTRAL AFRICAN REPUBLIC

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Project Title	Chinko Conservation Area REDD+ Project, Central African Republic
Version	10
Date of Issue	15 November 2023
Project Location	Central African Republic in the prefectures of Mbomou, Haute-Kotto and Haut-Mbomou.
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Project Lifetime	15 September 2016 – 14 April 2045
GHG Accounting Period	15 September 2016 – 14 April 2045
History of CCB Status	Not applicable, applying for a joined VCS – CCB validation and verification
Gold Level Criteria	The project aims to qualify for Gold Level criteria in the Biodiversity and Climate, a brief description of the activities planned and expected results are provided below. **Benefits on Biodiversity.** The project will achieve exceptional biodiversity benefits by conserving threatened fauna species including at least five critically endangered, nine endangered, as well as 12 vulnerable species. The project will continuously monitor these species with special focus on *Pan troglodytes schweinfurthii*, *Lycaon pictus* and *Loxodonta cyclotis.* In addition, preliminary results of the vegetation inventory showed the presence of certain typical rain forest like the critically endangered Mukulungu (*Autranella congolensis*) the endangered Wenge tree (*Millettia laurentii*) and true African ebony (*Diospyros crassiflora*). These species are heavily exploited all over their range and Chinko is a valuable stronghold for major individuals and might be crucial for the long-term preservation of a diverse gene pool for this economically important tree species. Project activities will contribute to the conservation of these species through the protection of their natural habitats, an improvement in connectivity between the area and its surroundings and a reduction in human pressure on the biodiversity in the CCA. Project activities include the development of infrastructure to ensure optimal management of the CCA, training and equipping of a sufficient number of rangers, effective law enforcement activities and sensitization activities with local communities to ensure the benefits of healthy eco-systems are well understood. **Benefits on Climate.** In the CAR the vulnerability to changes in the climate and a lack of ability to adapt to their adverse impacts represent serious threats to the management of ecosystems and other agricultural and renewable natural resources, social cohesion, stability and sustainable development. The implementation of the REDD project will create positive net climate change impacts. The sequestration of carbon in living biomass and the avoided deforestation of natural covers which act as sinks of CO2 will contribute to the reduction of GHG emissions in the project zone. The measures to assist communities and biodiversity to adapt to the probable

	impacts of climate change are designed to avoid the loss of forest cover by fighting the main drivers of deforestation. The main activities in relation to this are sensitise pastoralists to promote sustainable use of natural resources in line with the land-use plan and establish transhumant pastoralism corridors (TPCs). In addition, establish a good relationship with the local communities to enhance local skills training, welfare development, self-sustaining business development and sensitise the communities to promote the sustainable use of natural resources in line with the land-use plan and identify key income-generating opportunities. These goals are being addressed through a sustainable and holistic land use planning: The Land Use Plan, which includes all required pastoralist corridors and exclusion zones, is agreed upon and communicated to communities. The purpose for a plan and strategy for Greater Chinko is contributing to regional stability and ensuring long term sustainable use of natural resources for the communities. Further implementation of the Land Use Plan will create the proper conditions for stability in the region using the conservation and protection of ecosystems for community benefits.
Expected Verification Schedule	15 September 2016 – 31 December 2020

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1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or Impact Estimated by the End of Project Lifetime	Section Reference
Overall impact: To have a restored, well-functioning and sustainably managed protected area that serves as anchor point and contributes to the security of the larger landscape and the planning, execution and long-term management of natural resource use around the protected area.	2.1.11,4 and 5
Outcome 1: Improved transhumance management and resource use through conflict mitigation, sensitization and better land use planning	2.1.11 and 4
Outcome 2: Promotion on sustainable and controlled natural resource use through ownership, training and monitoring of co-management zones with communities	2.1.11 and 5
Outcome 3: Increased natural capital through the restoration of resilient and productive ecosystems. The project aims to restore species rich and productive woodland and grassland savannas, tropical forests and productive freshwater systems. This will result in higher wildlife densities, restoration of threatened species and reintroduction of locally extinct species.	2.1.11 and 5

1.2 Standardized Benefit Metrics

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
GHG emission or reductions removals	Net estimated emission removals in the project area, measured against the without-project scenario	Not applicable	
	Net estimated emission reductions in the project area, measured against the without-project scenario	4,558,205[1] tCO2e	3.2.4
Forest[2] cover	For REDD[3] projects: Estimated number of hectares of reduced forest loss in the project area measured against the without-project scenario	Data not available: the baseline emissions models predict cumulative emissions over time rather than a rate of ecosystem conversion in hectares per year.	
	For ARR[4] projects: Estimated number of hectares of forest cover increased in the project area measured against the without-project scenario	Not applicable	
Improved land management	Number of hectares of existing production forest land in which IFM[5] practices are expected to occur as a result of project activities, measured against the without-project scenario	Not applicable	
	Number of hectares of non-forest land in which improved land management practices are expected to occur as a result of project activities, measured against the without-project scenario	Not applicable	

[1] Ex ante emissions reductions for the first 10-year baseline period.

[2] Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (*VCS Program Definitions*)

[3] Reduced emissions from deforestation and forest degradation (REDD) - Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (*VCS Program Definitions*)

[4] Afforestation, reforestation and revegetation (ARR) - Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (*VCS Program Definitions*)

[5] Improved forest management (IFM) - Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood and fuelwood (*VCS Program Definitions*)

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
Training	Total number of community members who are expected to have improved skills and/or knowledge resulting from training provided as part of project activities	Approximately 400 employees and frequent exchanges with about 35 different communities and roughly 2,000 individuals.	4
	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities	Approximately 500 given the heavily male biased nature of certain activities such as hunting, mining, and pastoralism.	4
Employment	Total number of people expected to be employed in project activities,[6] expressed as number of full-time employees[7]	Approximately 400 employees with 60 non-armed eco-monitors, 60 non-armed tango officers and about 30 rangers.	4
	Number of women expected to be employed as a result of project activities, expressed as number of full-time employees	At least 10. Given the nature of the work and the difficult circumstances. Efforts are spent to increase the number of women employed.	4
Livelihoods	Total number of people expected to have improved livelihoods[8] or income generated as a result of project activities	Data not available. All adjacent communities will benefit from the Chinko Conservation Area (CCA). Improved livelihoods are expected in at least three levels. 1) Improved security (fewer armed groups and uncontrolled movements), 2) Preservation of wildlife	2.1.6 and 4.2.1

[6] Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.

[7] Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from the UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])

[8] Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. *The Sustainable Livelihood Approach to Poverty Reduction*. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
		(mammals, birds, fish, molluscs) that serve as an important source of nutrition for local communities. 3) Diverse ecosystem services such as constant supply of freshwater, protection from erosion, high air quality, amongst others.	
	Number of women expected to have improved livelihoods or income generated as a result of project activities	Data not available. It is expected that around 50% of the adjacent communities are woman.	2.1.6 and 4.2.1
Health	Total number of people for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	Approximately 400 (all employees)	4
	Number of women for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	Approximately 10 (all employees)	4
Education	Total number of people for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	African Parks is not an expert in education. However, sensitisation programs for all local employees (approximately 400) and community members in 35 villages (2,000 people) benefit from many educational programmes and courses in ecology, conservation, economics and other subjects. African Parks also works closely with students at the University of Bangui and the technical school of Mbaiki.	4.2.1
	Number of women and girls for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	At least 10 (all employees) and a minimum of 500 community members.	4.2.1

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
Water	Total number of people who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Data not available.[9]	4.2.1
	Number of women who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Data not available.	4.2.1
Well-being	Total number of community members whose well-being[10] is expected to improve as a result of project activities	More than 35 local communities will benefit and about 2,000 individuals. Most benefits will come predominately from: i) education, sensitization and training in sustainable use of natural resources ii) co-management and ownership of natural resources and ii) the responsible exploitation of minerals.	4.2.1
	Number of women whose well-being is expected to improve as a result of project activities	About 500, given the heavily male biased nature of certain activities.	4.2.1

[9] All adjacent communities benefit from ecosystem services provided by the CCA. A constant supply of freshwater (even during the dry season) is supplied by major rivers like Mbari, Chinko and Mbomou which are morphologically and ecologically in a pristine stage.

[10] Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Livelihoods, Health, Education and Water), and may also include other benefits such as strengthened legal rights to resources, increased food security, conservation of access to areas of cultural significance, etc.

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
Biodiversity conservation	Expected change in the number of hectares managed significantly better by the project for biodiversity conservation,[11] measured against the without-project scenario	In 2014, African Parks began to manage an area of about 20,000 km^2. After the signature of the new PPP on April 15th 2020 this increased to about 24'300 km^2. In 2023, a land-use plan will be proposed to the government of the CAR to actively manage 64,700 km^2 for nature conservation and sustainable development in a conservation landscape of existing protected areas of total 80,000 km^2. Sustainable land-use plans will be suggested to local communities for another 20,000 km^2 in the Eastern CAR Wilderness.	2.1.11
	Expected number of globally Critically Endangered or Endangered species[12] benefiting from reduced threats as a result of project activities,[13] measured against the without-project scenario	At least five Critically Endangered and nine Endangered species (Table 46)	5.2.1

[11] Managed for biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation, e.g. enhancing the status of endangered species

[12] Per IUCN's Red List of Threatened Species

[13] In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit.

2 GENERAL

2.1 Project Goals, Design and Long-Term Viability

2.1.1 Summary Description of the Project (G1.2)

The Chinko conservation area REDD+ project is an initiative initiated by African Parks to sustainably manage a part of eastern Central African Republic (CAR), a unique area where savannah and tropical forest meet. The project is intended as a grouped one, in which the long-term vision is to manage multiple sectors of eastern CAR in the prefectures of Mbomou, Haute-Kotto and Haut-Mbomou (See in Figure 1 the geographical boundaries). African Parks has an agreement with the CAR government in place since 2014 for the protection of four hunting zones and signed a new one in 2020 for the inclusion of new ones.

The conditions prior to the implementation of the project had several factors that impacted the well-being of communities and community groups living on the periphery of the project area. These include insecurity in the region, persistent conflict between transhumant pastoralists and local communities, lack of education and employment opportunities, and poor healthcare. These factors had an impact on the ecosystems and biodiversity of the region as well, where practices like unsustainable hunting and an economy of illegal wildlife trade, transhumant pastoralism and unsustainable agricultural activities were performed widely.

The overall objective of the project is to secure a core protected area in eastern CAR and to actively engage in the land use planning and sustainable management of the surrounding areas in order to restore and improve ecosystem functions and habitat, through community engagement, law enforcement and restoration and conservation activities. Below are the specific objectives.

Climate objectives: Enhance the restoration of natural ecosystems, leading to increasing the CO_2 storage and avoiding the emissions resulting from disturbance and conversion.

Community objectives: Improve the lives, livelihoods and safety of local communities by implementing community projects, land use planning and sustainable resources management.

Biodiversity objectives: Enhance the conditions for conservation and habitat management including restoration and maintenance of biodiversity and associated ecosystem services while improving the population of endangered species.

The measures to be implemented by the project are focused on reducing the impact of the main agents and drivers of deforestation and conversion, by creating new and more sustainable opportunities for those agents in the wider landscape. These activities include sensitisation of the local communities and transhumance pastoralists, the establishment of pastoralism corridors and more sustainable natural resource use. Moreover, the project will increase employment opportunities, continuation of biodiversity monitoring and restoration of natural areas among others. The success in the implementation of these activities is expected to generate greenhouse gases (GHG) emissions reductions (Check section 2.1.11 for more details of the project activities).

Upon the implementation of the project activities described above, the project is expected to generate an estimated annual average of net emissions reduction of 442,839 tCO2e and a total of 4,558,205 tCO2e for Sep 2016 – Dec 2026 period, according to the Non-Permanence Risk assessment the buffer discount obtained was 6.5% but the minimum assumed is 10%, therefore, after applying the buffer the average amount of tradable VCUs per year during this period is 398,553 and totalling 4,102,366 for Sep 2016 – Dec 2026 period.

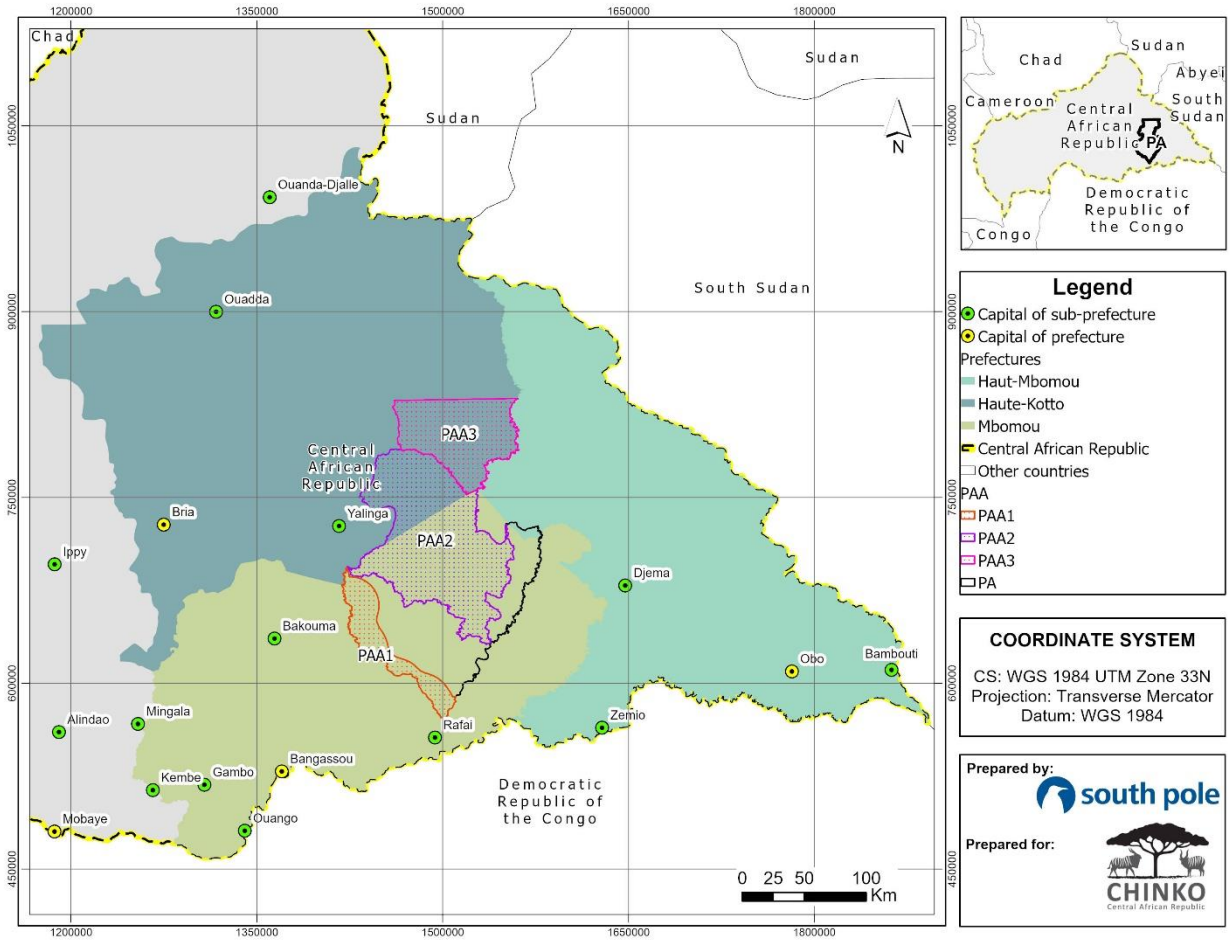


Figure 1: Project location[14] showing the project area, the project accounting areas and the expected geographical boundaries of expansion of the grouped project in the East of Central African Republic (prefectures of Mbomou, Haute-Kotto and Haut-Mbomou).

(Source: South Pole, 2023)

2.1.2 Project Scale

Project Scale	
Project	
Large project	X

2.1.3 Project Proponent (G1.1)

Organization name	African Parks RCA
Contact person	Jean-Baptiste Mamang-Kanga

[14] A full-size map and KML files are also available in the supporting documentation

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2.1.4 Other Entities Involved in the Project

Organization name	African Parks Network
Role in the project	Overseeing the management of the project
Contact person	Matthias De Beenhouwer
Title	Nature-based solutions manager
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Organization name	South Pole Carbon Asset Management Ltd.
Role in the project	South Pole plans and oversees the development of appropriate project design and monitoring techniques in line with VCS and CCBS guidelines.
Contact person	Jhoanata Bolívar
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2.1.5 Physical Parameters (G1.3)

Eastern CAR, where CCA is located, is one of the most inaccessible places on planet Earth where unique conditions of vegetation, habitats and ecological and evolutionary processes developed before the great influence of humans many years ago. This makes it a unique area where natural processes can take place, with processes that are unlikely to occur in other regions of the world dominated by humans today. The high productivity of such a natural tropical ecosystem and its resilience allows local people to directly benefit from these natural resources and ecosystem services.

The vast, undisturbed natural vegetation and diversity in this ecotone (tropical forest, forest, grassland) are likely to be a barrier to invasive species and the spread of disease. This is due to diverse habitat conditions and high competition, as well as the substantial effective population size and permanent genetic and

phenotypic variation that can be assumed for most of its organisms (Thomas, Robert, Derek, & Michael, 1997).

Size, connectivity, productivity and resilience are key parameters for the desired environmental framework that will ensure long-term nature conservation and sustainable natural resource use in eastern CAR. Conditions in which ecological and evolutionary processes can develop without significant human influence must be maintained and preserved for long periods of time. A self-regulating natural system that can dynamically adapt to changing conditions over time and can maintain a high level of biodiversity and resilient ecosystem functions, regardless of human intervention.

Below is a summary description of the basic physical parameters of the project, for details of the project location and geographic boundaries please refer to Figure 1.[15]

Topography

The following topography conditions can be found in eastern CAR:

Valleys, gorges, rifts

- The tropical dense northern Congolian lowland rain forest (Gbako or Limé) is the natural climax vegetation of soil that is sheltered from dry winds, intensive sun and fires by valleys, gorges or rifts. It can maintain moisture even during peak dry season (February–March) and during exceptional droughts. This is at least the case for areas up to 7.2°N that receive on average a minimum of 1,400 mm/a of precipitation and experience a dry season of maximum six months with less than 100 mm of precipitation on average.
- Tropical freshwater rivers and streams are the natural habitat that occur along major drainage systems. Most larger rivers are permanent at their middle and lower parts but show high seasonality and often completely dry out in their headwaters and upper stretches during the dry season. In general, most small- to medium-sized forest streams dry out completely during peak dry season (February–March) whereas medium and large woodland savanna rivers keep at least some surface water during the entire dry season. Lakes, ponds and other stagnant large waters are extremely rare given the long geological history of erosion and extremely limited tectonic and no glacial activities in the last millions of years.

Flat rocks, thick laterite layers and inselbergs

- Tropical dry edaphic grassland (Lakéré or Pémbéré) is the natural climax vegetation of soil that contains only a thin layer of a few centimetres of small particles. It is otherwise a hard layer of rock or laterite, impenetrable for large root systems and exposed to dry winds, intensive sun radiation and fires.
- Tropical temporary shallow freshwater ponds are common during the rainy season (May–November) on large rock fields where dry edaphic grasslands occur. Most of these ponds dry out completely and are filled up again during the rainy season over many cycles.

Floodplains, depressions, and sources

- Tropical humid edaphic grassland (Lando) is the natural climax vegetation of soil that is flooded or hyper wet with stagnant water during prolonged periods of the year.
- Tropical standing freshwater in temporal and permanent small lakes, ponds or flooded forests occur, thinly distributed, along certain lowland rivers that created the flat plains (mainly Ango, Bita,

[15] Coordinates as KML files are available at: Supporting information [2. General\Location]

Vovodo, Ali, Képi, Ngoangoa and Mbari). The hydrology of these small permanent waters might be extraordinarily complex and highly fragile. Any change in the morphology of the rivers associated, or a large-scale alteration of vegetation, might profoundly affect these hydrologic systems. It is likely that common hippopotamuses play a central role in keeping some of these water systems free from vegetation and slow down or even partly reverse the sedimentation of surface waters.

Rolling hills, plateaux, and lowlands

- Tropical open woodland savanna (Ngonda) is the natural climax vegetation of well-drained, flat or medium steep soils that are exposed to dry winds, intensive sun and fires. In general, climate, edaphology and the topography of eastern CAR are in favour of wooded savanna, which dominates large areas and is the biggest natural habitat in the region. However, species composition of the open woodland savanna, as well as percentage of tree cover and the average height of woody vegetation, differ tremendously between different sites and might be affected by edaphology, nutrients as well as biological process.

Soils

CAR soils are mainly ferralitic on sandstone for most of the territory and become tropical ferruginous towards the north. The ferralitic soils are more fertile than tropical ferruginous soils (FAO & GEF, 2018).

Ferralitic soils cover three quarters of the territory, particularly where high rainfall favours the hydrolysis of rock minerals to a great depth. These soils are poor in nutrients, acid, fragile, highly desaturated, often poorly drained with some inclusions of soils with gravelly or indurated horizons. Some are depleted in clay and appear on sandy materials from quartzite (Mbrés) or sandstones (Mouka-Ouadda, Kembe-Nakando and Carnot). Once they get degraded, ferralitic soils do not recover easily, and sometimes turn into bare crusts hardly recoverable (FAO & GEF, 2018).

Climate

Average total rainfall

Average annual precipitation ranges from 750 mm in the extreme north to >1,700 mm in the extreme south. This range of precipitation allows for a diverse woody vegetation, spreading from dense forests to open woodland savannas and shrublands. Areas receiving more than 1,600 mm are generally dominated by dense forest, areas receiving 1,600 mm to 1,000 mm are generally dominated by humid open woodland savanna and areas receiving 1,000 mm to 750 mm are generally dominated by shrublands.

Distribution of rainfall over the year

The length of the dry season with average monthly precipitation lower than 100 mm and the absolute minimum rainfall in the driest month of the year might set limits to the potential vegetation of the area. In eastern CAR the dry season with at least 17 mm, ranges from three months (December, January and February) to eight months, with up to five months without any rainfall at all (October to May). This is likely to the main driver for certain typical dense forest species that do not tolerate extensive dry periods, even if sheltered from surrounding hot and dry climate.

Average temperature

With an average monthly temperature from 24.4°C to 26.4°C, the climate in eastern CAR is typical tropical with no extremes.

Hydrology

The CAR hydrographic network is divided between two main basins. The Chari-Logone basin in the north, represents around one third of the country area and flows into Lake Chad. The Congo basin, the most important one, represents almost two thirds of the country area and flows into the south (Boulvert, 1987).

The Congolese basin is made up of two major sub-basins, the Oubangui and Sangha rivers. The Oubangui basin occupies more than three-quarters of the Congo basin. It stretches from east to west, as far as the Democratic Republic of the Congo (DRC), with the Uélé being the main contributor. The Oubangui is formed by the meeting of the Uélé and the Mbomou downstream from the city of Ouango. The Mbomou river originates from the Congo-Nile interfluve in the extreme southeast of the country, on the borders with Sudan and DRC, not far from Mount Navandou. Its main tributaries are the Ouara, the Chinko and the Mbari (Ministère de l'Environnement et du Développement Durable, 2013).

The project area is bordered along most of its east and west area by the Chinko and Mbari rivers.

Vegetation types

The CAR is located in an ecological transition zone. In the southernmost part, the closed canopy forest, mostly dense and humid, covers about 15 percent of Central African territory (Billand, 2009), this forest corresponds to the northern part of the closed forest in the Congo basin. The extreme north of the CAR is made up of Sahelian grassland and shrubby or grassy savannahs, while the central part of the country is made up of open forests and mosaics.

The vegetation types in the project area are classified in four major strata[16]:

- Closed canopy forest: found mostly in the southern part, covering around 48% of the current project accounting areas (around 1.19 m ha).
- Open woodland savannah: found in the central and northern part, covering almost 42% of the project area (around 1.05 m ha).
- Wet edaphic grassland: found mostly in the northern part and around the water streams, covers around 3% of the project area (around 0.07 m ha).
- Dry edaphic grassland: found mostly in the northern part, covers around 7% of the project area (around 0.16 m ha).

Figure 2 presents the vegetation types described above.[17]

[16] Values and percentage based on the 3 PAAs submitted for validation

[17] Full-size map available in the supporting documentation

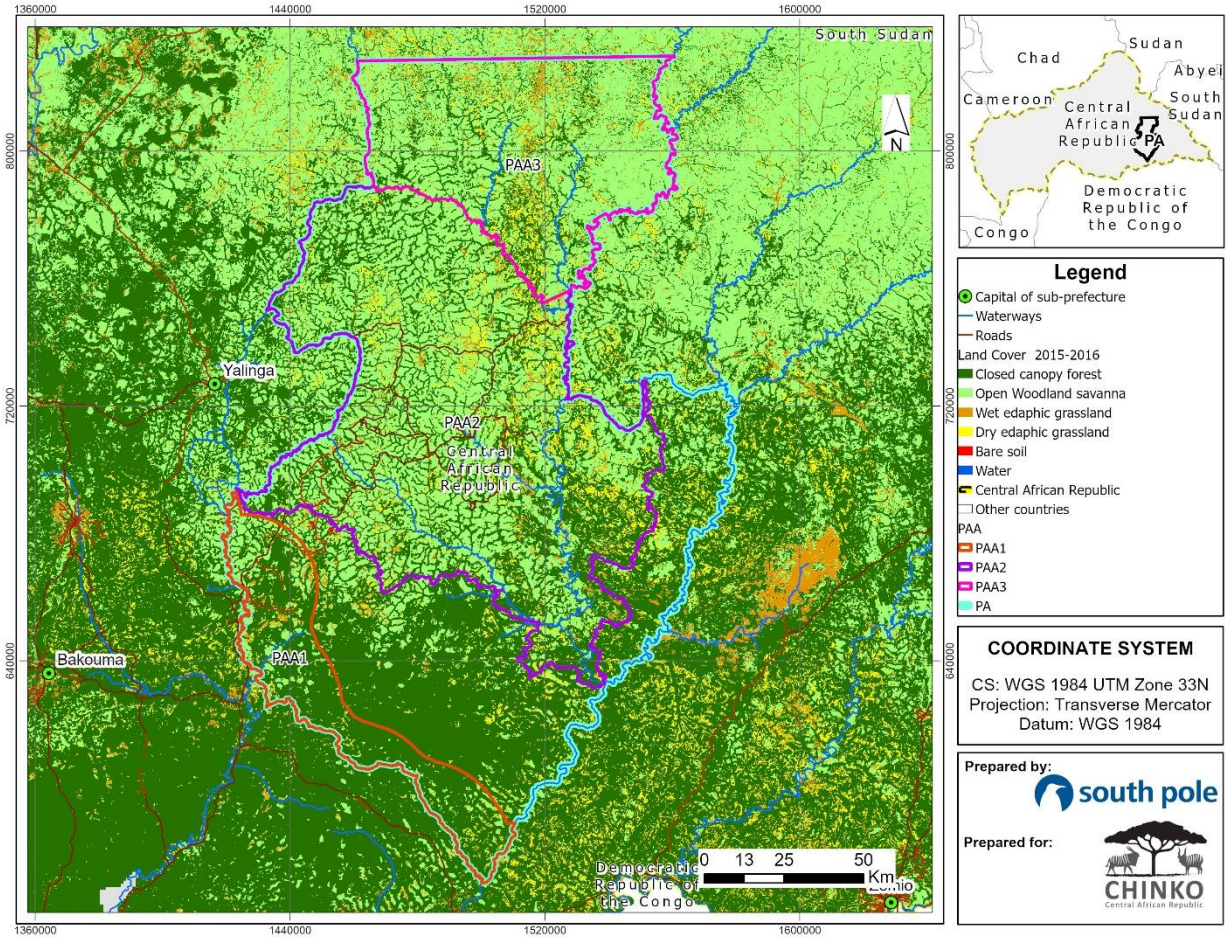


Figure 2: Vegetation cover of the project area showing the shift from Closed Canopy Forest in the South (Project Accounting Area 1) to more Open Woodlands in the North (Project Accounting Areas 2 and 3)

(Source: South Pole, 2023)

2.1.6 Social Parameters (G1.3)

The project consider two main stakeholders, local communities and transhumance pastoralists, below is a description of the social parameters related to both stakeholders.

Local communities

The CCA is located mostly in the Mbomou prefecture, in the south-eastern part of the CAR, close to the 'African Pole of Inaccessibility', where the borders of CAR, DRC and South Sudan meet. The area falls mainly within three local administrative areas within the Mbomou prefecture. These three sub-prefectures are Bakouma, Bangassou and Rafaï as well as Yalinga in the Haute-Kotto prefecture. The project area initially consisted of four former hunting zones, Bas Chinko, Chinko, Mbari and Vovodo Chinko, which were created in 1972. Later, in 2020, after the signing of the new mandated another former hunting zone was included in the project, *Trois Riviére*.

Main settlements

At present the CCA is uninhabited and only has limited road access and minor infrastructure development. The headquarters of the project are located 256 km from Bakouma (the nearest local authority with a population of between 800 and 1,200 inhabitants) and 370 km from Bangassou, the regional capital.

The following villages are located around the periphery of the project area: Nzako-Bac (Yakossi), Oua (Lavougba), Fodé, Kitika, Ouanda, Dénguiro, Agoumar, Sélime, Madabazouma, Banga, Yongofondo, Bangassou, Ouango, Yongossaba, Vougba, Balifondo, Rafaï, Mogba, Meskiné, Katembour, Guérékindo, Dembia, Baroua, Derbissaka, Djéma, Lengo, Bakouma, Nzako, Yalinga, Bria, Bani, Bangana, Sam-Oundjia, Ouanda-Djallé, Ouadda, Birao, AmDafok, Karamadar, Banima and Daradou.

The exact population of the region is unknown but average human population densities for tropical woodlands is amongst the lowest in the world.[18] It is estimated that the prefecture of Mbomou has a population of approximately 150,000 to 200,000 people, mostly living in cities. The population of Haut-Mbomou is approximately 50,000 to 80,000 and that of Haut-Kotto between 100,000 to 150,000. The population Vakaga is also somewhere between 50,000 to 80,000 people. These estimations are supported by the experiences of the African Parks teams that are familiar with the landscape.

Population growth is high in the region, mainly driven by low education, lack of birth control and family planning, non-functional family structures. There are also nomadic herders and accompanying merchants that use the wider landscape temporarily with a strong tendency to settle down and occupy the region in long-term if not carefully managed.

Socio-cultural information

The local agriculturalists in the region are Bantu people. The Bantu people living in the vicinity of Chinko are Banda (subgroups Langba, Langbassi, Yakpa), Mbangui, Ngbugu (Ngbougou), Nzakara, Sango and Yakoma (Ondoua Ondoua, G. et al, 2017).

The armed groups that have been identified as operating in the larger geographic landscape surrounding the project area are as follows: the Lord's Resistance Army (Uganda), the Janjaweed (Sudan and South Sudan), the Sudan People's Liberation Movement (SPLM) & SPLM-in-Opposition (SPLM-IO), Sudan People's Liberation Army (SPLA) and SPLA-in-Opposition (SPLA-IO), the Séléka and ex-Séléka and the anti-balaka (CAR) (Ondoua Ondoua, G., Beodo Moundjim, E., Mambo Marindo, J.C., Jiagho, R., Usongo, L. & Williamson, 2017).

The region surrounding the project area is characterised by the presence of large numbers of transhumant pastoralists with the total population being close to 50% Bantu and 50% Fulani. Around Chinko, Bantu farmers and Fulani pastoralists live in the same towns and villages.

Land-use and economic activities

Poverty is prevalent in the region and there are few economic opportunities for the communities living in the area. As a result, local settled communities are greatly dependent on natural resources. These isolated communities make their living through small-scale slash and burn agriculture, livestock rearing, hunting (both legal and illegal), fishing, harvesting of non-timber forest products (NTFPs), artisanal mining, small trade, temporary employment and handicrafts.

Small-scale agriculture

[18] Personal communications with African Parks, 2021.

Growing crops is a major livelihood activity of most Bantu communities in the area. In general people cultivate one or two fields each year, each with an average area of 0.6 ha (Ondoua Ondoua, G. et al, 2017). Most fields are cultivated by the owners, who grow mainly food. Rice is the top cash crop, with an average production of 147 kg per household per growing season, followed by cassava, peanuts, corn, beans, tomatoes, potatoes, vegetables and coffee (Ondoua Ondoua, G. et al, 2017). This produce is sold locally and any surpluses are sent to periodic markets at other locations.

Livestock

Some Bantu families keep free-ranging animals including cattle, pigs, small ruminants (goats and sheep) and poultry (chickens and ducks). The settled Fulani rear large ruminants, mostly cattle and donkeys. Cattle herds range between 150 and 300 animals per herder (Ondoua Ondoua, G. et al, 2017). The problem of space management between herders and farmers can lead to conflict. The Fulani keep cattle as a means of financial investment and although meat and dairy products are used when receiving visitors, to celebrate at festivals and weddings and as gifts, these products are rarely treated as commodities. They are sold only occasionally, to address specific needs.

Hunting

Hunting, both legal and illegal, is the most important source of income for many local people in the area. This hunting can be classified into three main types: firstly, small-scale legal hunting by local people, secondly, small-scale illegal hunting by relatively local individuals and finally, large-scale illegal hunting by armed non-state and state actors. The latter is organised poaching, and the subsequent trafficking of wildlife is often facilitated by political and administrative authorities as well as criminal networks.

Small-scale hunting (both legal and illegal) is an important activity for local communities living around the CCA. Local people hunt in the savannas throughout the year, but most intensively during the rainy season. They hunt with home-made shotguns, wire snares, dogs and sometimes with bows and arrows. Smoking is the usual means of preserving bushmeat, which is either consumed within the household, or sold at village markets and then often sold on at bigger regional markets. Wildlife by-products, such as horns and skins, are sold or used for ceremonial purposes.

Fishing

Fishing is also essential to local communities, providing an alternative to meat as a source of protein. Many local people fish in the riverheads during the dry season, when fish are most abundant, and much of the catch is consumed by the family. However, a significant proportion of annual income (9.7%) comes from the sale of fish (Ondoua Ondoua, G. et al, 2017).

Harvesting of Non-Timber Forest Products (NTFPs)

The collection of NTFPs provides relatively small quantities of diverse food items and commodities. People collect bark (for traditional medicine), caterpillars, Gnetum (*Gnetum africanum* - koko) leaves, honey, Marantaceae leaves, mushrooms and seeds. NFTPs are used in the home, as well as to bring in cash (Ondoua Ondoua, G. et al, 2017).

Artisanal mining

Some illegal gold and diamond mining took place inside the project area in the past.

Trade

Small trade appears to be a marginal activity for most local people in the region. The products they sell come from hunting and poaching (bushmeat), farming, livestock rearing and fishing (fresh and smoked fish), and include cassava flour, fresh cassava, honey, koko leaves, mushrooms, peppers, plantain, taro

leaves and wild yams (Ondoua Ondoua, G. et al, 2017). These commodities are often sold at gold and diamond mines. Small traders also sell necessities such as cooking salt, matches, paraffin, soap and sugar. Foods found for sale at local markets include avocados, corn, eggs, peanuts, rice, tomatoes and occasionally cows' milk.

Temporary employment

Several types of temporary employment are available in the region: short-term jobs as porters and/or guides to take part in surveys, research and monitoring, or demarcation and zoning missions. Other temporary work opportunities involve the clearing of fields, digging sand, loading and unloading of vehicles, and assisting with river transportation between towns (Ondoua Ondoua, G. et al, 2017).

Handicrafts

Local people make baskets, crossbows, fishing traps, furniture (such as chairs and shelves in bamboo, cane and wood), raffia mats (used as roof lining) and satchels (made of cane and lianas used to carry food).

Demographics

Housing

In the villages adjacent to the CCA, traditional houses are made of clay or fired brick, with mud floors and roofs of straw or palm leaves. Some houses have corrugated iron sheeting roofs. The Fulani live in small mud-floored huts made of straw.

Access to water

The project has restored the water points in the Bakouma Township, while the Rafaï Township has several water points that are maintained by the communities themselves. Nonetheless, the total number of water points in the region is inadequate.

Access to healthcare

Around the CCA, most people requiring treatment attend clinics in Bakouma, Bangassou or Rafaï. The persisting civil conflict in the region does have an impact on the hospitals of Bakouma and Rafaï. This impact can be seen by the absence of doctors and senior medical staff in these towns. *Médecins sans Frontières* also provides some healthcare in the region (Ondoua Ondoua, G. et al, 2017).

Education

There are few schools at the periphery of the CCA. The Bakouma Township has two schools (one in the centre of Bakouma and one in Fadama). There is also a school in Zemio and one in Lengo. The Rafaï Township has 11 schools but some teachers have over 150 students per class. The middle schools in Rafaï and Bakouma are managed by the Catholic Church and are not free. To address the lack of teachers, informal teachers (schoolmasters or parents) are employed. Many classrooms have unfinished walls, floorings in poor condition, leaking roofs and no blackboards. Schools are faced with a persistent lack of educational materials, and the books available have to be shared amongst pupils. The closest secondary school is in Bangassou. Only about 20% of primary students enrol in the secondary system, and an even smaller portion of them complete secondary education (Ondoua Ondoua, G. et al, 2017). Most children belonging to the semi-nomadic communities do not attend formal schools.

Communications and roads network

The Bakouma and Rafaï townships have a phone network. The towns of Bakouma and Rafaï are linked by a deteriorated dirt road. Few people in this region own a vehicle, therefore traffic is mainly by means of 4x4 vehicles belonging to international NGOs and heavy goods trucks. Motorcycles are a more common means

of transport, but fuel costs are high. Most local inhabitants walk or use a bicycle to go to their fields or visit neighbouring villages. There are several airstrips in Mbomou prefecture, including a landing strip at the project's headquarters.

Household income

Hunting is by far the most important source of income for households (59.5%), four times that generated by agriculture (15.1%) and six times the money earned from fishing (9.7%) (Ondoua Ondoua, G. et al, 2017). It is unclear how much of this comes from legal sources. It is, however, unlikely that such high income comes from legal sales alone.

Transhumant pastoralists

Besides the local communities described above, the region surrounding the project area is characterised by the presence of large numbers of transhumant pastoralists.

Characterised by an extreme form of strategic mobility, transhumant pastoralism has a long history in the Sudano-Sahelian ecoregion. Spanning the transition from Congolian rainforest to the arid Sahel, the ecotone's characteristic forest-savannah mosaic spurred the development – and expansion – of highly sophisticated pastoral societies. Yet unlike in areas farther west, transhumance has only recently become a significant phenomenon in eastern Central Africa.

All Fulani are classed as marginalised, minority peoples by the Office of the United Nations High Commissioner for Refugees (UNHCR) and the United Nations Development Programme.[19] They do not live in fixed abodes or practice agriculture but spend most of the time travelling in search of new pasture for their cattle.

Although pastoralism has a long history in Darfur (Western Sudan), it has only recently become relevant in CAR. Fulani presence in Darfur dates to the 17th century and trade was primarily conducted within Sudan and with neighbouring Chad, and herds rarely ventured further south than northern Vakaga in CAR. However, their pattern of movement was fundamentally disrupted by the Darfur War (2003-present) and South Sudanese Independence (2011).

The Darfur War had a devastating effect on pastoralism. Violence caused massive displacement, and as whole communities were razed. Also, with South Sudanese independence in 2011, many feared persecutions by the newly independent regime, this resulted in a massive shift into CAR.

Weakened by the Central African Bush War (2004-2007), local institutions were unable to regulate these new arrivals, and this allowed them to penetrate deeper into eastern CAR than ever before, they quickly overran CAR's eastern protected landscapes, these landscapes were ravaged as herders set fires, spread disease, poisoned predators and opportunistically hunted. As private operators and conservationists progressively abandoned the landscape, this effectively left most of the region without any form of organised land management regime.[20]

2.1.7 Project Zone Map (G1.4-7, G1.13, CM1.2, B1.2)

Figure 3 below presents the project zone map. The project zone includes the administrative boundaries of the prefectures of Mbomou, Haute-Kotto, Haut-Mbomou. This area was defined as the project zone

[19] UNDP 2014, available at: https://www.undp.org/content/undp/en/home/librarypage/hdr/2014-human-development-report.html

[20] Pastoralism in Eastern Central Africa: Implications for State, Society and the Environment. Available at: https://pfbc-cbfp.org/news-partner/PASTORALISM-EASTERNCENTRAL.html

because project activities, such as those related to provision of alternate livelihoods and community development, will be done within those prefectures.

As shown in the Figure 3, the project zone includes the location of the communities already consulted but also the areas where other stakeholders are expected to be impacted by the implementation of the project activities and the land use plan (it is expected that offsite climate and biodiversity impacts will be obtained in those prefectures with the proper implementation of the project and the land use plan).

Currently, the project proponent has engaged with all the communities present in the western and southern borders of the project area. Once new instances are added in the project, communities in the central and northern part of the project zone will be also engaged and positively impacted by the project.

The project area is also included in the project zone, as well as the areas of high conservation values, which are defined as transition zones in the bordering of the project perimeter and the communities living on the periphery of the CCA.

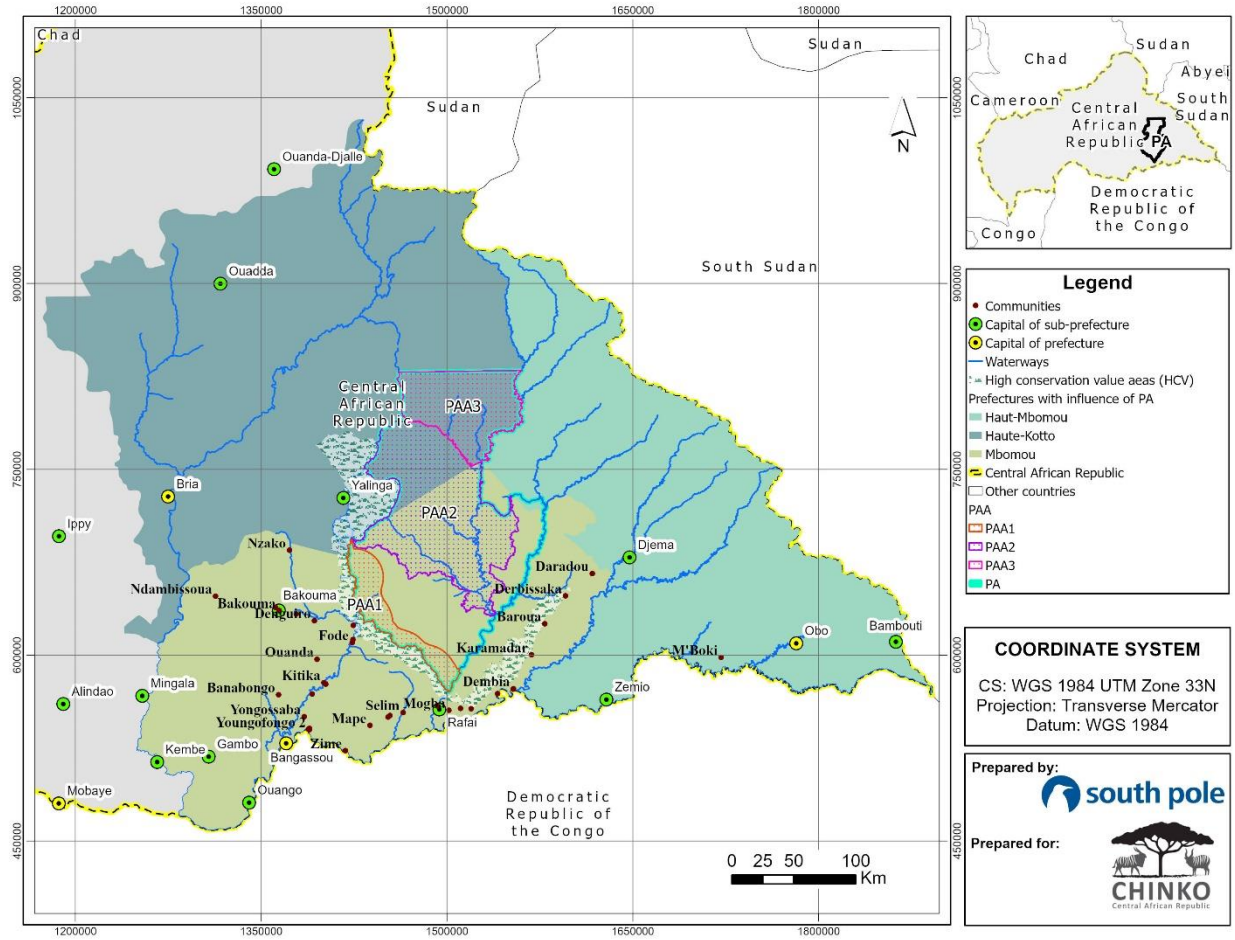


Figure 3: Project zone map which includes the prefectures of Mbomou, Haute-Kotto and Haut-Mbomou.

(Source: South Pole, 2023)

2.1.8 Stakeholder Identification (G1.5)

Because the CCA is recognised as a hunting zone and there are no communities living in the project area, besides the government, none of the stakeholders identified as agents of deforestation have any legal rights to the project area. It must be noted, however, that the project proponent understands the importance of having a strong constituency for conservation amongst the local communities living around the project area and the transhumance pastoralists coming from the north, an important component of the project is therefore to ensure that local communities and pastoralists use, in a sustainable way, the natural resources on which they rely.

Below is an explanation of the identification of the different stakeholders of the project.

African Parks employees

African parks employees are a relevant stakeholder with an important interest in the development of the project and all of them are considered stakeholders of the project since they are a key element in successfully implementing the project activities and ensuring that the project's objectives are met. Employees includes management team, echo-monitors, transhumant officers, control room operators, rangers and general workers, amongst others.

Local communities

For the identification of these stakeholders, the influence area of the project was established as the administrative boundaries of the prefectures of Mbomou, Haute-Kotto, Haut-Mbomou and Vakaga. Within those boundaries African Parks engaged with the communities and other stakeholders that will be directly or indirectly impacted by the project. These local communities are mainly found to the south and east of the project area, but communities from the northern part of the country could join the project at later instances of the grouped project.

The following villages are located around the periphery of the project area: Nzako-Bac (Yakossi), Oua (Lavougba), Fodé, Kitika, Ouanda, Dénguiro, Agoumar, Sélime, Madabazouma, Banga, Yongofondo, Bangassou, Ouango, Yongossaba, Vougba, Balifondo, Rafaï, Mogba, Meskiné, Katembour, Guérékindo, Dembia, Baroua, Derbissaka, Djéma, Lengo, Bakouma, Nzako, Yalinga, Bria, Bani, Bangana, Sam-Oundjia, Ouanda-Djallé, Ouadda, Birao, AmDafok, Karamadar (if people return), Banima (if people return), Daradou (if people return).

The stakeholder identification also considered the main activities done by the communities living there and what is the influence of those activities in the deforestation and degradation in the project area. The local communities living in the eastern CAR are dependent on subsistence agriculture activities as well as hunting, and the use of other forest resources for consumption or as a source of income.

Transhumant pastoralists

The transhumant pastoralists are another relevant stakeholder in the project, they come mainly from the Darfur region of Sudan but also from Chad and have only recently (early 2000s) begun herding their cattle deeper into the eastern CAR and the project area. These stakeholders have been identified as one of the main agents of deforestation and degradation in the project area due to the unsustainable practices they perform. They are identified thanks to the work of the eco-transhumance team of African Parks during the sensitisations done in the dry season and with the regional work that African Parks does in the nearby countries.

Governmental institutions

Governmental institutions that may have potential interest in the project were also included. The government agencies were included according to the roles of each one considering the project activities and the permits needed.

Private and philanthropic institutions

As part of its activities African Parks is in the continuous search of private and philanthropic institutions that could act as financial donors for the implementation of some of the project activities, they identify them based on the interests that those donors could have, for example some are interested in the monitoring of specific fauna species, others in the work with communities are others are less restrictive and provide financial support to the management of the area.

The stakeholder identification and analysis then assessed the rights, interests and relevance to the project for each stakeholder group. See section 2.1.9 below for more details.

2.1.9 Stakeholder Descriptions (G1.6, G1.13)

Table 1: Main stakeholders in the project area

Stakeholder	Rights, Interest and Overall Relevance to the Project
African Parks (AP)	Rights: Africans Parks, as the project proponent, has the legal right to implement the project in the project area. Interest: Their interest is to help restore the core protected area of eastern CAR and to actively engage in the land use planning and sustainable management of the surrounding areas in order to restore and improve ecosystem functions, wildlife and habitat. Overall relevance: The overall relevance to the project is their responsibility for the coordination of all aspects related to the implementation of the project.
African Parks employees	Rights: Africans Parks, as the project proponent, has the legal right to implement the project in the project area. Interest: The interest of the employees is to have a successfully implemented project that can provide employment and income generating opportunities in the region. Overall relevance: African Parks employees (including rangers, echo-monitors and transhumant officers, amongst others) are a key element in successfully implementing the project activities and ensuring that the project's objectives are met.
Local communities	Rights: They have no legal rights of tenure within the project area considering that is an area categorised as hunting zone by the government.

Stakeholder	Rights, Interest and Overall Relevance to the Project
	Interest: The local communities living in eastern CAR are dependent on subsistence agricultural activities, as well as hunting and the use of other forest resources for consumption or as a source of income. Overall relevance: Considering their subsistence use of natural resources in the region, they are a relevant stakeholder for the success in the implementation of the project activities, the theory of change assumes that with a correct engagement and agreements with them there will be a sustainable management of the region and long-term protection of the project area.
Transhumant pastoralists	Rights: The transhumant pastoralists come mainly from the Darfur region of Sudan and have been identified as one of the main agents of deforestation and degradation in the project area, they are foreigners in the country and have no legal rights of tenure nor resource access within the project area. Interest: Even though they have no legal right they are a key stakeholder that must be taken into account for the project success, they are aware of their legal situation and their main interest is to have agreed well managed sustainable corridors for their activities. Overall relevance: They are relevant in the implementation of the project since the success of the activities depends on the engagement and agreements with them and the joint solution that is needed for a holistic and long-term protection of the project area.
Governmental institutions	Rights: The governmental institutions have the right to oversee the proper management of the area covered by the agreement signed with African Parks Interest: Their interest in the project is having a well-protected area that brings new opportunities to the local communities. Overall relevance: These institutions must ensure that interventions in the project area are compliant with national regulations and provide support when needed.
Private philanthropic and international institutions	Rights: The have the right to oversee that the financial resources they provide for supporting project activities are being used properly Interest: The interest of these stakeholders is to financially support the proper implementation of some project activities Overall relevance: They are financial donors for the implementation of some of the project activities.

2.1.10 Sectoral Scope and Project Type

The project falls under scope 14 'Agriculture, Forestry and Other Land Use' (AFOLU) in the category of REDD Avoided Unplanned Deforestation and Degradation (AUDD). It is a grouped project that aims to protect areas covered with natural vegetation in the eastern part of the country which are expected to be converted, degraded and deforested in the absence of the project.

2.1.11 Project Activities and Theory of Change (G1.8)

In 2014, African Parks signed a 50-year mandate with the government of CAR, a mandate that was renewed in 2020 for 25 years. Previous to the arrival of AP to the area the presence of tens of thousands of cattle in CCA was devastating for the ecosystems, its associated biodiversity and soils, considering this, during its first years on site AP, after doing a full sensitization campaign, focused mainly on the law enforcement activities from a biodiversity perspective, later on, and in order to build trust with the communities surrounding the project, some activities focused on solving specific problems for the communities at large.

African Parks as an organisation acting in many countries of the continent, has pioneered the 'Public-Private Partnership' (PPP) model for protected area management. This model guarantees full responsibility for all park management functions which fall in to five pillars (Table 2) and ensures that we are 100% accountable to the government – who remains the owner and determines policy for the landscape.

Table 2: Key pillars

Pillar	Action	Output
Biodiversity conservation	Restore, monitor and evaluate critical landscapes	Ecologically functioning ecosystems
Community development	Engagement, education and enterprise activities	Support base for conservation, poverty alleviation and economic development
Tourism and enterprise	Accelerate economic development through income generating opportunities	Creation of a conservation-led economy
Law enforcement	Secure and protect national parks and reserves	Safety and security for people and wildlife
Management and infrastructure	Develop infrastructure and governance frameworks	Effective park management and robust governance

For the REDD project an identification of the agents and drivers of deforestation, an intervention matrix and a theory of change were developed considering the five key pillars of the organization and the most recent 5-Year-business plan (5YBP) for the protected area. The main deforestation agents are identified as pastoralists, followed by local communities and finally poachers and traders while the main drivers are transhumance and slash and burn agriculture (See section Identification of Agents and Drivers of Deforestation for more details). It is also important to note that the project is not located within a jurisdiction covered by a jurisdictional REDD+ program.

To explain how the project intends to achieve its climate, community and biodiversity (CCB) objectives, the theory of change (ToC) is developed. The ToC assumes that, with a proper land use plan in place which is accepted by all stakeholders, the project will generate benefits for climate, communities and biodiversity beyond the protected area. In the long-term financial, ecological and socioeconomic sustainability for the protected area and the wider landscape is envisaged. To reach that, activities will be carried out both inside and outside the protected area, as shown in the 5YBP.

The Chinko management team today is keeping the cattle out of the boundaries of the CCA and local fauna and flora are reclaiming their place. There are no communities located in the CCA, but there are peripheral communities that rely on the unsustainable extraction of natural resources. These are a priority for Chinko, so promotion on sustainable and controlled use of natural resources and benefiting from the new law enforcement dynamics, along with different project activities, are supporting the communities at large.

The main strategies followed in Chinko are:

- The collaborative design and implementation of a land use plan in the prefectures of eastern CAR
- Managing relationships with neighbouring people and implementing community projects to ensure that they benefit from Chinko's existence. The sustainable and equitable use of natural resources provided by the ecosystem at large is a priority in this regard.
- Enhance the conditions for conservation and habitat management including restoration and maintenance of biodiversity and associated ecosystem services while improving the population of endangered species.
- Providing security for the PA and for the landscape at large through an effective law enforcement programme, accepted by the communities.
- Building necessary infrastructure, including telecommunications, administrative facilities, roads, bomas, workshops and housing and the ongoing maintenance of this infrastructure and equipment.

The remainder of this section will provide further details on the project activities on a short, middle and long-term outcomes. The long-term impact of these outcomes will help achieve sustainability for the project area and the wider landscape. Considering that AP has been managing the area prior to the writing of the PDD, so some activities that will be described have already commenced while others are still under planning and will be implemented at the appropriate time, when resources would become available. More details will be provided wherever necessary.

Biodiversity conservation

The goal is to restore and conserve biodiversity by creating a well-functioning ecosystem while reducing the current pressures that damage the habitat. The Chinko Conservation Area conserves and aims to bring back and restore populations of endangered and vulnerable species according to the IUCN Red List (see Table 46). Therefore, it is important to have a conservation and habitat management plan/structure, that can create the proper conditions for restoration and maintenance of ecosystems with complex interactions.

These activities involve the research and monitoring of wildlife and human activities to optimize conservation activities, and document how wildlife population and habitats are being restored. As an example of collaboration alongside with the community, CCA included the communities in the biodiversity conservation area zoning and planning, in relation to key and or endangered species that will help maintain and restore key habitats, species and ecosystem.

Eco-monitors secure the area of influence and sensitize pastoralists, hunters, fishermen, miners, loggers and local communities and authorities to promote sustainable use of natural resources that prevent negative impacts on biodiversity conservation. In addition, they are helping to incorporate in the land-use planning the Transhumance Pastoralism Corridor (TPC), the Hunting and Fishing Community and Non-Timber Forest Products areas, considering that these are important local needs for communities. Activities are all part of a historic review of socioeconomic conditions and drivers and are embracing the relationship between CCA and the communities.

The development of GIS mapping and Data Analysis System (DAS) to capture wildlife and socioeconomic information will inform adaptive management, planning improvement, and scientific knowledge. This understanding of the landscape can give a better approach to governance and local needs, articulated with

sustainability goals. The activities, therefore, will have a positive impact on the community well-being while focusing on biodiversity conservation.

Transhumance

The identification of the agents and drivers of deforestation in the region concluded that pastoralists are the main agents, considering that their activities directly lead to the conversion of the woodland savanna. In order to reduce the impact of the transhumance, while avoiding to shift the impact to elsewhere in the landscape, different activities have been evaluated, proposed and/or implemented.

African Parks initially worked on clearly delineating and explaining Chinko's borders to the communities in the region. In the first year of implementation (during the 2016 – 2017 dry season), more than 5,000 signs were mounted on trees along the northern boundary road, which is where the majority of the cattle herds are coming from. Large signs were also put up in Bakouma, Yalinga and other villages to provide information about the boundaries of the CCA. During the second year an addition 5,000 signs were mounted to cover the entire protected area boundary (see Figure 4).

In addition, African Parks deployed transhumance sensitization teams during the dry season, the main objectives for such teams are to explain park borders, ecological interactions, conservation goals and sustainable land use approaches to nomadic and local herders.

This process started with employing just one former cattle herder and local Mbororo to work on the Chinko's community program. He had multiple meetings with leaders of the local herders, to sensitize them on the borders of the CCA, ecological interactions, conservation goals and sustainable land use approaches.

The sensitization teams have been deployed in the area since the first year of implementation. They are recruited around mid-October, when the transhumance starts entering CAR, and receive dedicated training before they are deployed in groups of four at the start of the dry season to the north of the reserve's boundary until the end of the dry season May/June.

However, the CCA cannot be sustainable without taking the entire landscape into consideration. Therefore, a good working relationship with communities, as well as with government authorities, is vital to establish a trusting and mutually strengthening relationship to allow both the long-term future of Chinko but also to try and develop the region sustainably through partnerships.

A key to achieve this is the implementation of a land use plan inclusive of a transhumance strategy that will be beneficial to the communities and will pave the way for sustainable resources utilization, peace and governance in eastern CAR. This is why African Parks driving the development of a participative land use plan including proposed transhumance corridors, designated pasture lands around markets in eastern CAR and community-managed forest and fishery zones. This will have to be integrated in a more comprehensive formalized and regulated strategy, approved by all stakeholders at the local, regional and national level.

Designated, monitored and properly enforced transhumance corridors through the Eastern CAR Wilderness can connect Sahelian rainy season pasturelands with key markets in eastern CAR. The aim would be to minimize negative impacts of transhumant pastoralism on the Eastern CAR Wilderness and local communities by taking in mind the carrying capacity of the land and restoring large wilderness while allowing local farmers to benefit directly and indirectly from the presence of transhumance pastoralists.





Figure 4: Echo-transhumance team (left) marking border of the protected area with clear signs as guideline for herders (right), 2016 dry season

Community development

Community development and engagement covers activities both inside and around the CCA, as mentioned before. This is important and relevant because in the CCA there are no communities living inside, and villages that are situated nearby, especially concerning the practice of small-scale agriculture, can have significant impact on the CCA in the short to medium term. Slash-and burn agriculture is by far the most common agricultural practice with communities and involves clearing the forest in small areas and burning it after clearing. This creates severe damage to the ecological functions related to biodiversity and soil conservation, climate regulation and water quality in the region. Therefore, activities will target this specific type of deforestation threat.

Sustainable agriculture

Firstly, it is important to stress that the main focus of African Parks around the CCA in terms of community outreach is to co-implement a framework of sustainable resources use. Depending on the location of the communities, this can go from extraction of natural resources further away from the villages to rolling out sustainble farming practices closer by the villages.

The objectives for sustainble agriculture are two-fold: firstly, to mitigate the impact of protected area management on local communities in terms of reduced access to natural resources,through the improvement of livelihoods based on sustainable natural resource management and agriculture. Secondly, to reduce the pressure for virgin forested land through sland-and-burn agriculture by providing alternative farming techniques that are conserving the soil and that can be scaled up across communities.

To achieve the objectives the main activities are to strengthen coordination with local and national government and civilian agencies/committees and to establish a good relationship with the communities. African Parks also aims to enhance local skills training, introduce new farming techniques and focus on self-sustaining business development.

Initially, activities are planned around the identification of small business opportunities that promote sustainable farming techniques in 3 Mbomou sub-prefectures (Bangassou, Bakouma and Rafaï). Once

those activities are set-up and locally self-sustaining, African Parks will have a clear understanding to scale this across communities and will implement activities focused on community needs.

Specifically, once funding has been secured from carbon credits, African Parks will support 2 farming components in a first phase:

- Scaling-up vegetable gardening in the above-mentioned sub-prefectures. A minimum of three support campaign during the dry season will be developed near water points.
- Food crops: with multiplication plots of cassava cuttings, and groundnuts / maize seeds. A minimum of 16 farming groups will be supported in a first campaign.

Educational support and interventions

CCA supports and promotes research by university graduates from Agriculture/Forestry departments and will employ local people with university degrees completed in the short and middle term. This will contribute to the built up and strengthening of local skills, creating welfare development and self-sustaining business, in-country capacity building, achieving community support for conservation, increasing the incentives for conservation and improving educational levels. Commercial enterprise development is key to create new income and this support will create a new generation of entrepreneurs with local business.

Eco-monitors who carry out sensitization's meetings on sustainable use of natural resources have a good relationship with the communities and are constantly promoting the understanding of the benefits of wildlife/habitat conservation and sustainable use of natural resources. Their role will also increase as they engage in the co-management of buffer zones adjacent to the CCA.

CCA is supporting schools and salary payment of parent-teachers (Bangassou, Bakouma, Rafaï and Nzako) and participates in different activities around education in the larger landscape. CCA is also helping with healthcare facilities and sports competitions in the region like the Bangui marathon.

CCA visits

CCA is committed to train community liaisons, and brings to the area local leaders, national authorities and government delegates yearly to improve their perception of the area.

CCA is creating a committee to achieve these goals and increase governance for the economic growth of the region applying the land use plan being developed. CCA is continuously maintaining the local roads and will coordinate with local and national delegates and ministers, including civilian agencies/committees the continues development of the infrastructure and facilities to innovate and have better services and products to offer.

As an example, awareness campaigns on park activities, which included information on conservation and related national law were heavily targeted towards villages along the south and western sides of the area and were well received, even attracting the support of local authorities. CCA has strengthened focal point offices in surrounding community to ensure that a positive, shareable message reaches the national audience to promote awareness and constituency for conservation.

These goals are being addressed through sustainable land use planning and developing a local green economy through training and securing basic social services and are complemented with baseline studies and reports in written to better comprehended needs. The Land Use Plan, which includes all required wildlife corridors and exclusion zones, is agreed upon and communicated to communities, and an action plan on consultations to further develop it with stakeholders is being carried out. CCA purpose for a plan and strategy for Greater Chinko are contributing to regional stability and ensuring long term habitat for wildlife as a result. Further development of the Land Use Plan will create the proper conditions for stability in the region, conserving and protecting wildlife with community involvement.

Tourism and enterprise

The project area requires the necessary infrastructure, security conditions and competent employment to take advantage of tourism and enterprise development for economic impact. Therefore, it is key to determine the potential tourism enterprises that can be develop in the region, considering the common practices that are in place at the moment like sport hunting and eco-tourism. CCA will create a document with potential tourism zones, where it will identify key income generating opportunities by assessing a broad range of tourism development potentials.

On the other hand, CCA has been and will continue to consult, control and advice tourist operators; load-bearing capacity, fees, seasonal portfolio on products and services among other commitments. The increase in revenue and employment creation from tourism activities are contributing to national fiscus as a result of active standard partnership agreement and conditions for external operators.

Law Enforcement

Given Chinko's geopolitical situation, providing security to the park, its wildlife and surrounding communities is of utmost importance to the long-term viability and survival of this entire area where pressures like transhumance, poaching among others need to be monitor and controlled. To standardize and ensure the highest level of technical competence and professionalism, law enforcement training is and will be carried out for the entire Ranger unit. While the role of eco-monitor team key focus is to monitoring camera traps to document wildlife within the core area, the eco-monitor teams work to ensure the park's boundaries are respected, as well as tracking human activity within CCA to protect the habitat. They are often first responders and able to call for prompt intervention as needed.

Ranger patrolling in CCA is critical for the habitat security. The team does confiscations, sensitization and if necessary, send the captured to the relevant authorities to be apprehended. Safety and security for people and wildlife, and effective procedure with local authorities/ethnic groups and institutions are also carried out when special cases demand it. CCA will plan the restructuring of law enforcement personnel (rangers, eco-monitors, eco-transhumance officers and control room operators) to improve leadership and discipline, prevention of illegal wildlife poaching in the middle term period.

As a result of law enforcement, CCA expects to achieve a core protected area free of cattle with poaching cases confined to the periphery. The promotion and implementation of a comprehensive habitat management plan will help to increase habitat restoration and protect wildlife.

Management and infrastructure

CCA remains the largest employer in Eastern CAR with predominantly local people engaged, full or part-time. This engagement and capacity building will continue to stabilize operations and management, will improve cost-efficiency and enhance credibility. Functional offices in the surrounding communities of Rafaï, Bakouma and Bangassou are operational while the maintenance of headquarters and associated infrastructure is continuously improving. The vision for the project is to build a Community Center in Rafaï and Bangassou, while continuing to improve the operational bases in CCA (rentals of existing housing/office/storage facilities secured). In the middle term construction of housing facilities for senior, middle and low management staff will be carried out, as well as the maintenance and expansion of required airstrips and Forward Operating Bases (FOBs) in the park, that allows for essential management access, taking the growing responsibilities and seasonality into account.

While the CCA improves human capacity, it is also strengthening the relationship with the communities and promoting the standardize operations. Some of the activities that the staff carries on, which serves both staff and community, are the annual road clearing and basic repairs by the road maintenance team.

Improved governance is key for the project area to thrive. Due to training and capacity building development African Parks is innovating in the operation by creating a fit for purpose vehicle and aircraft fleet for park. This includes the provision of air link between Chinko HQ, Bangui and Garamba that allows for adequate personnel and cargo transportation, ensure presence and control throughout the protected area. On this matter CCA will refurnish the vehicle and aircraft fleet operating and will acquire new vehicles and aircraft fleet, following a maintained plan that is prepared.

As for applied technology, to maintain and provide new access on Networks and Information technologies for staff to be better connected, CCA is improving the information network with associated incentive scheme with local partners that will result on a collaborative Early Warning System (EWS) and information sharing platform to acknowledge and provide stability and enabling effective management. Communications infrastructure will provide efficient and secure communication/internet for Chinko operations which includes networks improvement and maintenance: Garmin Delorme network, Iridium, etc... reducing human-wildlife conflict.

As a conclusion impacts on the five pillars will contribute directly to AP Mission (to have conservation impact in Africa for the benefit of both wildlife and people through the management of a diverse portfolio of protected areas that is environmentally, socially and financially sustainable) and project objectives in the short, middle and long term goals by ensuring that (i) the project area enjoys optimal management through a well-equipped, trained and motivated staff operating effectively over the entire area of intervention; (ii) local communities actively support the project's conservation goals and use natural resources in a sustainable way; and (iii) local communities are empowered through the implementation of productive sustainable income generating activities that link the projects conservation objectives with revenue opportunities, the project will achieve its CCB objectives.

For more details on the agents and drivers' identification and its estimated deforestation caused, the interventions planed, its expected outputs, outcomes and impacts and the list of activities see Annex 1.

2.1.12 Sustainable Development

According to the information provided by the Sustainable Development Report 2020,[21] the CAR is the world's lowest-ranked country with an overall score of 38.54 out of 100. This score measures a country's total progress towards achieving all 17 SDGs and can be interpreted as the percentage of achievement.

The country has only achieved two out of 17 SDGs (Climate Action and Life on Land) and it is not possible to ranked it in one: Life below Water. For the remaining 14 SDGs major challenges are still ongoing in order to achieve the SDGs goal (see Figure 5). The trends shows that the two achieved SDGs have a maintained achievement, two of the 14 SDGs not achieved are on track to being achieved, six are stagnating or increasing at less than 50% of the required rate, three are decreasing and three more have no trend data information available (see Figure 6).

As the data shows, it is a major challenge for the country to be on track to achieve the SDGs, the project intends to contribute to maintaining the achieving SDGs (13 and 15) and also to improve the current assessment on at least three more (see Table 3).

[21] Available at:
https://s3.amazonaws.com/sustainabledevelopment.report/2020/2020_sustainable_development_report.pdf



Figure 5: Current Assessment - Sustainable Development Goals achievement

Source: SDG dashboard

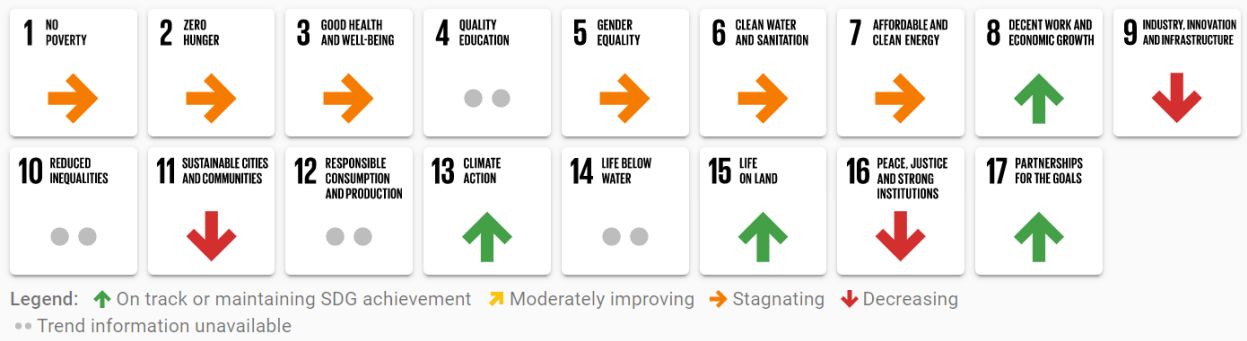


Figure 6: Trends on SDGs achievements

Source: SDG dashboard

Table 3: Project SDGs contribution

SDG	Contribution to national priorities	Monitoring description
SDG 1 – No poverty	In a country with high levels of poverty, African Parks as a project proponent is expecting to support decreasing the poverty level by being the largest employer in the region.	Number of people employed Percentage of employees earning a salary above the poverty headcount ratio at $1.90/day (%) Percentage of employees earning a salary above the poverty headcount ratio at $3.20/day (%)
SDG 8 – Decent work and economic growth	In a country where unemployment and informal employment prevails, African Parks as a project proponent is providing decent work and contributing to economic growth in the region (not only by providing income opportunities but also by paying government taxes). Currently, the project proponent is the largest employer in the region and aims to protect labour rights and promote safe	Percentage and number of employees earning a monthly salary above the national average Frequency rates of fatal and non-fatal occupational injuries

SDG	Contribution to national priorities	Monitoring description
	and secure working environments for all workers.	
SDG 10 – Reduced inequalities	In a country where unemployment and informal employment prevails, African Parks as a project proponent is helping to reduce inequalities in the region by being an equal opportunity employer that aims to eliminate all forms of unfair discrimination such as race, ethnicity or gender in the recruitment and selection of staff.	Proportion and number of employees earning below 50 percent of median income
SDG 13 – Climate action	With the successful implementation of the project African Parks intents to demonstrate to governmental officers that it is possible to integrate climate action measures into strategies and planning.	Net estimated emissions reductions in the project area, measured against the baseline scenario
SDG 15 – Life on land	With the successful implementation of the project African Parks intents plans to progressively increase the protected area and promote the implementation of sustainable management, halt deforestation and help to restore degraded forests.	Chinko conservation area (ha)

2.1.13 Implementation Schedule (G1.9)

Date[22]	Milestone(s) in the project's development and implementation
13 June 2014	Chinko project and the government of the CAR sign an agreement for the management of the hunting zones N° 39, 40, 41 and 48.
December 2014	Chinko became the eighth protected area in the African Parks portfolio.
December 2014	Strategic relationships were developed with conflict research groups and regional military task forces based in the area, in order to advance the overall stability and improve the governance in the eastern CAR region.
January – December 2015	Management and Infrastructure: Construction of the headquarters, securing a core protection zone within the park.

[22] Please note that some milestone does not have a corresponding date but rather a period of time or a specific month.

Date[22]	Milestone(s) in the project's development and implementation
15 September 2016	Project start date: Sensitisation meetings with transhumance herders regarding Chinko's boundaries.
2016–2017 Dry season	Community Development: Focus on sensitisation and relationship building with local leaders and community members.
March 2017–April 2018	Humanitarian assistance: Staff in CCA provided safety and security to around 380 internally displaced people (IDP) who have fled the violence in neighbouring towns held by rebels. The refugees remained for several months until the ethnic violence subsided, and they were able to safely relocate back to their villages. Some of them have been hired as transhumance sensitisation officers, helping their community and reducing the threats that arise from armed cattle herders.
July 2017	On arrival of the transhumance herders from the north, sensitisation teams were deployed to speak with the herders and raise awareness about CCA and its borders. They were able to direct the herders around the protected area.
November–December 2017	All the rangers completed refresher training and advanced tactical training.
4 December 2017	Park management and infrastructure development: CCA organised a conference focused on 'Exploring the intersection between conservation and peacebuilding in Central Africa', and targeted key stakeholders including donors, conservationists and institutions.
2017–2018 Dry season	Sensitisation teams continue to be deployed in the field on the known cattle roads to divert groups around the park.
Second semester 2018	Law Enforcement: African Parks recruited, trained and deployed 32 transhumance sensitisation officers to monitor and educate transhumant herders coming into the CAR from Sudan, one of the major threats in the area.
17 September 2018	Community Development: community sensitisation meeting held in Bangassou saw significant results. Through direct communication with the community, the meeting opened the door to future socio-economic development opportunities.
November 2018	30 transhumance sensitisation officers were recruited and went through an extensive training programme, learning navigation with locus software and usage of satellite devices.
2018–2019 Dry season	Multiple teams of rangers, transhumance sensitisation officers and eco-monitors were deployed. Not only does this help to secure the CCA but it contacts numerous herders from Sudan and has a significant impact on directing the grazing of these people and the probability of conflict. Almost the entire CCA remained cattle-free during most of the season.
January–February 2019	Biodiversity Conservation: Chinko and Vovodo River expedition. 200 km of the Chinko River and 15 km of the Vovodo River was surveyed.

Date[22]	Milestone(s) in the project's development and implementation
March 2019–July 2020	Community Development: local stakeholder consultation and discussions about a comprehensive land-use plan for the periphery of the CCA. The meetings covered all communities (permanent settlements) in the west, south and east of the CCA.
July 2019	Biodiversity Conservation: the first standardised aerial minimum count along major floodplains was executed. The observation of a herd of 52 Eastern Giant elands, six independent groups of 75 eastern buffalo and 11 events of 32 defassa waterbucks, as well as the sighting of an adult roan male antelope along the 580km transect indicate that larger herbivores are widely spread in the Chinko Nature reserve and continue to recover.
26-27th September 2019	Community Development: the CCA was pleased to host various dignitaries, ambassadors and ministers including CAR's United States (US) ambassador, USAID director and the Minister of Water, Forestry, Hunting and Fishing
Nov 2019–Jan 2020	Law Enforcement: training was carried out for the entire ranger unit.
2019–2020 Dry season	Unarmed ECO and transhumance teams in the field, working to sensitise the local communities in the periphery of the park. CCA remained free of cattle.
February 2020	Community Development: a presentation of CCA was made at the US ambassador's residence to key stakeholders in the region. Attendees included representatives from World Bank, the Chinese Embassy, the French Embassy, AFD (French Development Agency), the head of UN Office for the Coordination of Humanitarian Affairs (OCHA), the US Embassy and the Office of U.S. Foreign Disaster Assistance, the National Assembly and the Minister of Water and Forestry. It was followed by a similar presentation held at OCHA during inter-cluster meetings to all UN bodies and INGOs.
15 April 2020	An agreement to expand the protected area to 5.5m ha was signed, start date for the second instance (PAA 3).
October 2020–early 2021	Community Development: local stakeholder consultation and discussions about a comprehensive land-use plan for the periphery of the CCA.
26 November 2020	The last illegal mine within CCA borders was peacefully closed.
November 2020	Forest monitoring process started.
Last quarter of 2023	Envisaged first verification and issuance covering the period 2016–2020.

2.1.14 Project Start Date

The project start date was 15 September 2016. Although the first agreement with the government was signed back in June 2014, no project activities that led to the generation of GHG emissions reductions were implemented in the field and only in September 2016 African Parks started the first campaign with sensitisation officers in the field informing the transhumance pastoralists of the importance of the project

area and the necessity to avoid using the area as a route. This activity led to successful management of the cattle inside the project area during the 2016–2017 dry season.[23]

To comply with the VCS Standard requirements section 3.7.3 AFOLU projects shall complete validation within five years of project start date, however, despite being working since 2019 to fulfil all the standard requirements to have the project validate before such date and considering the usual situation happening since COVID-19 outbreak in early 2020, the multiple country and global restrictions impacted the desired timeline development of the project and the project was not able to complete its validation prior than 15 September 2021. Therefore, back in May 2021, African Parks requested a rule exemption grant to Verra and the standard granted an extension to complete validation.

2.1.15 Benefits Assessment and Crediting Period (G1.9)

The crediting period is from 15 September 2016 to 14 April 2045. The length of the crediting period is 28 years and 7 months.

The period starts with the sensitisation campaigns for the 2016-2017 dry season and ends in the final day of the current agreement with the government (a 25-years agreement that started on the 15 of April of 2020). For more details, please refer to sections 2.1.14 and 2.5.9.

2.1.16 Differences in Assessment/Project Crediting Periods (G1.9)

There are no differences between the GHG emissions accounting, climate adaptive capacity, and resilience, community, and biodiversity assessment periods.

2.1.17 Estimated GHG Emission Reductions or Removals

Year[24]	Estimated GHG emission reductions or removals (tCO_2e)
Sep 2016 – Dec 2016[25]	81,359
2017	189,820
2018	361,667
2019	371,793
2020	433,833
2021	438,890
2022	468,309
2023	499,602
2024	534,535
2025	568,235

[23] Annual and monthly reports are available as supporting Information at: [2. General\Project Start Date]

[24] Following the VCS Standard requirements, since the project will need a revalidation process, ex-ante baseline projections beyond a 10-year period are not relevant nor included at this moment.

[25] For a better alignment of future instances, the project calculates the emission reduction in a calendar year basis.

2026	610,162
Total estimated ERs	4,558,205
Total number of crediting years	10.3
Average annual ERs	442,839

2.1.18 Risks to the Project (G1.10)

Table 4: Project risks

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Political risk – weak governance ratings	The CAR is one of the least developed and poorest countries in the world and scores low across all governance indicators of the World Bank (average score of -1.55 for the period 2015–2019).[26] This could put project activities at risk if government decisions make the incentives for avoiding deforestation less attractive and/or important.	The CAR is a member of the forest carbon partnership. The country has submitted a readiness plan idea note (R-PIN) and a readiness preparation plan (R-PP). This shows that the government is serious about its REDD commitment. Furthermore, African Parks has signed an agreement with the national government to take responsibility for the management and financing of the project area. This is a legally binding commitment to continue management practices that protect the credited carbon stocks over the length of the project crediting period. Finally, the project area is one of the largest employers in the region and maintains healthy relations with various government ministries, particularly the Ministere Eaux, Forets, Chasse et Peche (Ministry of Water, Forests, Hunting and Fisheries).
Political, environmental, and social risk – political instability and conflict	The political and social instability in neighbouring countries such as the Republic of South Sudan could result in the displacement of people in the region. This may result in an influx of people (including	African Parks actively engages with transhumant pastoralists that enter the project area, particularly from Sudan.

[26] Supporting Information: [NPRT\2. External Risks\Political Risk]

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
in neighbouring countries	herders, poachers, armed groups and foreign fighters) into the project area. Environmental degradation in these countries could further exacerbate these influx of foreign herders in the project area in search of fodder for their cattle, as desertification pushes pastures further South.	African Parks has a developed good relationships and has high levels of trust with these herders over the past few years. This allows the project to work together with the pastoralists to identify corridors through which to move that have a minimum impact on the biodiversity and carbon stocks within the project area, while also minimising potential conflict with local communities. Keeping large, contiguous areas of undisturbed habitat will also contribute to halting further desertification.
Political and social risk – security and the proximity of the project area to the territories of known rebel groups.	Various rebel groups are active in the region where the project area is located. This could result in violence towards staff, local communities and put project activities at risk.	African Parks takes security in the region seriously and has hired, trained and equipped a sufficient number of rangers to protect the project area and unarmed teams to engage with local communities. In fact, local communities attribute the relative high security in recent years directly to the project. African Parks also engages regularly with government and other groups (including ex-members of rebel groups) to continue improving security in the region.
Community risk – reliance on natural resources	The communities living on the periphery of the project area are reliant on natural resources for their livelihoods, particularly on bushmeat as a source of subsidence. This may result in conflicts with the project with regards to law enforcement in the project area.	African Parks aims to ensure communities have access to natural resources that they rely on, while safeguarding sustainable use of these resources. The project aims to establish buffer zones that are managed together with communities, where sustainable use of natural resources is allowed. African Parks aims to expand its presence to support surrounding communities and discuss with focus groups (hunters, fishermen,

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
		pastoralists) the best practices leading to sustainable use of resources. The active management of the CCA and the buffer zones will allow hunters and fishermen to find more and higher quality natural resources in close proximity of their villages for an efficient harvest that allows for sustainable practices.
Natural risk – fire	Fires are common during the dry season in the savannah. Especially fires occurring towards the end of the dry season, often as a result of pastoralists aiming to rejuvenate the savannah, pose a significant risk to the carbon stock in the project area.	Fires are common in the project area and play an important role in the healthy functioning of the ecosystems in the region. African Parks has developed a comprehensive fire management plan which it regularly implements.[27] These controlled fires ensure that larger, uncontrolled fires later in the season are unlikely to occur.

2.1.19 Benefit Permanence (G1.11)

As previously explained in section 2.1.11, the theory of change assumes that, with a proper land use plan in place which is accepted by all stakeholders, the project will generate benefits for climate, communities and biodiversity beyond the protected area. In the long-term, financial, ecological and socioeconomic sustainability for the protected area is envisaged to ensure that benefits are maintained beyond the project lifetime

The main measure being designed to maintain and enhance the benefits beyond project lifetime is the establishment and implementation of the land use plan in the prefectures of eastern CAR, this plan wants to achieve a more sustainable use of the land considering the important ecosystems and biodiversity of the area and will have a positive impact on the community well-being and regional stability.

In addition, as stated in section 2.1.11, the first objective of the project has been to ensure that the CCA is well protected and managed in a comprehensive way. By improving management, governance and technical capacities, the project has been able to effectively manage and enforce the national laws with regards to protected areas across the entire CCA through its main law enforcement activities such as sensitization, patrolling and law enforcement. However, AP understands the need to build a strong constituency for conservation amongst local community members and has been engaging with

[27] Fire management plan available in the NPR Report supporting information.

communities through a variety of sensitization activities and other ad hoc assistance wherever possible. These community-based activities will continue to be a major focus of the project moving ahead.

That is why besides the land use plan and law enforcement activities, other measures to be implemented by the project are focused on targeting the main agents and drivers of deforestation and conversion, to give new opportunities that create change in the agents' behaviour. These activities include sensitisation of the local communities and transhumance pastoralists, the establishment of more sustainable practices, increase of employment opportunities, continuation of biodiversity monitoring and protection of natural areas among others. Through the project, it is also envisaged that veterinary, communication and other services will become available in the designated transhumant pastoralism corridors. The success in the implementation of these activities is expected not only to generate greenhouse gases (GHG) emissions reductions but to create a change in the agents' behaviour which will help to maintain and enhance the benefits beyond the lifetime.

2.1.20 Financial Sustainability (G1.12)

As identified in the non-permanence risk tool, the financial factor and the project autonomy to get its own resources are currently the most significant challenges for the project's development. However, African Parks has adopted financial mechanisms to provide an adequate actual and projected flow of funds for the project implementation in order to achieve the objectives, as shown in the cashflow.

For the 2017 – 2030 period the project has secured around 27% of the funds required, without the projected revenues from selling Verified Carbon Units (VCU). It is expected that the carbon credits would provide significant resources to continue developing project activities, which would not have been possible without them.

2.1.21 Grouped Projects

1) Eligibility Criteria for Grouped Projects (G1.14)

The eligibility criteria for the project meet the applicability conditions set out in the methodology (see section 3.1.2), The eligibility criteria have been designed to only include new instances which correspond to the areas within the prefectures of Mbomou, Haute-Kotto and Haut-Mbomou with similar characteristics to the project area. This makes them subject to the same community and biodiversity without-project scenario described in sections 2.2, 4.1 and 5.1. Also, the eligibility criteria are subject to the baseline scenarios and additionality described in sections 3.1.4 and 3.1.5. They will be subject to the same stakeholder engagement as the one described in section 2.3.

In addition, considering that it is envisaged to increase the project accounting areas throughout the project crediting period, African Parks will include new instances once the eligibility conditions are guaranteed, once the project is believed to start reducing GHG emissions and similar project activities and monitoring elements can be applied as described in this document. The expansion of the conservation area in a progressive manner rather than a quick expansion will generate the best results and conditions to comply with the requirements.

Finally, new instances will be added only in areas when there is evidence of project ownership held by the project proponent from the respective date of each project activity instances as is the case of PAA 3 that was added once the new agreement with the government guaranteed the project ownership.

2) Scalability Limits for the Grouped Projects (G1.15)

The threshold for the project expansion is defined as the prefectures of Mbomou, Haute-Kotto and Haut-Mbomou. This is the area in which the long-term plan related to the optimal land use management will be applied, in order to achieve the benefits of the project.

3) Risk Mitigation Approach for Grouped Projects (G1.15)

Considering that each instance of the project will be added once a new agreement with the government is signed, consultation with the local communities is made and financial sustainability is met, no new risk to climate, community and biodiversity benefits is foreseen. On the contrary, the benefits of the project would expand its coverage.

Although a risk analysis will be done for each new instance, all the related risks should be the same as the ones identified in section 2.1.18 as well as in the AFOLU non-permanence risk tool.

2.2 Without-project Land Use Scenario and Additionality

2.2.1 Land Use Scenarios without the Project (G2.1)

See sections 3.1.4 and 3.1.5, which contain the description of the baseline scenario as well as the potential land use scenarios and the associated drivers of land use changes most likely to occur within the project zone in the absence of the project.

2.2.2 Most-Likely Scenario Justification (G2.1)

The most likely land use scenario in the absence of the project is a continuation and increase of the extensive transhumance pastoralism activities implemented without a proper analysis of carrying capacity of the land considering its limitations and the impact on the ecosystems and associated biodiversity as well as the subsistence driven activities performed in the region by local communities like unsustainable mining and shifting agriculture practices. For more details see sections 3.1.4 and 3.1.5.

2.2.3 Community and Biodiversity Additionality (G2.2)

Although the project has activities that generate biodiversity and community benefits, these also face the same barriers as the other project activities (see barriers in section 3.1.5), and without funding from the sale of GHG credits it is unlikely that the project activities would be able to be implemented or continue in the future. The implementation of the proposed project activities will require a joint effort between local communities and African Parks, to guarantee effective conservation and local sustainable development. These activities, without the revenue from the sale of GHG credits, would not be possible.

In the absence of the project, the communities living on the periphery will continue with a lack of employment opportunities, considering that Chinko is the largest employer in the region. Considering the fact that the population is characterised by high levels of poverty, as a result, the local communities are greatly dependent on natural resources, which in a without-project scenario will mean continuous deterioration of the biodiversity resources of the area, non-sustainable use of the forest resources and the loss of habitat for animal species of global conservation importance.

Without the project and the support from African Parks in the implementation of the land use plan in eastern CAR, the persistent conflict between transhumance herders and local agricultural communities is also likely to continue. It is likely that conflict over land between farmers and cattle herders in the CAR will, in fact, increase in the future. This would be as a result of the increased cross-border migration from Chad and Sudan to find new pasture as a result of the desertification in the areas north of Chinko. It is also expected

that the increased availability of veterinary drugs will further allow these humid regions to become viable migration routes for transhumant pastoralists crossing into the CAR from Chad and Sudan. Without the activities proposed by the project, CCA is likely to see an influx of illegal pastoralists and a rise in conflict between local communities and these seasonal migrants.

Unsustainable hunting and poaching will continue to take an enormous toll on populations of tropical mammals, birds, reptiles and fish species in the project area. It is widely recognised that losses of vertebrate populations can disrupt plant-animal interactions, threatening the integrity of natural ecosystems.[28]

For more details see sections 4.1.4 and 5.1.3.

2.2.4 Benefits to be used as Offsets (G2.2)

There are not any distinct benefits for community and biodiversity intended to be used as an offset.

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

As mentioned in section 2.1.8, the stakeholders are: African Parks employees, local communities, transhumant pastoralists, governmental institutions and private philanthropic and international institutions. Below is a description of how full project documentation has been and will be made accessible.

For the employees, physical copies of the final documents will be made available at the parks' offices.

For local communities one way to share information is that the documentation is translated into French and distributed amongst their representatives and local government structures. A second strategy that is used due to the high levels of illiteracy amongst local community members but also for the transhumant pastoralists is the dissemination of the project information through local staff such as community liaisons and sensitisation team (presentation materials are used wherever possible during workshops). These employees have experience and training in engaging with local communities around the project area, as well as the transhumant pastoralists that enter the CAR from neighbouring countries.

Using their accumulated experience and the guidelines developed, local staff have been able to accurately describe the content of the draft project document (PD), to explain the verification process and the significance of these documents, and to respond to any questions or concerns that may have been raised by community members or other stakeholders to the project.

For other stakeholders with more technical background, such as governmental institutions and private and philanthropic financial donors, African Parks is providing them access to project documentation and delivering frequent reports of the project activities.

It is expected that once the project is validated, and the first monitoring report is verified, meetings will be held with the different stakeholders to share the final PD and monitoring report. This process will be repeated after each monitoring period. Also, as requested by the standard, and in order to ensure

[28] Poulsen, J.R., et al. 2013. Ecological erosion of an Afrotropical forest and potential consequences for tree recruitment and forest biomass.

transparency of the project, the project design and monitoring documents will be made available to the general public through VERRA website.

2.3.2 Dissemination of Summary Project Documents (G3.1)

In addition to the activities described in section 2.3.1, summary project documentation has been actively distributed and discussed in direct meetings to communities living on the periphery of the project area. This summary documentation was primarily translated into French for the national entities but is discussed with the communities in their local language. Printed copies of these summarized reports as well as flyers and posters have been distributed amongst workers, communities, local government structures and other stakeholders, where appropriate. The summary documentation included information on the project description, project goals, design, and long-term objectives.

Again, due to the low levels of literacy in the region, the summarised information has also been presented to local community members by African Parks. Meetings were held in surrounding villages to provide details of the following:

- definition of the project's climate, community and biodiversity objectives
- location of the project
- definition of the boundaries of the project area (where project activities aim to generate net climate benefits) and the project zone (where project activities are implemented)
- description of project activities
- grievance mechanism

Information about African Parks, including contact information, was also provided to communities during these meetings. It was explained that community members can contact African Parks at any stage during the project's lifetime to request project information and documentation. African Parks will also undertake regular visits to all communities throughout the project's lifetime to continue sharing information about the project with local communities.

A summary of the initial monitoring report will also be provided to local communities (translated into French and presented orally through community meetings). This report will include information on monitoring results that show that the project has delivered net positive climate, community and biodiversity benefits. During the lifetime of the project all results will continue to be shared among community members through workshops and meetings and in printed form where appropriate.

2.3.3 Informational Meetings with Stakeholders (G3.1)

All informational meetings with local communities and other stakeholders were conducted by local staff who benefit from existing relationships and trust within local community structures. A comprehensive guidance document was developed to ensure that local teams had a thorough understanding of the requirements set out by the CCB Standards, and training sessions were conducted via phone/Skype calls with staff and project managers on the ground to clarify any questions they had before the informational meetings took place.

All stakeholders were proactively invited to the informational meetings. Due to the lack of communication, infrastructure and high rates of illiteracy around the project area, invitations were directly informed to all stakeholders with an explanation of the purpose of the informational meetings and consultations. Reminders were also played over the radio the day before the meetings to ensure maximum participation.

In total, 14 villages were visited at least once to hold informational meetings with community members. These villages were Bangui, Mbaiki, Bakouma, Denguiro, Lavougba, Fode, Madabazouma, Rafaï, Bangassou, Dembia, Derbissaka, Djema, Baroua and Ouanda. Delegates and community representatives from surrounding villages were invited to these meetings to ensure widespread representation from all communities living on the periphery of the project area.[29]

During the informational meetings, nature conservation and sustainable use of natural resources was discussed, including a section focused on deforestation and degradation. The project objectives were also discussed, and possible impacts were identified. The communities' perceptions of the project were encouraged during these meetings.

Meetings in Bria and Rafaï were also held that targeted the transhumant pastoralists. These meetings were used to inform the herders about deforestation and REDD programme as well as the project objectives. Hundreds of herders have also been personally contacted by the unarmed transhumance officers and been informed about the project objectives and boundaries. These interactions allowed for the herders to have the project goals and objectives explained first-hand, in the field. A new transhumance regional focal point is currently working with the projects transhumant officers to further improve the quality of information shared with the herders as well as the types of data collected from them. Furthermore, the goal of this focal point is to establish direct connections to pastoralist communities in Darfur in order to organise stakeholder meetings directly in the key pastoralism communities with leaders and influential people.

2.3.4 Community Costs, Risks, and Benefits (G3.2)

Communities and pastoralists

African Parks subscribes to the guiding principles for Free, Prior and Informed Consent. They have a strict policy that ensures that the following decision-making processes are taken into account during the development of a project:

1. free from coercion, intimidation or manipulation.
2. prior to allocation of land for particular uses or approval of specific projects. Lead time should reflect respect for time requirements of indigenous consultation/consensus processes.
3. informed at a minimum, and based on full available information, about the nature and scope of any proposed project or activity, including:
    - areas that will be affected
    - the potential economic, social, cultural and environmental risks and benefits
    - type of law enforcement work and possible impact, and
    - the timeframe of the proposed project and organizations/actors likely to be involved.

Information should be in a language easily understood by the affected people, delivered in a culturally appropriate way, and available from independent sources. Communities may also require capacity building on unfamiliar issues to be truly informed.

4. consent requires time and an effective system for communicating among all affected community members and taking decisions through customary or other community-defined decision-making processes. It requires that affected people are able to say yes or no at each stage of the project. Consent is to be given or withheld by the community as a whole; no single individual or representative can make the decision. Consent should result in equitable agreements and should be part of ongoing processes of communication and negotiation, rather than a one-off action.

[29] Supporting documentation: [2. General\ Informational meetings]

By subscribing to these principles, it was necessary that communities and other stakeholders were involved in the project through full and effective participation. During the local consultation with the community, project activities, risks and benefits were clearly explained. The community had time for questions in which they expressed their concerns. The impacts of the project activities focused both on impacts on biodiversity and on local communities and other stakeholders.

It was also explained to the participants how the project supports and promotes the following safeguards:

- actions complement or are consistent with the objectives of national forest programmes and relevant international conventions and agreements
- respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws
- the full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities
- actions are consistent with the conservation of natural forests and biological diversity, ensuring that the REDD+ actions are not used for the conversion of natural forests, but are instead used to incentivise the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits.

Finally, African Parks also used the opportunity to express its commitment to the principles of doing good and do not harm.

Employees

When a new employee is hired, they are communicated of the costs and risks they may face in their daily job[30] and the actions needed for mitigating the risk (more details in section 2.3.17). As a way to mitigate such all project employees are required to undergo training before they take up their roles in the project. The training is designed to inform workers of any potential costs and risks they might face, and how to reduce them. For example, all rangers receive extensive training on the use of firearms to ensure that risks are minimised. African Parks has a strict HR policy that covers workers' safety and meets international best standards. All these procedures are followed in the context of this project.

But workers are also aware of the benefits[31] provided by African Parks in the implementation of project activities, they understand that African is providing decent work and contributing to economic growth in the region (The project proponent is the largest employer in the region and that has a positive impact in the surrounding communities). The employees also feel proud of working with African Parks and they feel that their work has a significant contribution to the country and to protecting the natural resource of the country.

2.3.5 Information to Stakeholders on Validation and Verification Process (G3.3)

The measures taken for informing communities and other stakeholders of the process for CCB validation and verification is that during the local consultation meetings, sensitization processes and other workshops done by African Parks during their operations, the participants of such events (e.g. African Park workers, transhumant pastoralist, local communities and government and institutional representatives) are informed and/or reminded about the REDD+ project and the required registration process (including the validation and verification), noting that an external auditor (from a validation and verification body) at some point in the future will visit the area to carry out this process.

[30] Note that according to the CCB Standards v3.1 the phrase 'costs and risks' equates with negative impacts.

[31] Note that according to the CCB Standards v3.1 the term 'benefits' refers to positive impacts.

Because of the high levels of illiteracy within local communities, the communication methods used for informing the stakeholders of the validation and verification process is doing explanations orally during the workshops and engagement sessions. For the first audit, once the dates for the audit were decided, African Parks team was in charge of carrying out the informational process as described in the section below.

2.3.6 Site Visit Information and Opportunities to Communicate with Auditor (G3.3)

Once the dates for the audit were decided, African Parks workers, pastoralists, community representatives and government officials were informed in advance of the visit from the auditor through the following measures and communication methods[32]:

- Inform the workers in Bangui office and in Kocho (Chinko's headquarters), via group meetings and discussions, of the auditors site visit and their opportunity to interact with them in an independent and freely manner during the auditors' stay in Chinko office and headquarters. In addition, the dates of the audit were added in the bulletin board in Chinko headquarters so all employees could see it.
- Inform the participants of the 20202 *Comité de pilotage des Aires protégées et ses périphéries* (CAPEP) workshop, through the terms of reference of the workshop, of the auditors site visit and their opportunity to interact with them in an independent and freely manner during one day of the workshop.
- Engage with transhumant pastoralists in the northern part of the country and inform them, via direct interaction with African Parks workers and representatives, of the auditors site visit and their opportunity to interact with them in an independent and freely manner during the auditors' visit to Sam-Oundja.
- Engage with local herders in Rafaï and inform them, via direct interaction with African Parks workers and representatives, of the auditors site visit and their opportunity to interact with them in an independent and freely manner during the auditors' visit to Rafaï.
- Invite representatives from nearby communities to go to Kocho and brief them, via direct interaction with African Parks workers and representatives, of the auditors site visit and their opportunity to interact with them in an independent and freely manner during the auditors' stay in Kocho.

The purpose of the auditor visit was made clear and dates of the visit were communicated. It was explained that during the visit, they will have the opportunity to communicate with them in an independent and freely manner, even in the absence of the project proponent considering the availability of local interpreters.

2.3.7 Stakeholder Consultations (G3.4)

As with the informational meeting, consultations took place with local communities living on the periphery of the project area, as well as with other stakeholders. As described previously, a comprehensive guidance document was developed, and training sessions were conducted via phone/Skype calls with staff and project managers on the ground to clarify any questions they had before the consultations started.

Again, invitations were printed and hand delivered in person to explain the purpose of the consultations. Reminders were also played over the radio the day before the meetings to ensure maximum participation.

[32] Evidence available at: [2. General\Audit communication]

In areas where not all community members were able to attend consultation meetings, community representatives were invited to ensure widespread representation.

Figure 7 shows the villages consulted in which different meeting has been held during the 2019 – 2020 period.[33] A number of consultations also took place with transhumant pastoralists in the region.

In each meeting, participants were given a brief description of the project and the agenda for the day. The agenda was kept as clear as possible, focusing on the explanation of the project. The following agenda points were covered during the informational meetings with stakeholders.

- explanation of the project
- discussion on safeguards in REDD+
- presentation of the project activities
- identifying the project's environmental and social impacts
- discussion on feedback and grievance redress procedure
- discussion on monitoring
- workers' relations

The aim of the project was explained to the stakeholders in detail. This included the project's location, information about African Parks and their motivations, who else is involved, and the project phases and timelines.

In addition, an exercise was carried out in which the participants were asked questions related to the project, through which the community's level of understanding about the project process could be identified. This exercise provided another opportunity for any concerns regarding the project to emerge.

It was clear from the consultation process that local communities and other stakeholders are supportive of the project, its activities, and goals. For example, the consultation process allowed all stakeholders to agree on where the most suitable corridors for transhumant pastoralists will be established. The location for these corridors was discussed in depth during meetings with pastoralists, government, and ex-rebel leaders familiar with the project area.

Similarly, local communities who are engaged in illegal mining activities in the project area have been involved all along the processes of closing the illegal mines. In addition, they have participated in developing the strategy for opening new mines in the transition zone and applying and enforcing responsible mining techniques that have minimal impact on vegetation and the hydrological system.

At the meeting, the complaint procedures and protocols (Feedback and Grievance Redress Procedure) were also explained and discussed to ensure that stakeholders agree that the selected methods are the most appropriate. See section 2.3.12 for more details.

[33] Full-size map available in the supporting documentation

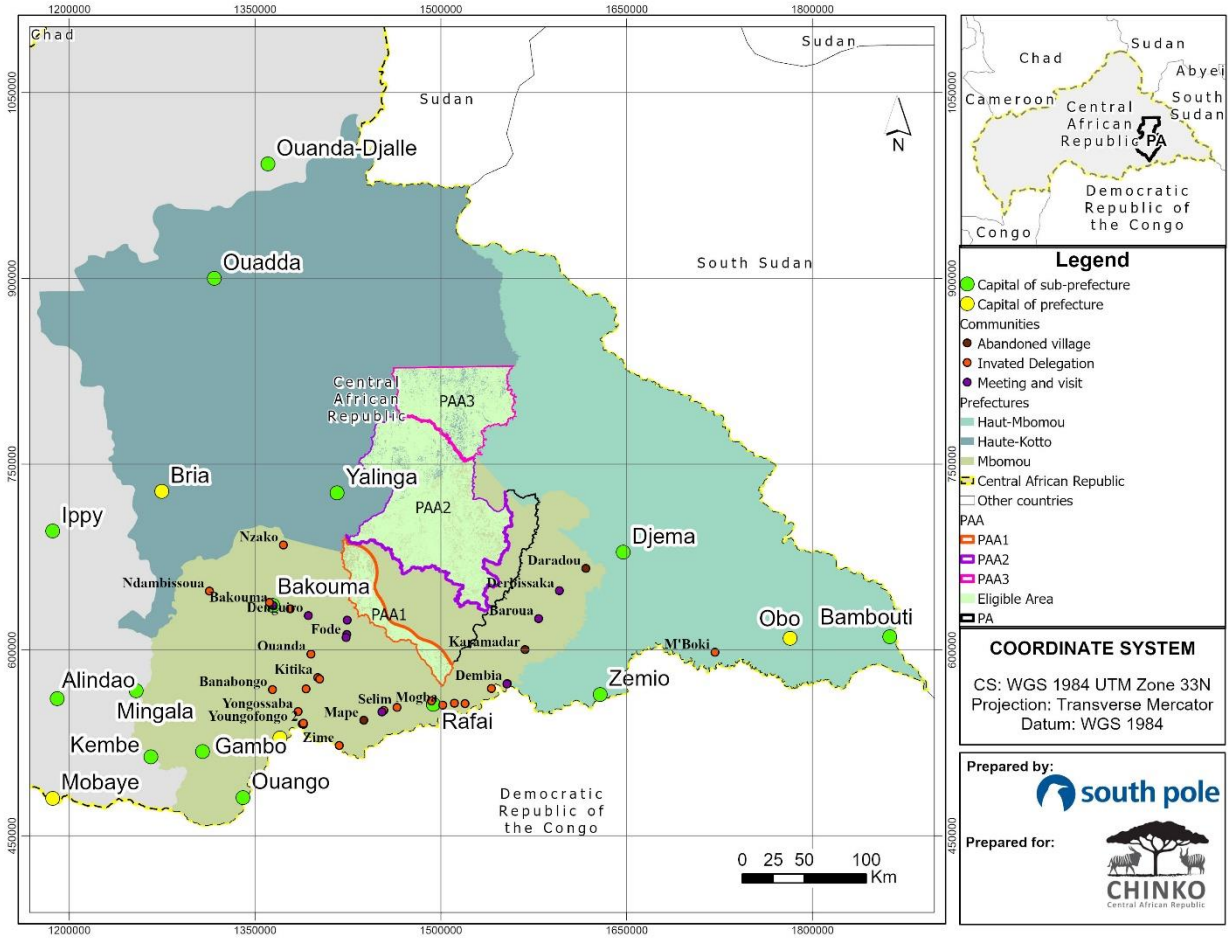


Figure 7: Consulted communities in the region, informed about the project through consultation, are indicated by black and yellow dots.

(Source: South Pole, 2023)

2.3.8 Continued Consultation and Adaptive Management (G3.4)

Communication and consultation have taken place and will continue to take place on an ongoing basis between African Parks and local communities and other stakeholders surrounding the project area. The project will allow for the employment of additional staff in various roles that will engage with local communities and transhumant pastoralists regularly. These roles include armed rangers, unarmed echo-monitors and unarmed transhumant officers. These workers will be hired from surrounding communities, whenever possible (see section 2.3.15 for more details on employment opportunities).

These project staff members, after receiving the required training, will be in regular contact with local communities and transhumant pastoralists to ensure they are updated on the project activities and their impacts. These staff members will also be the main point of contact for local communities and transhumant pastoralists to notify AP on any potential conflicts, grievances or negative impacts the project may have on them. This structure of ongoing consultation, feedback and adaptive management in combination with rigorous data collection for the M&E will allow the project to improve and adapt the implementation continuously according to the changing circumstances on the ground.

Further consultations with local communities and the transhumant pastoralists will be conducted regularly through the ongoing sensitisation activities by AP staff and through the community liaisons as the ones established in Nzako, Yalinga, Debrikassa and Fode. The community liaisons engage with local communities on a regular basis throughout the year.

The eco-monitors and rangers will work with local communities on the periphery on the project throughout the year and therefore, be a continuous, ongoing mechanism for communication and consultation between the local communities living in the area and African Parks. The transhumant monitors, on the other hand, will be deployed annually (during the dry season) to engage with the transhumant pastoralists when they enter the CAR from the north. This will ensure that there is also effective communication and consultation with these groups and African parks.

Because of African Parks' presence throughout the region it is expected that all questions and/or inquiries of the people should be resolved in a timely manner and also that the stakeholders inputs are considered within the project activities.

2.3.9 Stakeholder Consultation Channels (G3.5)

African Parks management team performs periodical meetings with the employees of their team to inform them about the results of relevant activities as well as to plan the correct development of the future ones, employees are heard, and suggestions are considered.

In regard to local communities and pastoralists, African Parks has community liaisons and sensitisation teams in the region to engage with them on a regular basis throughout the year, these stakeholders are aware of the liaisons and sensitisation teams and engage with them for consultations and information when needed. This provides an effective communication channel that allows efficient and constant communication between stakeholders and the project team.

In addition to this, African Parks is actively performing meetings and workshops where the community can participate. Due to logistics constraints, and respecting the local hierarchy conditions, the representatives of groups (such as representative of woman, youth, fishermen, hunters, pastoralists, among others) are invited to a common previously defined area rather than having workshops in each town. At each meeting, the contact numbers of the project proponent are shared so that people interested in the project could be involved and engaged throughout the life of the project. This consultation process, where relevant, is then documented and potential next steps identified by the community management team.

2.3.10 Stakeholder Participation in Decision-Making and Implementation (G3.6)

During the consultation process, the identification of possible impacts was discussed with the participants. Collaborative working was encouraged, to promote the participation of all attendees (men, women and children) in the group discussion. All participants were encouraged to speak freely and express their opinions without feeling judged.

As stated, extensive engagement has taken place between African Parks and local communities living around the CCA. The REDD+ project has been communicated to all stakeholders, but beyond that, continuous sensitization and engagement has been taking place since African Parks signed their agreement with the government to manage the CCA. This has ensured that African Parks understands the local culture and encourages effective participation. The project can only succeed in the long-term with sufficient community buy-in, and African Parks has been actively working to build a local constituency for

conservation among local communities. Rangers, unarmed eco-monitors and unarmed transhumant officers are all hired from within the local communities to maximize cultural sensitivity. Similarly, African Parks has worked closely with the transhumant pastoralists that enter the CAR from Sudan to ensure that alternate grazing corridors do not create conflict and can meet the herders' needs.

Building community capacity is an important focus of the project activities in order to ensure the involvement and input of communities during the project life cycle. The feedback of participants from all meetings and workshops are considered and incorporated in the ongoing land-use plan that is being developed. A good example is a second Transhumance Corridor in the south after local herders and farmers agreed on developing a corridor through Niakari but admitted the complexity of this task and proposed a corridor north of Niakari as a short-term solution. This suggestion was accepted, and African Parks is now working on a strategy together with "Invisible Children" to establish a well-organized local transhumance corridor from the old village of Mapé to Bakouma.

All these measures have been, and will continue to be, implemented with active participation and decision making by the communities, without gender discrimination, and respecting the cultural customs of the parties concerned.

2.3.11 Anti-Discrimination Assurance (G3.7)

African Parks has an excellent reputation, do not participate in, and are not complicit in any form of discrimination or sexual harassment. They have policies in place that aim to provide a workplace that is free of discrimination and sexual harassment, and where employees respect one another's integrity, dignity, privacy and right to equity in the workplace. African Parks has a strict human resources (HR) policy that follows CAR labour laws and international standards. All recruitment processes are transparent, and the procedures are non-discriminatory, and based on merit.[34]

The participation of the community in the project has been inclusive, in respect to individual and gender-independent capacities, cultural identity and religion. Our community staff is trained in anti-discrimination to ensure highest standards to avoid discrimination whenever interaction takes place with community members.

2.3.12 Feedback and Grievance Redress Procedure (G3.8)

African Parks has a Human Rights Grievance Mechanism composed of three main processes: complaint filing, review and settlement.[35] This mechanism allows for the reporting of, and response to, accusations of human rights abuses related to park management activities. The mechanism is designed to:

- address potential breaches or violations of African Parks' Human Rights policies and procedures, including all law enforcement activities;
- ensure compliance with the African Parks Human Rights standards as set forth in the Code of Conduct and Statement of Principles document;
- be accessible to all stakeholders;

[34] For more details of its policies please refer to: Supporting Information: [2. General\ Human Rights Statement of Principles]

[35] Available as supporting documentation in the grievance mechanism folder: [2. General\ Grievance mechanism]

- keep complainants well-informed of progress of cases brought forward; and
- maintain records on all cases and issues brought forward for review.

Besides the general mechanism that African Parks has, there is also a local one for Chinko, which is a consensual and operational mechanism for managing conflicts and concerns related to the management activities of African Parks in the CCA. The mechanism is designed to fully consider the needs and context of the local communities in the area as partners rather than beneficiaries or vulnerable groups. The principle is to respect their rights and take their opinions into account. The mechanism is designed to:

- Provide feedback on concerns/grievances from the population regarding the management activities of the CCA;
- Report and address abuses or allegations of human rights or legal violations;
- Ensure compliance with APN operational standards and procedures; and
- Be accessible to all stakeholders.

This mechanism and the channels for submitting a complaint (described below) are regularly disseminated to the local communities through communication campaigns supported by AP's staff. All outreach staff are able to inform the community of the existence of the complaint channels and how the procedure works.

The channels for receiving complaints are:

1. Suggestion boxes:

They are set up in large villages around the CCA. These boxes are locked and only AP personnel have the keys. These boxes are installed in a secure location.

Chinko's personnel collect the letters in the presence of at least two community leaders with whom they draw up and sign a receipt report that specifies the number of letters collected before forwarding them to the human rights focal point, who follows up.

2. Directly during engagement meetings

Discussion groups and focus groups discussions (men, women, community leaders, administrative and local authorities) are organized during missions to the communities bordering the protected area. Also, as far as possible and depending on logistics, there are missions to transhumant communities in order to meet with these groups who cannot access the channels installed in the villages.

During those meetings these actions are taken:

➢ Inform the community and/or transhumance pastoralists about Chinko's complaint management mechanism and the functioning of the channels set up,

➢ Collect their concerns, complaints or grievances,

➢ Reiterate the awareness of the communities or transhumance pastoralists on their rights and duties towards the protected area.

➢ Communicate the status of grievances to complainants.

3. Green Line

A free telephone line is available and managed by an operator following the confidentiality principle. The operator registers complaints and collects as much information as possible via a form made available to him/her.

4. Local Development Consultation Committees

Recently, the sustainable development department has set up local development consultation committees (GCDL) in villages surrounding the park. Since these committees are located in the communities, represent

the communities, and meet twice a month to discuss various issues related to community concerns, they will also be used as a channel for complaints.

Types of complaints:

Two types of complaints are received by the mechanism: “non-sensitive” and the “sensitive” complaints.

Non-sensitive complaints comprising categories 1 and 2 may concern activities directly or indirectly implemented by Chinko personnel, and may relate to misunderstandings, lack of information, dissatisfaction or conflicts between community members or between the community and African Parks staff. Non-sensitive complaints are not treated in the same way as sensitive complaints.

Sensitive complaints fall under category 3 and 4 and concern violations of the African Parks code of conduct, operational procedures, national laws and/or international human rights standards. They are subject to a more rigorous process by AP.

Table 5: Examples of complaints

Type	Sensitivity level	Example
Non-sensitive	1	Request other types of support than those offered. Choice of location of activity. Poor organization at project sites. Lack of information about the next activity. Dissatisfaction with an activity.
	2	Human-Wildlife Conflict Herder-farmer conflict Land/land space conflict. Recurrent problem in relation to the activity.
Sensitive	3	Favouritism/discrimination on hiring or on projects. Theft/racketeering, blackmail, bribery. Bullying and other inappropriate behaviour or other situation of abuse of power. Requesting favours of any kind in exchange for assistance
	4	These are complaints associated with allegations of human rights violations in the activities of the management of the conservation area. Examples are: Cruel, inhuman or degrading treatment. Intimidation/physical threat Moral or sexual harassment Unjustified damage to property resulting in material property damage or financial loss. Privacy violation (trespassing, etc).

Type	Sensitivity level	Example
		Targeted attacks against an ethnic or minority group, violation of the rights of detainees Any other violation of human rights

The procedure for handling the complains is as follows[36]:

1. Admissibility of the complaint: When a complaint is received the admissibility is examined.

➢ When the complaint is "non-sensitive," the complaint is forwarded to the head of the relevant department for processing. The department involved in the grievance proceeds with the processing of the complaint. Given the local context (high illiteracy levels in the local communities) the non-sensitive complaints are mostly received orally and addressed on site.

➢ When the complaint is "sensitive," the human rights focal points is responsible for processing it

2. Referral of complaints: Upon receiving the complaint, the complainant or his/her representative will be acknowledged within 10 working days from the date of the receipt.
3. Internal review: In the event of allegations of human rights violations an investigation will be opened within 5 days of the acknowledgement of receipt.
4. Assessment and resolution of sensitive complaints: In the event of a sensitive complaint there will be a committee, the members of such committee are responsible for implementing measures within a maximum of 4 to 6 weeks.
5. Monitoring of internal measures for sensitive complaints: Follow-up of the proper implementation of measures taken
6. Closure and notification to the complainant: Throughout the process a confidential focal point will be in communication with the complainant for sensitive complaints. If the complainant is not satisfied with the action taken the complaint procedure may be re-initiated to reach a mutually satisfactory resolution.
7. Archiving: Electronic and physical archiving is assured.

To conclude, it is important to highlight that due to high illiteracy levels in local communities, continued and regular sensitization work is still needed and will continue to be provided by African Parks to ensure that the different stakeholders understand the purpose and functioning of the grievance mechanism developed for the local context.

2.3.13 Accessibility of the Feedback and Grievance Redress Procedure (G3.8)

The feedback and grievance redress procedure has been publicised and made accessible to communities and other stakeholders. Because of the high levels of illiteracy within local communities, the grievance procedure has also been explained to local community members orally through workshops and engagement sessions. Community members are also aware that if they have any grievances, they are able to raise them with eco-monitors or other members of the African Parks staff involved with community engagement and outreach. These staff members will then be able to assist with lodging an official grievance. All grievances that are raised, as well as the project responses, including any redress, will be documented and made publicly available, safeguarding confidential information. Community members will

[36] For more details of the procedure please refer to the grievance mechanism folder: [2. General\ Grievance mechanism]

also be updated on the outcomes of any grievances, in person, through individual or group meetings depending on the context.

2.3.14 Worker Training (G3.9)

African Parks has extensive experience in conservation and community sensitization development projects. Many of the project activities have been designed to transfer knowledge to local communities through workshops and the direct activities. The CCA is also the largest employer in the region and aims to protect labour rights and promote safe and secure working environments for all workers.

The project has, and will continue to, employ people from the surrounding communities. These roles include rangers, eco-monitors, transhumance monitors, and control room operators, among others. African Parks Human Resources Manual SOP has recruitment, performance and development policies which aims to develop workers' competencies and build institutional capacity to levels that foster achievement of high-performance standards, and fulfilment of the project objectives.[37] The project proponent has been using them as an orientation and training guideline, establishing a set of rules and conducts.

Effective management requires competent and motivated employees. Career planning and competence building activities are needed to develop and maintain a high-performance workforce by providing targeted opportunities for learning and growth. AP's culture promotes individuals owning their careers. Career planning allows employees to align their annual development objectives with long-term career objectives and organizational needs.

African Parks has a Capacity Development Planning Policy aims to develop employee's competencies and build institutional capacity to levels that foster achievement of high-performance standards and fulfilment of objectives.[38] All the competence needs are analysed in line with the organisation's strategic priorities for each business unit and compiled into an annual Capacity Development Plan including the relevant costs that need to be provided for in the annual budget.

African Parks Law Enforcement SOP is a comprehensive manual detailing the Standard Operating Procedures and Best Practice Guidelines that are followed for training of staff that are involved in law enforcement activities. These guidelines were developed together with subject matter experts and industry professionals both within the African Parks Network, and the wider community. Everyone employed in roles that involve law enforcement activities are also required to meet a number of minimum standards referred to as basic qualification standards and receive a specific programme on Human Rights Conservation Law Enforcement.[39] Finally, African Parks also offers specialist training courses that offer unique skills that are needed by certain elements within the community engagement or law enforcement teams.[40]

In regard to staff turnover, the leaving employee has a handover session with the new one taking the role. This ensures that the capacity and flow of the activities are not lost during staff turnover. It is important for them to review the status of the activities that the leaving employee was performing, the location of documents, if applicable, and the expected/planned next steps for continuing the activities with the minimum

[37] More details available in the HR SOP

[38] More details available in the HR SOP – Capacity Development Policy section

[39] More details available in the Human Rights Training Curriculum

[40] More details available in the HR SOP and Law Enforcement SOP

impact because of the person change. For managers and high-level employees, considering the nature of the normal operations within Chinko, it is also normal that other members of the team are aware of the activities required so there are no operational delays and/or problems during the employee holidays.

2.3.15 Community Employment Opportunities (G3.10)

The project ensures that all individuals from the communities are given an equal opportunity to fill any employment positions (including management) if the job requirements are met, and that benefits reach women and the most vulnerable and/or marginalised people in the community, without any discrimination of age, sex, marital status, ethnicity, social status, religious convictions, political ideas, and/or sexual orientation.

The project has several activities planned that will provide further employment opportunities for community members. These include positions as:

- rangers
- eco-monitors
- transhumant monitors
- community liaisons
- general workers (including logistics and cooks)

There will also be opportunities for local people to assist with the monitoring of the project activities through activities such as soil carbon sampling and camera trapping. Training manuals and dedicated training workshops will be made available.

All candidates for positions will be selected for appointment based on merit according to their abilities, qualifications and competencies, with the aim of selecting the best person possible for the job. African Parks is an Equal Opportunity Employer (EOE) and thus aims to eliminate all forms of unfair discrimination such as race, ethnicity, or gender, in the recruitment and selection of staff. African Parks also has an HR policy that states it is committed to sourcing and capacity building of talent in the countries where they operate.

Other types of temporary employment are also provided by African Parks. These include short-term jobs as porters and/or guides to take part in surveys, research and monitoring, or demarcation and zoning missions. Other temporary work opportunities involve the clearing of fields, digging sand, loading and unloading of vehicles, and assisting with river transportation between towns.

2.3.16 Relevant Laws and Regulations Related to Worker's Rights (G3.11)

According to Article 9 of the Central African Republic Constitution "All workers participate to determine working conditions through their representatives. Laws establish mandatory assistance and protection to workers who suffer from health problems due to their working conditions." Moreover, according to Article 9: "The Republic guarantees all citizens the right to work in a healthy environment, rest and satisfaction of their needs (…). It guarantees citizens conditions favourable to their personal development, through an efficient employment policy. All citizens of the country shall be equal before the law. No one may be prejudiced in his/her employment based on his/her origin, gender, opinion or belief. Laws establish assistance and protection conditions granted to workers, especially the younger, older, disabled and those who have health problems due to their working conditions."

The main regulations protecting workers rights in the CAR are as follows:

- Law no. 09-004 of January 29, 2009 establishing the Labour Code of the Central African Republic
- Law no. 06.035 of December 28, 2006 on the Social Security Code
- Decree no. 09-116 of April 27, 2009 fixing the methods of application of law no. 06-035 on the Social Security Code.
- Order no. 005 / MFPTSSFP / CAF / DGTEFP of July 11, 1994, establishing and functioning of the Health and Safety Committees in the Central African Republic.

The project meets all the relevant laws and regulations covering workers' right in the CAR. African Parks has a strict HR policy and Standard Operating Procedure that meet international best standards.[41] The HR policies and standard operating procedures apply to all employees. African Parks has further developed an HR Policy aligned for the CCA which ensures that the project aligns with the local context in relation to local law and operational needs. All workers are informed of their rights and responsibilities during their training sessions.

The project also has an onboarding procedure that is used to inform works about their rights. Once a new hire has been selected this will be followed by on-boarding and induction programmes that will be completed during a probationary period prior to him/her joining the organisation full time, after a final probation review.

Each employee should act with integrity and apply the code of conduct. This requires, among other things, being forthright, non-discriminatory, honest, candid and accountable. AP employees are committed to treating everybody with dignity and respect regardless of level or circumstance. AP is committed to providing equal employment and advancement opportunities for all individuals without discrimination based upon an individual's race, colour, gender, religious creed, or any other characteristic protected by law. Employees are evaluated on merit and on the basis of their performance and will be provided with honest and fair feedback in this regard.

2.3.17 Occupational Safety Assessment (G3.12)

Below is a list of the more substantial risks to worker safety that could arise due to project implementation:

- Injuries related to transport/logistics. All transports with vehicles, airplanes or helicopters bare a risk of accidents, injuries and fatalities. AP strives to minimize risk by providing PPE, applying Standard Operating Procedures (SOP's)[42], employee training and professional maintenance of equipment.
- Field injuries. Active work in the field is always associated with a risk on injuries and health. AP tries to minimize risks by applying SOP's, providing health and life insurance, employee training and the provision of professional working equipment. However, a minimum risk of injuries and health problems remain given the nature of physical work in remote areas.
- Human-wildlife conflict. Incidents where staff are confronted with wildlife are rather rare in Eastern CAR. The main threat for AP employees remains pathogens like *Plasmodium falciparum, Salmonella sp*. and their vectors (Anopheles mosquitos, Tse-tse flies, jigger fleas, etc). Venomous animals such as snakes, scorpions and various stinging insects are common in the region, but rarely cause life-threatening situations for staff. A solution is being worked on to import a broad-

[41] Supporting information: [2. General\ Human Resources Manual]

[42] Relevant SOPs available at Supporting information: [2. General\ Safety SOPs]

spectrum antivenom for snakes to Central Africa. There are still problems regarding the permits to import such antivenoms into the Central African Republic.

- Risk of confrontation with armed groups. During field patrols, one of the main objectives is to ensure the area remains free of poachers and pastoralist. This means they are regularly exposed to armed poachers or armed pastoralists. However, it is important to note that despite all the challenges in the past, there have been zero collisions and none of the staff has ever been injured this way.

As a way to mitigate such risks all project employees are required to receive training before they take up their roles in the project. The training, conducted by qualified medical staff, is designed to inform workers of any potential risks they might face, and how to reduce them. Moreover, they receive training in first-aid, water treatment and accident prevention and communication. African Parks has a strict HR policy that covers workers' safety and meets international best standards. All these procedures are followed in the context of this project

To mitigate the risk of confrontation with armed groups, AP has developed a very elaborate and field-tested "Tiered Deterrence Approach" (Figure 8). This sets out in detail a series of steps that are followed consistently by all staff. In addition, all rangers receive extensive training on the use of firearms to ensure that risks are minimised.



Figure 8: Chinko's tiered deterrence approach to mitigate pastoralism poaching risks

African Parks also recognises that many of its employees work in challenging and often dangerous conditions and is committed to mitigating these risks. African Parks provides adequate relief using insurance in the event of an incident. Employees qualify for these benefits, based on their employment contract types. These are described in more detail below.

All members of African Parks and their project management units are covered with Group Life Insurance, irrespective of any local insurance policy cover, for up to a maximum of six times their annual earnings for death or total permanent disability in the event of an accident or from natural causes, subject to the conditions of the policy. Premiums are paid by African Parks Network at no cost to the employee.

Employees based in parks, who are local and not part of the project management unit, are covered by group personal accident insurance at no cost to the employee. Staff are also covered for emergency evacuation and hospital insurance.

2.4 Management Capacity

2.4.1 Project Governance Structures (G4.1)

African Parks is a non-profit conservation organisation that takes on the complete responsibility for the rehabilitation and long-term management of national parks and protected areas in partnership with governments and local communities. African Parks is the project proponent and will be in charge of implementing the project activities. Below is the current organigram of African Parks in CAR.

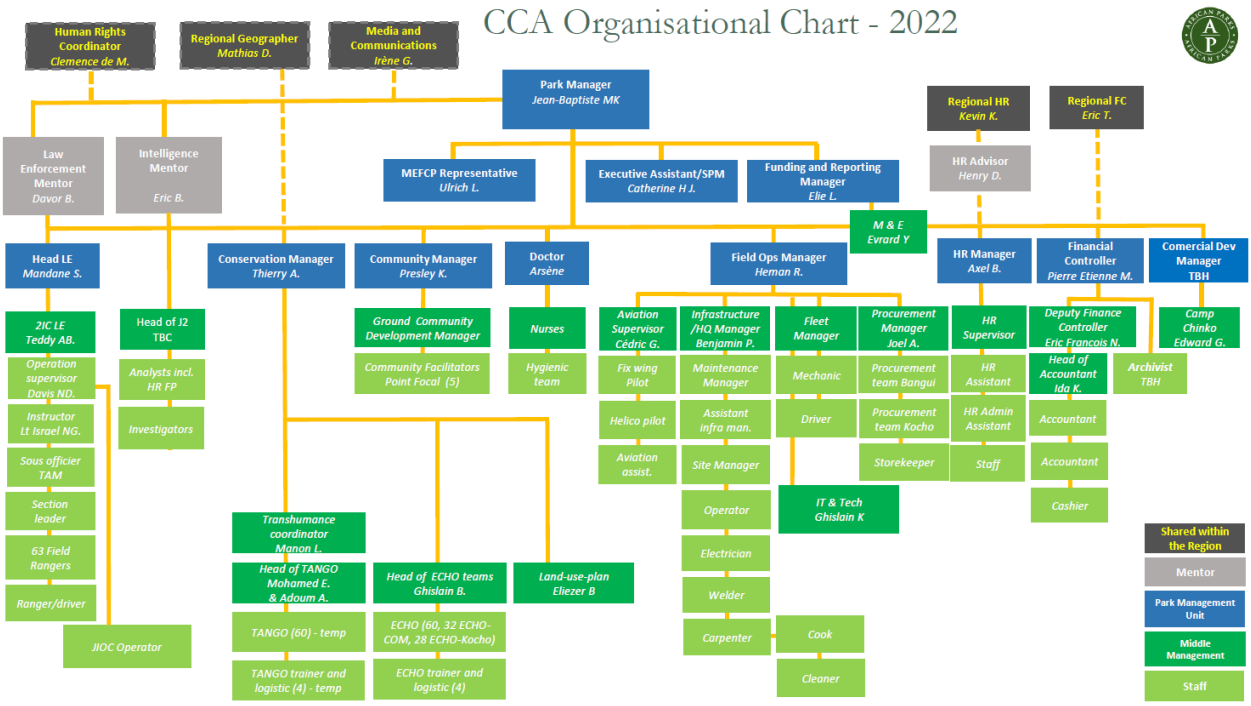


Figure 9: Chinko organisational chart - 2022

2.4.2 Required Technical Skills (G4.2)

Between AP, the project partners and their advisors, the project possesses all of the following skills:

South Pole has a technical and professional team that combines extensive knowledge in GHG ER certification for forestry and land-use projects and VMR systems, enabling them to comprehensively address all aspects of the project. More information on South Pole can be found at https://www.southpole.com.

South Pole bring experience in:

Carbon Accounting:

- Excellent knowledge of carbon accounting and carbon markets
- Strong knowledge of REDD+ projects.
- Ability to manage the geographical information system and databases to generate all required cartographic analysis
- Ability to train plot samplers
- Experience in the VCS and CCB standards

African Parks RCA bring experience in:

Community and Biodiversity:

- Understanding of Monitoring, Reporting, and Verification (MRV) requirements.
- Background in monitoring and research.
- Knowledge in sampling methods of wildlife and ecosystem assessment using quality indicators.
- Knowledge in anti-poaching control and sustainable agriculture activities.
- Experience in working with the community and environmental education.

Project Management:

- Experience in sustainable practices for local and rural development, conservation and management of biodiversity and ecosystem services.
- Experience of African conservation projects.
- Knowledge in planning, execution and control of administrative and financial resources.
- Experience and skills in managing resources from donors or co-operators.
- Good leadership skills

These skills are obtained through its management team that includes but is not limited to:

- A Park Manager with more than 25 years of experience in conservation and management of protected areas.
- A Field Operations Manager with more than 10 years of work experience in supply chain, engineering, maintenance and project, with experience based in remote and volatile contexts
- A Conservation Manager with 10 years of expertise of the local context in the area
- A Law Enforcement Manager with more than 10 years of Law Enforcement experience working both as a private security specialist and as anti-poaching instructor in different national parks and protected areas in Africa
- A Community Development Manager with more than three years of professional experience.
- A Human Resources Manager who has worked in the field of administration and human resources for a number of humanitarian aid organisations in the Central African Republic

More information of the management team of Chinko available in African Parks webpage.[43]

2.4.3 Management Team Experience (G4.2)

African Parks pioneered the public-private partnership model for protected area management, whereby African Parks takes the full responsibility and execution of all management functions. This is achieved through three approaches: long-term agreements; putting in place long-term funding solutions; and establishing good governance and management by creating separate legal entities registered in the country, with a Board representing key stakeholders.

The project is managed and operated from the project headquarters, which have been given the mandate by the project proponent (African Parks) to administer carbon proceeds and develop management strategies, collaborate with the operation partners on the ground and oversee general implementation of project activities and project operations on behalf of the project partners.

[43] https://www.africanparks.org/about-us/our-people/park-management/chinko

The management team must ensure land management and carbon activities are implemented. The main responsibilities of the management team are to:

- ensure the principles of good governance
- coordinate contact with partners
- monitor the implementation of activities at different scales in the field
- monitor the personnel file
- produce annual reports
- organise meetings with the organisation, transhumance and village communities
- ensure activities for anti-poaching control and sustainable agriculture

Other entities involved in the project

South Pole Carbon Asset Management Ltd has a long and successful track record working on forestry-based carbon projects, including the first forestry VCS project that issued credits in Latin America, and the largest REDD+ project in extension in Zimbabwe.

South Pole contributed throughout to the PD and will support the monitoring and verification processes of the climate, community, and biodiversity benefits, and will document any complaints and claims through the mechanism defined by the project participants. In addition, South Pole will support validation and verification under the VCS/CCB standard by meeting with the auditor, responding to corrective actions, and performing project registration and any clarifications requested by controls.

South Pole is a global sustainability service provider, dedicated to working with clients in the public and private sectors to deliver solutions that help create more sustainable societies and economies. Its vision is to positively impact the climate and ecosystems and communities. South Pole's team of over 100 experts across 20+ offices around the world focuses on key sustainability issues such as climate change, renewable energy, forestry and land-use, water, and sustainable cities and buildings.

Over 16 years, South Pole has, together with its clients, achieved the following results:

- Prevented 170 million tonnes of CO_2 emissions
- Developed more than 700 projects across the renewable energy, forestry, agricultural, industrial, household, and public sectors
- Protected or restored more than 2 million hectares (ha) of land, and
- Created 100,000 jobs in developing countries.

South Pole has a technical and professional team that combines extensive knowledge in GHG emission reduction certification for forestry and land-use projects and VMR systems, enabling them to comprehensively address all aspects of the project. More information on South Pole can be found at https://www.southpole.com

2.4.4 Project Management Partnerships/Team Development (G4.2)

The project team is suitably qualified for the project implementation (see section 2.4.3).

2.4.5 Financial Health of Implementing Organization(s) (G4.3)

The financial factor and the project self-sustainability to generate its own resources is one of the most significant challenges for the project development. However, African Parks has adopted financial mechanisms to provide an adequate actual and projected cashflow for the project implementation, in order to achieve the objectives.

During the first years of the project lifetime, Chinko covered around 70% of its expenditures using the revenue from the activities and funds obtained from donor organisations and used an endowment fund to cover the rest. For the next years, in the short- and medium-term (2021 – 2030 period) the project has secured only approximately 27% of the funds required without the projected revenues from selling verified carbon units (VCUs).[44] It is expected that the carbon credits would provide significant resources to continue the development of the project activities.

One of the strategies to ensure adequate financial support over the project lifetime is the signing of emission reduction purchase agreements (ERPAs) with buyers willing to obtain credits from the project for various years, in order to guarantee an income for the implementation of the activities.

2.4.6 Avoidance of Corruption and Other Unethical Behavior (G4.3)

African Parks has a strict Code of Conduct that the organisation and its employees are obliged to follow. The Code of Conduct forms part of African Parks' Humane Resources Policy and Standard Operating Procedures.[45] All employees must comply with all applicable laws and regulations which relate to activities for and on behalf of African Parks and not seek to gain advantage through illegal or unethical business practices.

The code of conduct covers:

- Human Rights
- Fair Dealing
- Conflict of Interests
- Gifts, Payments and Commissions
- Public Disclosures
- Protection and Proper Use of AP Assets
- Relationships with Clients, Customers and/or Visitors
- Fraud and Corruption

All employees are required to respect, protect and uphold the human rights of all persons with whom they come into contact in their professional capacity as a representative of the CCA and of African Parks. Specifically, all law enforcement personnel must always ensure that they protect the human rights and wellbeing of suspects in custody, never torture, observe best practice law enforcement techniques for suspect interviewing, and facilitate best practice judicial processes.

Any material transaction or relationship that could reasonably be viewed to give rise, or potentially give rise, to a conflict of interest must be discussed with an immediate supervisor/manager before the transaction proceeds to the point that a conflict of interest may be inferred.

The code of conduct defines fraud and corruption as "the acceptance of bribes, receiving of money, goods or services which are not disclosed to the organisation and through which one person gains a dishonest advantage over another". African Parks consider these as serious offences which can result in criminal proceedings.

Fraud and corruption, or attempted fraud and corruption, are breaches of the acceptable standards of conduct required of employees and will not be condoned by the project. Disciplinary action will be taken against offenders, whether or not a loss has been suffered by the organisation. Employees found guilty of

[44] For more details please refer to the NPR report and the Cash Flow elaborated as supporting documentation

[45] Supporting information: [2. General\ Human Resources Manual]

fraud and corruption will be dismissed and may be reported to the police should the evidence justify such action.

South Pole, as the supporting organisation, is also committed against these practices. The company has several policies in place such as an anti-corruption policy, an ethics policy and process, a code of conduct (also for third parties), among others. These documents show South Pole's commitment to conduct business with full integrity.

2.4.7 Commercially Sensitive Information (*Rules* 3.5.13 – 3.5.14)

No commercially sensitive information has been excluded from the public version of the project description, annexes will be upload as required by the standard, for providing other supporting information the project proponent should be approached by the interested party and an internal assessment will be done to determine whether the information could be shared or not.

2.5 Legal Status and Property Rights

2.5.1 Statutory and Customary Property Rights (G5.1)

The Constitution of the Central African Republic provides that all persons have a right to property, and the state and citizens have an obligation to protect those rights. In terms of tenure, currently the Eastern CAR land has been claimed either as hunting area, national park, wildlife reserve and *"zone banale"* (open land able to be claimed by communities) as shown in Figure 10.

In the case of this project, the project area is considered uninhabited, although there are communities that live in the surrounding areas. For more details on the relevant laws and types of land tenure in the CAR (see section 2.5.7). It should also be noted that transhumant pastoralism is a common practice in the region, which has undefined property rights under the CAR law.

Under the national laws of the CAR, protected areas are the property of the state. There is a public-private partnership agreement in place between the national government and AP, which gives AP the authority to fully manage operations of the project area. All protected areas in the CAR are influenced by laws that include the involvement of communities in conservation projects. Law No 08.022 in the Forestry Code of CAR establishes the integration of indigenous peoples into the management of protected areas, including the recognition of customary rights of use, consultation in the event of exploitation, the implementation of community forests, and participatory management in decisions concerning the protection of ecosystems.

CAR's 2006 Water Code recognises the existence of 'sacred waters' and ensures their protection by community leaders. The CAR's Forest Code also recognises customary rights to forest resources, granting local communities use-rights to forest land and forest products. All use-rights recognised by the formal law are subject to state definition and control. Finally, the CAR government recognises use-rights to land based on the principles of customary law.

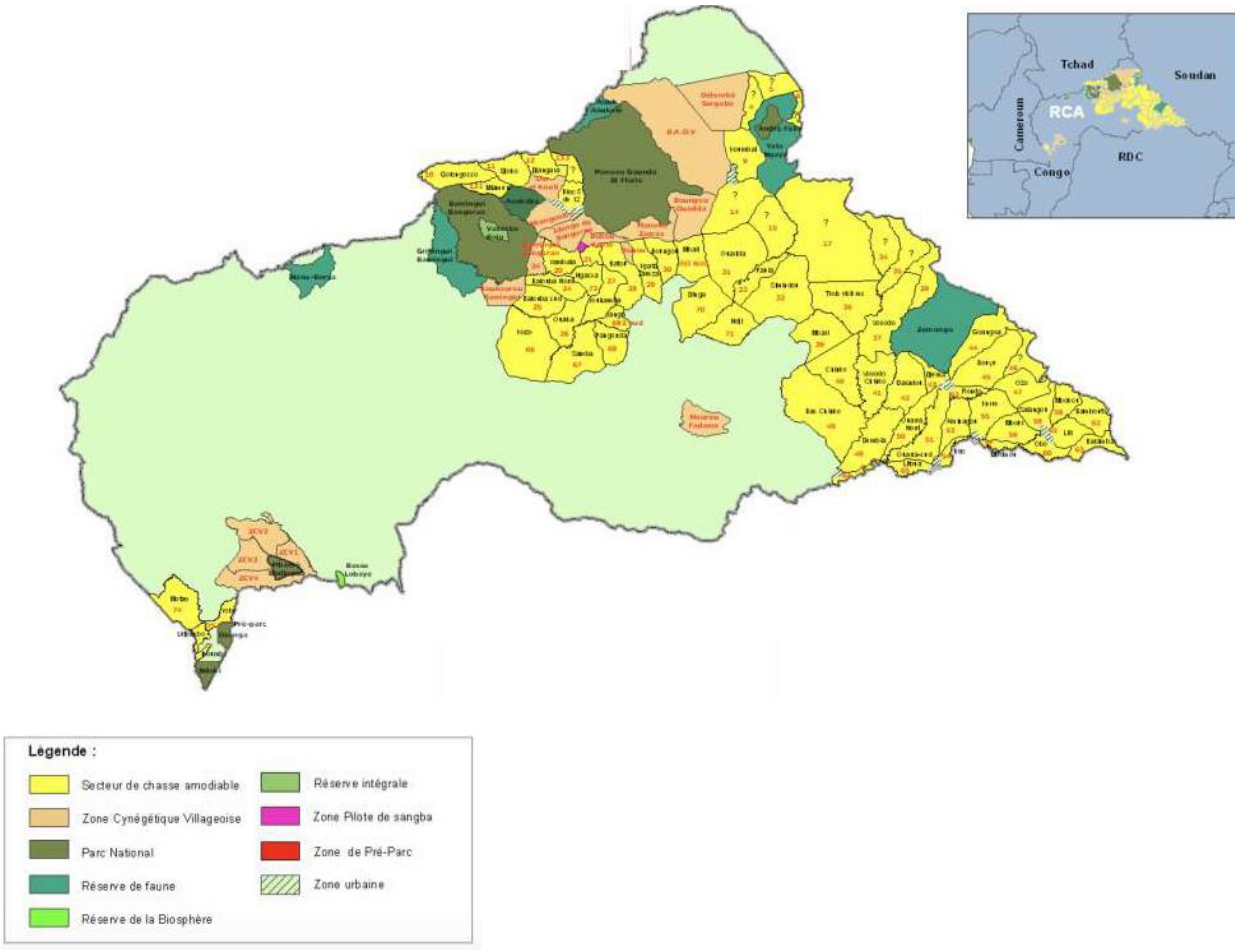


Figure 10: Land tenure in CAR[46]

2.5.2 Recognition of Property Rights (G5.1)

At present, the project area is uninhabited and only has limited road access. There are, however, local communities living in the surrounding area. As described in section 2.5.9, the land in the project area belongs to the CAR Government. Under the national laws of the CAR, and as mentioned in section 2.5.1, protected areas are property of the state.

African Parks has signed an agreement to manage the project area under a public-private partnership. This gives AP the rights to fully manage and control of the current project accounting areas and the legal right to operate all project activities as well as enforce the law of CAR with regards to the protected area[47]. Because the CCA is recognised as a protected area and there are no communities living in the project area, none of the other stakeholder that were identified have any legal rights to the project area. The project has and will continue to allow and encourage the sustainable use of natural resources by local communities for their livelihoods in the region.

[46] Carte Touristique de la RCA, IGN, Paris 1993, retrieved from : http://www.abctaxa.be/rca/cooperation/programmes/projet-ecosystemes-forestiers-d-afrique-centrale-ecofac-1/composante-zones-cynegetiques-villageoises-zcv/schemad-orientationzcv.pdf

[47] See Supporting Information: [2. General\ Project Ownership]

2.5.3 Free, Prior and Informed Consent (G5.2)

Currently, the project area is uninhabited and the management of the area was granted by the government through the signing of a partnership agreement with African Parks (see section 2.5.9 for more details of the agreements and the supporting evidence), therefore, the property rights are recognized, respected and supported. The Project proponent is not and will not encroach uninvited on private, community and/or government property, each action taken for the management is done after obtaining the necessary approvals and agreements with the government.

Considering that the area covered by the project area is uninhabited and African Parks has an agreement with the government for the management of such area, no free, prior and informed consent was required, there were no stakeholders whose property rights were affected by the project, however, the project proponent has conducted stakeholder engagements with local communities living on the periphery of the project to inform them about the project and explain that the project will in no way encroach on private or community property. See section 2.3 for more details on this process.

African Parks subscribes to the guiding principles for Free, Prior and Informed Consent[48]. They have a strict policy that ensures that the following decision-making processes are taken into account during the development of a project:

- free from coercion, intimidation or manipulation.
- prior to allocation of land for particular uses or approval of specific projects. Lead time should reflect respect for time requirements of indigenous consultation/consensus processes
- informed at a minimum, and based on full available information, about the nature and scope of any proposed project or activity, including:
    - areas that will be affected
    - potential economic, social, cultural and environmental risks and benefits
    - type of law enforcement work and possible impact, and
    - timeframe of the proposed project and organizations/actors likely to be involved

Information should be in a language easily understood by the affected people, delivered in a culturally appropriate way, and available from independent sources. Communities may also require capacity building on unfamiliar issues to be truly informed.

- Consent requires time and an effective system for communicating among all affected community members and taking decisions through customary or other community-defined decision-making processes. It requires that affected people are able to say yes or no at each stage of the project. Consent is to be given or withheld by the community as a whole; no single individual or representative can make the decision. Consent should result in equitable agreements and should be part of ongoing processes of communication and negotiation, rather than a one-off action.

2.5.4 Property Rights Protection (G5.3)

Project activities will not at any time lead to the involuntary removal or relocation of land ownership rights and do not oblige communities associated with the project area to relocate nor lose access to areas or resources that are important from a cultural or historical perspective.

[48] For more details of its policies please refer to: Supporting Information: [2. General\ APN Human Rights Statement of Principles]

2.5.5 Illegal Activity Identification (G5.4)

The region in which the project area is located is characterised by insecurity, often perpetuated by the activities of foreign armed groups. The impacts of the activities of these armed groups, as well as illicit cross-border movements, have resulted in instability in the region.

The main illegal activities that have been recognised, and could affect the project's activities, are illegal grazing, poaching and illegal wildlife trade. In Chinko, poachers have been identified as originating from Bakouma and Rafaï. Non-local poachers also come from Bangassou, Bria and Gambo. Poaching is an important source of income for all communities living around the reserve, and most offtake is sold to local buyers (see section 2.1.6 for more information on the important livelihood activities in the region). Most of this poaching takes place on a relatively small scale. Large-scale commercial poaching, however, is often carried out by armed groups and is highly organised. These groups engage in poaching for purely economic purposes. Poaching in the region has sometimes been shown to have been facilitated by the administrative authorities in the region. Local leaders and chiefs have been implicated in internal, but not cross-border trafficking, of high-value products (Ondoua Ondoua, G. et al, 2017).

Transhumance pastoralists have also been identified as posing a serious risk to the area with high incidences of overgrazing, illegal human-induced fires and poaching all recorded as regular and realistic threats to the area. While meat is sold locally, high-value products such as ivory, skins, and other trophies are transported to larger towns and cities. The transhumant pastoralists are also actively involved in trafficking of wildlife, and of ivory and leopard skins in particular (Ondoua Ondoua, G. et al., 2017).

Armed groups operating in the region (e.g. the Seleka), have been recognised as actively supplying firearms, and using their vehicles to transport large quantities of bushmeat to neighbouring towns and cities, such as Bria and Yalinga, northwest of Chinko (Ondoua Ondoua, G. et al., 2017).

As well as bushmeat, traders sell ivory, and big cat skins, fat, teeth and claws. In CAR, the first points of sale for illegally procured wildlife products are the towns of Rafaï and Zemio (Zemio also hosts 2,400 Congolese refugees who fled the Lord's Resistance Army (LRA) atrocities in the Democratic Republic of Congo (DRC) in 2009). Zemio is seemingly the largest trading centre for wildlife products in southeast CAR, notably for elephant meat and orphaned chimpanzees (Ondoua Ondoua, G. et al., 2017).

In terms of the measures taken against these illegal activities, the project has a number of law enforcement initiatives that are designed to prevent illegal activities in the project area, such as ranger patrolling inside CCA, critical for habitat and wildlife protection. The team does prevention, confiscations, sensitization and if necessary, sends the offenders to the relevant authorities for prosecution. Safety and security for people ecosystems and wildlife, and effective collaboration with local authorities/ethnic groups and institutions are also carried out when special cases demand. In addition, while the role of eco-monitor team is to sensitize communities to ensure the park's boundaries are respected, as well as tracking human activity within CCA and monitoring camera traps to document wildlife within the CCA. They are often the first line of response and able to call for prompt intervention as needed.

Besides the law enforcement activities, there are also activities for reducing the reliance of the local communities on illegal activities, such as the creation of sustainably managed buffer zones and the identification and implementation of alternative income-generating activities, as explained in sections 2.1.11 and 2.1.19. These other measures to be implemented by the project are focused on targeting the main agents and drivers of deforestation and conversion, to give new opportunities that create change in the agents' behaviour. These activities include sensitisation of the local communities and transhumance pastoralists, the establishment of more sustainable resources use, increase of employment opportunities, continuation of biodiversity monitoring and protection of natural areas among others. The success in the implementation of these activities is expected not only to generate greenhouse gases (GHG) emissions

reductions but to create a change in the agents' behaviour which will help to better understand the value of nature and intact ecosystems and prevent that the illegal activities mentioned earlier continue in the future.

2.5.6 Ongoing Disputes (G5.5)

A number of disputes have been identified that have been resolved or are in the process of being resolved. African Parks is transparent with regards to all disputes that have been raised and has measures in place to ensure all disputes are resolved in a manner that benefits all parties.

The most recent dispute resolved was related to the closure of illegal mines in the southwestern part of the project area. Since 2014, there have been three main regions where illegal gold and diamond mines have been established. Because mining is illegal in the project area under the CAR law, two out of the three were closed between 2015-2016. The last illegal mining region in the southwestern part of the project area, however, was socio-economically much more important for the local communities. As a result, the project was hesitant to shut down the illegal mines without a new opportunity for the community. The project engaged with affected communities, miners, and government representatives over a two-year period, in order to establish the best way to relocate these mines, and create responsibly managed official mines in the buffer zones that were established. The process was successful, and the last illegal mine in the project area was peacefully closed on 26 November, 2020.

Another dispute took place along the north-western boundary of the CCA. CCA was initially established with four hunting zones. When African Parks took over management of the CCA, they started to manage the road network and campsites that had been established and used by a hunting company called CAWA from 2006 to 2014. An area on the western side of the Mbari River had been used by CAWA for official and legal trophy hunting but was actually outside the Mbari-39 hunting zone and officially in the community zone of Yalinga. African Parks had been managing this area from 2015-2020 as protected land, as there was a 10 km2 area of forest that was an important hiding place for the last forest elephants in Eastern CAR.

In 2020, the project invited a delegation from Yalinga village (which was previously inaccessible due to security issues in the rebel-controlled zone) to Bangassou where the dispute was discussed. A strategy was developed to create an official buffer zone between Yalinga and the project area where the community has access to the natural resources. African Parks will assist the community in managing the zone and using the resources in a sustainable way. The goal is to create two different sectors. Sector I will be for sustainable hunting, fishing and responsible mining while Sector II is for strict protection. In the future, Sector II could become an ecotourist destination or trophy hunting zone, with the revenue going to the community of Yalinga.

The final dispute was around the Dembia-49 hunting zone, which was assigned to the management of African Parks, after the agreement with the CAR government was signed on 15 April, 2020. This hunting zone includes villages and is close to a public road. The goal for this area is to split the hunting zone into two sectors; one strictly protected and fully managed by African Parks, and a second defined as a buffer zone managed by the local communities, with assistance from the project and the government. This process is ongoing, and the first meetings with the affected communities have been held in a positive and collaborative spirit.

It should also be noted that there are often minor disputes between local communities and the project's law enforcement team around the issue of poaching in the project area. Communities around the project area are, however, supportive of the project with most agreeing that the stability in the region is a direct result of the project activities.

Finally, it is worth mentioning that the project proponent is working with the government of CAR in the task of developing a comprehensive land-use plan for Eastern CAR with the participation of local communities

that will propose the new zonation of the region. The participative land use plan that will include transhumance corridors, regulated hunting areas, grazing areas and dedicated areas for agricultural activities, this will help to avoid disputes over rights to lands and territories considering that the development of this plan requires the full participation of the different stakeholders and continuous communication with community leaders as well as with the regions representatives to ensure that all interests are aligned. One of the outcomes of this is to improve communities' access to natural resources. In the mid- to long-term, a successfully implemented land use plan should allow hunters and fishermen to find more and higher quality natural resources in closer proximity to their villages avoiding disputes for resources.

2.5.7 National and Local Laws (G5.6)

There are a number of national and local laws that are relevant to project activities. These are described in detail below and cover the climate, land, water, forest, and minerals sectors. The project is in compliance with all the laws described below and aligns with all national climate strategy documents.

The CCA is uninhabited and classified as a protected area. African Parks has signed an agreement with the government to take responsibility for managing the protected area and assisting in enforcing the law of CAR with regards to the protected area. In order to achieve success in this regard, African Parks has recruited, trained and equipped a sufficient number of rangers, eco-monitors and transhumant officers to effectively manage the CCA and enforce the national laws in the area.

Communities on the periphery of the project area that have access rights to the natural resources in the CCA will in no way be prevented from accessing these natural resources. An important component of the project is to ensure that local communities have access to the natural resources on which they rely and use those in a sustainable and equitable manner. The project will continue to establish buffer zones that are managed together with communities. The sustainable use of natural resources is allowed (and encouraged) in these buffer zones.

Climate

In terms of response to climate change, the CAR ratified the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol in 1995 and 2008 respectively. The country also developed a number of documents that provide strategic policy guidance in the implementation of the Convention. These include:

- the national adaptation programme of action (NAPA) in 2007
- the first- and second-generation Poverty Reduction Strategy (PRSP I and 2) for the period 2007-2011 and 2012-2016 respectively
- the Environmental Code in 2007
- the national programme to combat desertification and land resource degradation in 2009
- the Environmental Policy in 2011
- the preparatory document for the REDD + strategy and its implementation through the Measurement
- reporting and Verification (MRV) project
- the second national communication in 2013 on the assessment of emissions by sector; and
- the Intended Nationally Determined Contribution (INDC) in September 2015, which includes an adaptation component

The CAR has neither developed its National Adaptation strategy nor its Nationally Appropriate Mitigation Actions (NAMA). It is expected that the NAMA's agenda will be developed with funding from the African

Climate Change Fund (ACCF) and its national adaptation strategy will be developed with financing from the World Bank.[49]

Land

The 2004 Constitution of the Central African Republic states that all persons have a right to property, and the state and citizens have an obligation to protect those rights. CAR's Law No. 63 of 1964 is the primary formal law governing land rights in CAR. Law No. 63 recognizes customary law but limits customary land tenure to use-rights.[50]

Several land tenure types exist in CAR, including private ownership, concessions, and customary tenure. These are discussed in more detail in the following paragraphs.

Under CAR's formal law, an individual or entity can obtain ownership rights to land through registration of their interest as private property. Occupants of land can apply for ownership rights under the principle of mise en valeur, which awards ownership rights to those who develop their land intensively (e.g. by means of intensive or permanent agriculture). Ownership rights may be transferred by purchase, inheritance and lease. Less than 0.1% of land in the CAR is registered.

Individuals, groups, and entities can lease land from the state or private parties under formal law and customary law. Leases of land within the state's public domain are granted for definite periods, generally not exceeding 20 years; no lease can extend beyond 50 years.

The state can also grant concessions of land to individuals and entities as concessions. The concessionaire must develop the land in accordance with the terms of the concession within two years for urban land and within five years for rural land. Concessionaires who have developed the land in accordance with the agreement and obtained the approval of the local government may apply for private ownership rights to the land.

The state's recognition of occupancy rights to certain land has continued despite the absence of formal law providing for rights of habitation. Upon application, the state issues a habitation permit that allows the applicant to occupy the land and erect any non-permanent structure, including huts of organic materials. In some areas the permits are free and easily obtained. In peri-urban areas, permits are difficult to obtain and often require large payments and the permission of multiple officials. The length of time for which habitation permits are granted is unknown.

Law No. 63 of 1964 recognises use-rights to land based on principles of customary law. Customary law is a localised and evolving system, and no comprehensive studies have been published detailing the nature of the system as it is operating in CAR. Some general principles of customary law that are common to the central African region are thought to apply in the CAR, such as land being held collectively through lineage and the right of a first clearer of land to use the land. As the commercial value of land has increased, customary landholdings have become increasingly individualised and passed by inheritance within families.[51]

[49] https://www.greenclimate.fund/sites/default/files/document/readiness-proposals-central-african-republic-undp-nda-strengthening-and-country-programming.pdf

[50] https://land-links.org/country-profile/central-african-republic/#summary

[51] Ibid.

Water

The Ministry of Water, Forestry, Hunting and Fisheries has authority over the country's water resources. The Ministry of Agriculture and Livestock has authority over irrigation water and systems, and the Ministry of Public Works is responsible for urban water supplies and systems.[52]

CAR's 2006 Water Code states that all of the country's surface and subterranean water is in the public domain. No one can prevent the free movement of the country's surface and groundwater, and any use of the water must be authorized by the government. The Water Code does not expressly recognize customary water rights (ARD 2007a). The Water Code does, however, recognize the existence of "sacred waters" and ensures their protection by community leaders.[53]

Forests

The Ministry of Water, Forests, Hunting and Fisheries (MEFCP) is responsible for the management of the country's forests. The CAR has several laws and regulations pertaining to forest management, wood harvesting, processing and trade.

The Central African Forest Code was passed in October 2008 (Law No 08.022) and is the main legal text governing the forest sector in CAR. The Forest Code provides for state ownership of the country's forests and divides the forests into the permanent forest domain and non-permanent forest domain. The country's permanent forests are located in Bangassou in the eastern part of the country and the southwest forest system. Non-permanent forests are those created by local governments, individuals, and groups through arboriculture and forest restoration activities.[54] The Forest Code also provides the authority for the licensing of traditional timber production and community forests. Concessionaires, on the other hand, must hold a Forest Management Permit (Article 32, Forest Code). The Forest Code recognises customary rights to forest resources, granting local communities use-rights to forest land and forest products. All use-rights recognised by the formal law are subject to state definition and control.[55]

The Yaoundé Declaration of 1999, which was signed by CAR, Cameroon, Chad, Democratic Republic of Congo, Republic of Congo, Equatorial Guinea, and Gabon, established an international framework for collaboration on cross-border forest issues, the creation of protected areas, and the development and implementation of coordinated sustainable forest management. The declaration also created a governance structure, the Central African Forests Commission (COMIFAC), which has the authority to direct, coordinate and monitor forest and environmental policies in the region.[56]

Minerals

The Ministry of Mining and Energy is responsible for the mineral sector. Production of diamonds and gold is overseen by the Bureau of the Evaluation and Control of Diamonds and Gold (Bureau d'Evaluation et de Control de Diamant et d'Or - BEDCOR), which maintains a database of production.[57]

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[52] USAID, 2010. Property Rights and Resource Governance Country Profile: Central African Republic

[53]. https://land-links.org/country-profile/central-african-republic/#summary

[54] USAID, 2010. Property Rights and Resource Governance Country Profile: Central African Republic

[55] Ibid.

[56] Usongo and Nagahuedi, 2008. Participatory land-use planning for priority landscapes of the Congo Basin.

[57] Bermudez-Lugo, 2006. The Mineral Industries of Central African Republic, Côte d'Ivoire, and Togo.

The 2009 Mining Code governs all mining activities in CAR. Article 6 of the Mining Code provides that all mineral resources are the property of the state. Entities and individuals can obtain rights to CAR's minerals, and rights to minerals are separate and distinct from rights to land. The Mining Code recognizes customary property rights and requires license holders to compensate holders of customary rights for damage to land or loss of land-use resulting from mining operations.[58]

2.5.8 Approvals (G5.7)

The current project accounting areas are established in uninhabited hunting zones granted by CAR government on a recently signed 25-year partnership.

2.5.9 Project Ownership (G5.8)

Considering that the project is a grouped one, and according to the legal agreement signed by African Parks and the government, African Parks has tenure rights on the current project accounting areas and the legal right to control and operate the project activities although the land ownership remains to the government.

In June of 2014 Chinko signed a 50-year agreement with the Ministry of Forest Economy, Environment and Tourism in representation of the Government of the Central African Republic for the management of the hunting zones N° 39, 40, 41 and 48.[59] This agreement was later superseded by a 25-year agreement, signed in April of 2020, for the management of the initially included hunting zones as well as N° 17, 32, 34, 35, 36, 38 and 49.[60] The agreement gives the possibility to further increase the protected area and it is therefore that a grouped project was considered, where new instances can be added once the legal agreement is established and activities are resulting in GHG emission reductions.

As explained in section 2.1.15, the crediting period is from 15 September 2016, once the sensitisation campaigns started for the 2016-2017 dry season, to 14 April 2045 date until the current agreement with the government is in place. Therefore, the length of the crediting period is 28 years and 7 months, in compliance with the minimum of 20 years of crediting period requested in VCS Standard rules.

2.5.10 Management of Double Counting Risk (G5.9)

The emissions reduction as a result of this project are not intended to be used under any other trading programme or mechanism. The current project is entirely independent of any other carbon project or programme scheme being developed in the country; therefore, no double counting has occurred, and it is not intended to occur.

2.5.11 Emissions Trading Programs and Other Binding Limits

The emissions reductions as a result of this project will not be used for compliance under any other trading program or mechanism.

2.5.12 Other Forms of Environmental Credit

The project has not sought nor received any other form of GHG-related environmental credit.

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[58] USAID, 2010. Property Rights and Resource Governance Country Profile: Central African Republic

[59] Supporting information: [2. General\Project Ownership\2014_Chinko 50year agreement]

[60] Supporting information: [2. General\Project Ownership\2020_Chinko 25year agreement]

2.5.13 Participation under Other GHG Programs

The project has not been registered nor is seeking registration under any other GHG program.

2.5.14 Projects Rejected by Other GHG Programs

The project has not been rejected by any other GHG program

2.5.15 Double Counting (G5.9)

Any credit issued by VERRA will have a unique identifier to avoid double counting.

3 CLIMATE

3.1 Application of Methodology

3.1.1 Title and Reference of Methodology

Methodology applied:

VM0009 Methodology for Avoided Ecosystem Conversion, v 3.0

Tools applied:

- VT0001 Tool for the Demonstration and Assessment of Additionality in VCS AFOLU Project Activities, v 3.0
- VCS AFOLU Non-permanence Risk Tool, v 4.0

3.1.2 Applicability of Methodology

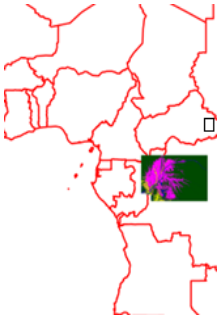
Below is a description of each applicability condition of the methodology, a statement of whether it applies to the project and a justification.

Table 6: Applicability conditions of the methodology

Applicability conditions	Justification
1) The drivers and agents of conversion in the baseline scenario must be consistent with those described in section 6 of the methodology VM0009, and the end land use in the baseline scenario is non-forest (in the case of REDD project activities) or converted native grassland (in the case of ACoGS project activities). Accordingly, the project activity must be APD or AUDD for forested project accounting areas and APC or AUC for grassland project accounting areas.	The methodology is applicable because the drivers and agents of conversion in the baseline scenarios are consistent with those described in section 6 of the methodology (see section 3.1.4) and the end land use in the baseline scenarios is a non-forest state. The project activity is a AUDD (see section Identifying Baseline types).
2) All project accounting areas must have been in an unconverted state (i.e. forest or native grassland) for at least 10 years prior to the project start date, according to the following:	All land in the PAAs has been in an unconverted state for at least 10 years prior to the project start date, see section Delineating Project Accounting Areas for more details.

Applicability conditions	Justification
a) land in all forested project accounting areas has qualified as forest, on average, across the project accounting areas, as defined by the Food and Agriculture Organization (FAO) 2010 or by the residing designated national authority for the project country for a minimum of 10 years prior to the project start date; and b) land in all grassland project accounting areas has qualified as native grassland or shrubland for a minimum of 10 years prior to the project start date.	Land in all PAAs has qualified as forest as defined by the national report of the forest resources assessment of the CAR in 2015[61]: Land occupying an area of more than 0.5 hectares with trees reaching a height of more than five metres and tree cover of more than 10%.
3) For project accounting areas with an unplanned baseline type, a conversion threat must exist for each project accounting area as demonstrated by one of the following two options: a) imminent conversion (see definition) must be predicted by a survey, where more than 60% of respondents predict the end land use identified in the baseline scenario. The survey must meet the requirements of Appendix E of the Methodology VM0009; or b) as of the project start date, some point within 2 kilometres of the perimeter of the project accounting area has been converted to the end land use identified in the baseline scenario.	All the PAAs in the project belong to the unplanned baseline type category and there is a conversion threat for each of them demonstrated by: b) As of the project start date, some point within 2 kilometres of the perimeter of the relevant PAAs has been converted to the end land use identified in the baseline scenario, for more details see Identifying Baseline types section.
4) In the case of baseline type F-U1, at least 25% of the project area boundary is within 120 meters of deforestation and at least 25% of the project area boundary is adjacent to the reference area (see section 6.3 of the methodology VM0009).	Not applicable, the project does not have any PAA with a baseline type F-U1.
5) In the case of baseline type G-U1, at least 25% of the project area boundary is adjacent to the reference area (see section 6.3 of the methodology VM0009).	Not applicable, the project does not have any PAA with a baseline type G-U1.
6) In the case of baseline type F-U2, at least 25% of the project area boundary is within 120 meters	Not applicable, the project does not have any PAA with a baseline type F-U2.

[61] https://www.fao.org/3/az183f/az183f.pdf

Applicability conditions	Justification
of deforestation (see section 6.3 of the methodology VM0009).	
7) The project accounting area(s) must not contain peat soil.	As shown by Dargie et al., (2017), nor the CAR nor the project accounting areas contain any peat soil.  Figure 11: Extent of the central Congo Basin peatland complex and Chinko location (black square in the image) Source: (Dargie et al., 2017)
8) For each project accounting area, a reference area can be delineated for each baseline type in the baseline scenario that meets the requirements, including the minimum size requirement, of section 6.8.1 of this methodology.	A reference area for each baseline type was delineated following the requirements detailed in section 6.8.1 of the methodology. Refer to Delineating Reference Areas section for more details.
9) As of the project start date, historic imagery of the reference area(s) exists with sufficient coverage to meet the requirements of section 6.8.4 of the methodology.	As of the project start date, historic imagery of the reference areas exists with sufficient coverage to meet the requirement of section 6.8.4 of the methodology. See section Selecting Historical Imagery for more details.
10) Project activities are planned or implemented to mitigate ecosystem conversion by addressing the agents and drivers of conversion as described in section 8.3.1 of the methodology.	Several project activities are planned and implemented to mitigate ecosystem conversion by addressing the agents and drivers of conversion as described in section 8.3.1 of the methodology. See sections 2.1.11 and Leakage Mitigation Strategies for more details.
11) The project proponent has access to the activity-shifting leakage area(s) and proxy area(s) to implement monitoring (see sections 8.3.2.1 and 6.4) or has access to monitoring data from these areas for every monitoring event.	The project proponent has access to activity-shifting leakage areas and proxy areas to implement monitoring, see section Spatial boundaries for more details.

Applicability conditions	Justification
12) If logging is included in the baseline scenario and a market leakage area is required as per section 8.3, then the project proponent has access to (or monitoring data from) the market leakage area if measurement is needed (see section 8.3.3 of the methodology VM0009).	Not applicable, logging not included.
13) This methodology is applicable to all geographies. However, if Soil organic carbon (SOC) is a selected carbon pool and the default value from section 6.19.2 is selected, then the project must be located in a tropical ecosystem.	Although initially SOC is not selected, the project is located in different tropical ecosystems of CAR and therefore the default value from section 6.19.2 of the methodology could be used once SOC is added as a pool.
14) If livestock is being grazed within the project area in the project scenario, there must be no manure management taking place, as emissions from N_2O as a result of manure management are not quantified or addressed in this methodology.	There will be no manure management in the project area as part of the project activities.
15) For ACoGS project types, project activities must not result in significant GHG emissions. All GHG emissions from project activities must be shown to be *de minimis* (see section 8.3.1 of the methodology).	Not applicable.

In addition to the applicability conditions of the methodology, below is a description of each applicability condition of the Additionality tool, a statement of whether it applies to the project and a justification.

Table 7: Applicability conditions of the VT0001 tool

Applicability conditions	Justification
a) AFOLU activities the same or similar to the proposed project activity on the land within the proposed project boundary performed with or without being registered as the VCS AFOLU project shall not lead to violation of any applicable law even if the law is not enforced.	The project activities on the land within the project boundary will not lead to violation of any applicable law. As explained in section 3.1.5, the activity is consistent with enforced mandatory applicable laws and regulations.
b) The use of this tool to determine additionality requires the baseline methodology to provide for a stepwise approach justifying the determination of the most plausible baseline scenario[3]. Project proponent(s) proposing new baseline methodologies shall ensure consistency between the determination of a baseline scenario and the determination of additionality of a project activity.	The baseline methodology followed for this project has a stepwise approach justifying the determination of the most plausible baseline scenario. For more details refer to section 3.1.4.

3.1.3 Project Boundary

Spatial boundaries

Below is a description of the spatial boundaries of the project considering the six types of areas used in the methodology.

Geographical area of the grouped project:

The boundaries of expansion of the grouped project are the prefectures of Mbomou, Haute-Kotto and Haut-Mbomou. Currently, African Parks does not have land tenure agreements and/or has not secured financial sustainability to manage all the area within the expansion boundaries, which is why the project is proposed as a grouped project, in which future instances will be added in subsequent verifications once conditions are met.

Figure 12 represents a map of the designated geographic area within which all project accounting areas are located (prefectures of Mbomou, Haute-Kotto and Haut-Mbomou).

Project area

At the moment of validation the project area is encompassed by the following hunting zones (*zone d'intérêt cynégétique* – ZIC):

- 39: Mbari
- 40: Chinko
- 41: Vovodo Chinko
- 48: Bas Chinko
- 36: Trois rivières

Instances

Considering the current agreements with the government, the two separate baseline scenarios and the activities carried out by African Parks in the area, the project at the moment of the validation consist of the following instances:

Closed Canopy Forest dominated area instance

At validation there is only one instance for CCF dominated areas, which is denominated the PAA 1 and is described below.

Open Woodland Savanna dominated areas instances

At validation there are two instances for OWS dominated areas, which are denominated PAAs 2 and 3 and are described below.

Project accounting areas

Considering the methodological requirements set for the baseline scenario, the following PAAs are included at the moment of validation:

- PAA 1: Non-constrained CCF dominated areas of ZIC 41
- PAA 2: OWS dominated areas of ZICs 41 and 48 and the entirely of ZICs 39 and 40
- PAA 3: ZIC 36[62]

For more details of the PAAs check Delineating Project Accounting Areas within Section 3.1.4.

[62] This area was included in the management mandate of African Parks after the signature of the partnership agreement of April 2020 that expanded the area under management.

Reference areas

Considering the different baseline scenarios present in the region, the project proponent selected two reference areas, one for the CCF dominated areas under the influence of local communities and one for the OWS dominated areas under the influence of transhumant pastoralists. Both areas were selected following the methodology requirements (see more details in Delineating Reference Areas section). As can be seen in Figure 12 the reference areas are adjacent to the project accounting areas.

Proxy areas

The proxy areas were selected considering three post deforestation scenarios, agricultural areas and mining sites for PAA 1 and overgrazed areas for PAAs 2 and 3. For more details see section Delineating Proxy Areas.

Activity-shifting leakage areas

Considering the different baseline scenarios present in the region, the project proponent selected two activity-shifting leakage areas (ASLA), one per each baseline scenario. The ASLA 1 for PAA 1 (areas under the influence of local communities) was established in collaboration with them, the idea was to select buffer zones around the western and southern borders of the PAA. The ASLA 2 for PAAs 2 and 3 (areas under the influence of transhumant pastoralists) was established initially based on the areas more subject to their movements so the ASLA is composed by areas around the eastern and northern borders of the PAAs 2 and 3.

These areas are as accessible as the corresponding PAAs and have similar conditions in terms of topography and land cover. For more details see section Delineating the Activity-Shifting Leakage Area.

Market leakage area

As explained in section Determining Emissions from Market Leakage, the project does not account emissions from market leakage.

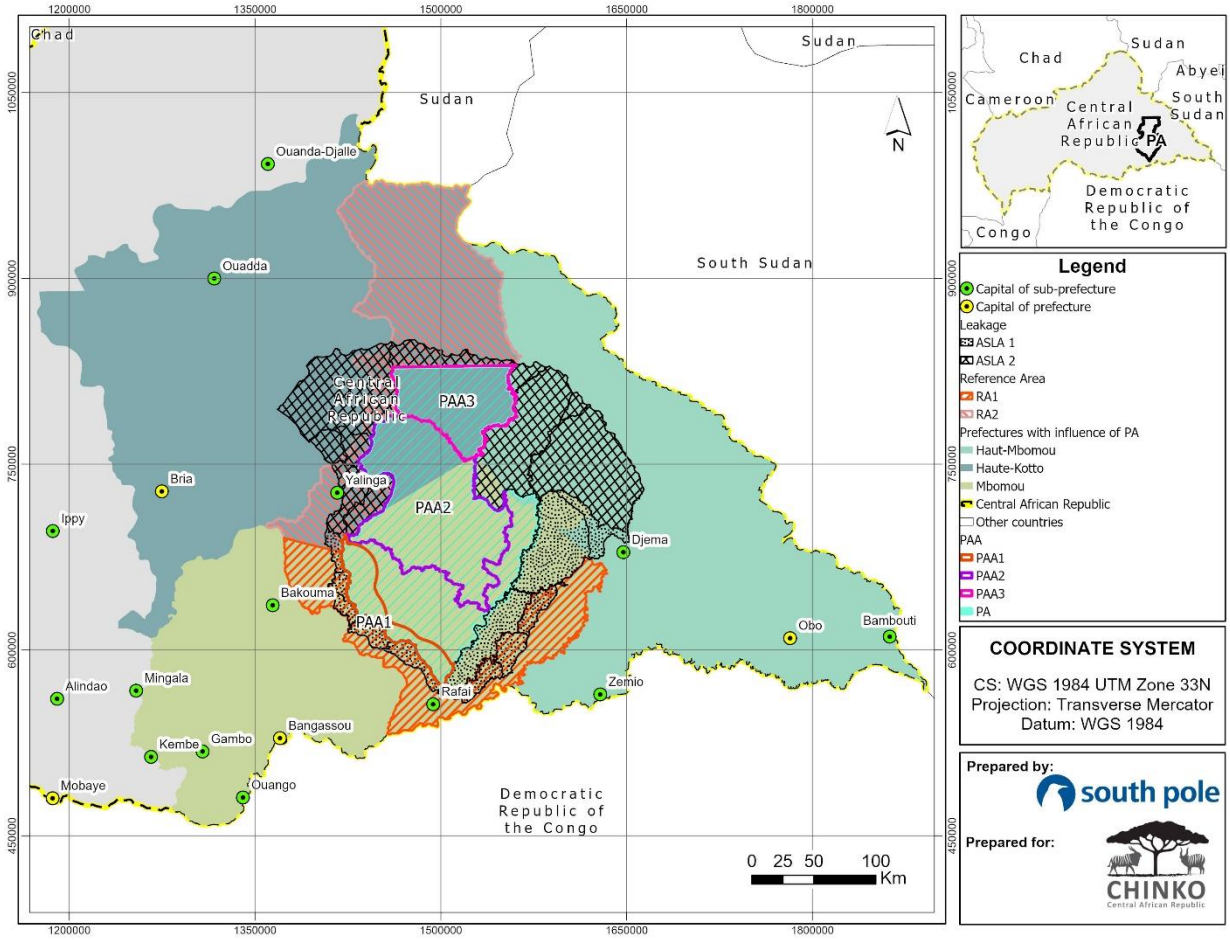


Figure 12: Spatial boundaries highlighting the contours of the project area, the project accounting areas, the reference areas, the activity-shifting leakage areas and the geographical boundaries of expansion of the grouped project (prefectures of Mbomou, Haute-Kotto and Haut-Mbomou).

(Source: South Pole, 2023)

Temporal boundaries

- **Project start date:**
  - **PAAs 1 and 2:** 15 September 2016
  - **PAA 3:** 15 April 2020
- **Crediting period:** From 15 September 2016 to 14 April 2045. The length of the crediting period is 28 years, 7 months and 0 days.
- **Baseline re-evaluation:** As per VCS requirements, for the duration of the project it is necessary to reassess the baseline every 10 years. Then, the baseline re-evaluation will be performed during the first verification claiming credits from a monitoring period after 16 September 2026.
- **First anticipated monitoring period:** The first anticipated monitoring period will be from 15 September 2016 to 31 December 2020.

- **Anticipated subsequent monitoring periods:** The subsequent monitoring reports are anticipated in a two to three-year interval.[63]

Gases and carbon pools

Table 8: Included GHG Sources

Gas	Baseline and project sources	Included?	Justification/Explanation
CO2 (carbon dioxide)	Flux in carbon pods	Yes	Major pool considered in the project scenario
CH4 (methane)	Burning of biomass	No	Conservatively excluded
	Livestock	Yes	A required source when emissions from grazing are not de minimis
N2O (nitrous oxide)	Burning of biomass	No	Conservatively excluded
	Livestock	No	Excluded on the basis of applicability condition 14
	Synthetic fertilizer	No	Conservatively excluded

Table 9: Carbon pools

Carbon pool	Required?	Inclusion?	Justification/Explanation
Above-ground merchantable tree (AGMT)	Yes, if baseline scenario or project activity (ies) include the harvest of long-lived wood products. Otherwise, accounting for this carbon pool is not required.	No	Pool not required; the baseline scenario does not include the harvest of long-lived wood products. Conservatively excluded
Above-ground other tree (AGOT)	Yes	Yes	Mandatory. Major pool considered
Aboveground non-tree (AGNT)	Yes, if the baseline scenario includes perennial tree crops. Otherwise, accounting for this carbon pool is optional.	Yes	Pool monitored in the carbon plots

[63] Potential periods subject to change

Carbon pool	Required?	Inclusion?	Justification/Explanation
Below-ground merchantable tree (BGMT)	Optional	No	Conservatively excluded
Below-ground other tree (BGOT)	Optional	Yes	Optional. May be conservatively excluded
Below-ground non-tree (BGNT)	Optional	Yes	Optional. May be conservatively excluded
Litter (LTR)	No	No	Always conservatively excluded
Deadwood (DW)	Yes, if AGMT is selected	No	Conservatively excluded
Standing deadwood (SD)	Optional	No	Conservatively excluded
Lying deadwood (LD)	Optional	No	Conservatively excluded
Soil organic carbon (SOC)	Optional	Yes	Conservatively excluded
Long-lived wood products (WP)	Yes, if AGMT is selected	No	Conservatively excluded

3.1.4 Baseline Scenario

As stated in the methodology, the baseline scenario depends on the identification of the agents and drivers of conversion and an understanding of how, when and where they might have operated in the project area.

Since there may be multiple groups of agents acting differently in the baseline scenario, more than one project accounting area may be required within a given project area. The baseline scenario for each baseline type is characterized by baseline emissions models that predict what would have happened in each project accounting area had the project not been initiated.

Below is a description of the different steps followed to determine the baseline scenario according to the methodology.

Identification of Agents and Drivers of Deforestation

Agents

In eastern CAR the agents of deforestation are classified in two major groups, these are transhumant pastoralists and local communities, below is a description of each group.

Transhumant pastoralists:

Pastoralists groups in the region generally consist of 20 to 50 people each, leading to at least 10,000 heads of cattle that live in loose groups. They do not live in fixed abodes or practice agriculture but spend most of the time travelling and exploit natural resources in the region as they move. It is common for family groups to join the herders as well as merchants that sell veterinary drugs and basic necessities (e.g., salt, sugar, millet, tea, or makeshift tents) to the pastoralists. This results in a very complex situation of large groups of people, cattle, donkeys and supplies moving long distances annually from the dry Sahel to the more humid grasslands in the south of the country (Aebischer et al., 2020).

The exploitation of natural resources includes poaching of large game, poisoning large carnivores that pose a threat to their cattle as well as cutting down trees for fodder, honey, medicine, fuel wood and other non-timber forest products. Because the forested areas restrict the movement of the pastoralists, they commonly cut down and burn the understory to create corridors that improve access the following year. Their movements also contribute to the trampling of regenerating seedlings and compaction of soil that results in lack of germination.

Transhumant pastoralists face no constraint to their mobility and migrate on loosely defined routes over extended periods of time. They can walk tens of kilometers per day for months on end during long seasonal migrations.

As indicated by the information collected by African Parks in their interaction with pastoralists in the region, they mainly come from Sudan, Chad and South Sudan and are expecting to reach the southeastern part of the CAR. The greatest distances are covered by herders and organized poachers from the Sahel, especially South Darfur. Transhumant herders and poachers from Sudan often travel 670 km to 800 km in a direct line from their homes to grazing and hunting grounds in the east of the CAR.

Local communities:

Here, we focus on local communities that live on the periphery of the project area.

Poverty is prevalent in the region and there are few economic opportunities and almost no formal employment opportunities for these communities. As a result, local communities are greatly dependent on natural resources. These communities make their living through small-scale agriculture, livestock rearing, hunting (both legal and illegal), fishing, harvesting of NTFPs, artisanal mining, small trade, temporary/seasonal employment, and handicrafts.

Growing crops is a major livelihood activity of most communities in the area, however mining and hunting are also relevant. Some families keep free-ranging animals including cattle, pigs, small ruminants (goats and sheep) and poultry.

The mobility of local communities is usually determined by the distance to the natural resources they need but in general they don't have major physical constraints to their mobility. Miners and hunters are extremely mobile in the Eastern CAR and local people can invest a lot of time and effort to reach the most remote areas in search of valuable resources. For example, miners and hunters from Rafaï used to travel more than 100 km in a straight line from the town to an area inside the CCA before AP took over management of hunting zone 48. Hunters, miners and fishermen from Yalinga often worked 50 km from their village and travelled without access to any transport infrastructure. Local hunters in Banabongo claim to travel up to 80 to 100 km to hunt larger animals. Miners from Bangassou established mine sites 170 km from the village travelling on small trails through the bush on foot or by bicycle. In terms of agriculture, as demonstrated by the historical data all highly productive soils and promising agricultural land within 32 km of a settlement are potential croplands and dense tropical forests are especially targeted for this (see more details in Delineating Project Accounting Areas).

Drivers

The former Ministry of Environment and Sustainable Development presented in its readiness preparation proposal (2011) to the Forest Carbon Partnership the national direct drivers of deforestation and degradation of forests. These are principally transhumance practices, unsustainable slash and burn agricultural practices, uncontrolled logging and harvest of non-timber forest products (NTFP), and infrastructure development (roads, mining, housing). Within the CCA the main drivers of deforestation are the transhumance practices and subsistence driven activities by local communities (such as slash and burn agriculture and artisanal mining), and are described in detail below:

Transhumance practices

Transhumance pastoralism is the main direct driver of deforestation of woodland savannas in the region and was already affecting the project area before the implementation of the project activities.

As early as 2011, the REDD readiness proposal for the country informed that:

"…Extensive transhumance is a source of significant pressures on the vegetation cover. Without a clear definition of rangeland to preserve forests (and crops) and provision of fodder in low season, maintaining the livestock causes negative impacts on the vegetation" and "…transhumance has played and will continue to play a role in the destruction of ecosystems despite governmental efforts to permanently settle livestock farmers and intensify their production systems."

Similar affirmations are mentioned again in the National REDD strategy in RCA, a document developed by the Ministry of Environment and Sustainable Development in 2021. There the unsustainable and extensive grazing is again mentioned as one of the drivers of degradation and deforestation in the country. At least 60% of the national actors interviewed have a perception that this practice is an important factor for degradation and deforestation.[64]

Transhumance practices operate at a regional scale. According to the Environmental Impacts Risks and Opportunities Assessment in South Sudan, made by the country government with support from the UNDP in 2011,[65] pastoralism is a significant driver of conversion. A significant contribution of livestock to land conversion in the region is the removal of seedlings, which eliminates the capacity of the forest to regenerate. Heavily grazed forest therefore often shows a very open structure on the ground. When overgrazing by livestock is too high and is combined with other factors (e.g. fire, fuelwood use, clearing for different purposes, low rainfall, drop in the water table) the woodland savannas degrade and turn into grasslands or even deserts. This increases sensitivity to soil erosion, especially in the high rainfall areas in the South of the country.

In recent years the eastern CAR wilderness has come under significant threat of encroachment by nomadic pastoralists and their livestock. Pastoralists have gradually extended their range to the area over the past decades. But this process has recently intensified, driven by desertification to the North, unsustainable grazing, human population growth, extended droughts, regional conflicts, and aided by the increased availability of veterinary drugs to overcome Trypanosoma (see the main patterns present in the area in Figure 13).

The cumulative effect of their movement results in deforestation and desertification. An example in the region is shown by the vegetation inventory carried out as part of the project. The inventory showed the long-lasting effects of pastoralists on natural vegetation along the former "March Bangui", a route used, between 2009 and 2017, as a shortcut through Chinko from the East to the West. Even five years after the

[64] Ministry of Environment and Sustainable Development, 2021. *Strategie Nationale REDD+ de la Republique Centrafricaine*. Available at: https://forestcarbonpartnership.org/system/files/documents/sn-redd_de_la_rca.pdf

[65] Ministry of Environment. 2011. Environmental Impacts Risks and Opportunities Assessment: Natural resources management and climate change in South Sudan.

"March Bangui" route was closed, the area only contains 23% of the carbon stock compared to control sites in the nearby open woodland savannah.

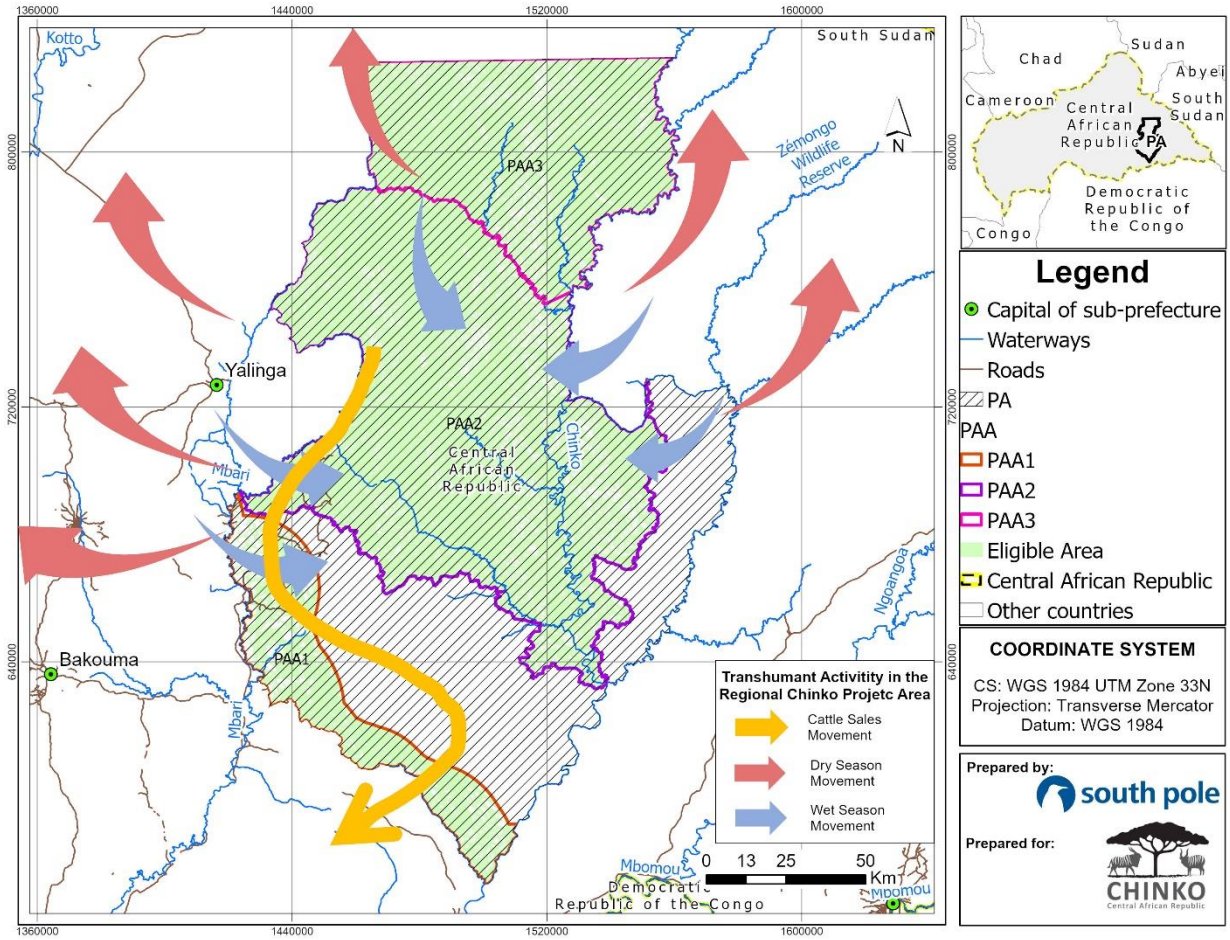


Figure 13: Transhumance patterns showing wet season movements inside the CCA prior to implementation.

Source: (Ondoua Ondoua, G. et al 2017).

Due to the lack of knowledge concerning transhumance corridors, it is becoming increasingly difficult to control the movements of cattle herds and restrict their impacts to smaller areas. By restricting their access to protected areas, environmental loss of these important habitats would be minimised. Containing movements of the cattle herds may also geographically restrict poaching and wildfire caused by the pastoralists and avoid disease transmission to and from wildlife.

Establishing corridors requires rational land-use planning in consultation with all stakeholders (see section 2.1.11 for more details of the activities proposed). Transhumance corridors have been successfully created and managed in West Africa, where both farmers and pastoralists recognise the importance of corridors for their peaceful coexistence (Alidou, 2016).

Subsistence driven activities by local communities

Slash and burn agriculture (Shifting practices)

Although the country has no updated reliable figures on the rate of deforestation due to slash and burn agriculture, many studies on the CAR forests have shown that it is gradually being replaced by agricultural plots (the World Bank Group, 2010).

Most agriculture is small-scale, and the sector is dominated by traditional subsistence systems. Future agricultural developments may, however, be at the expense of forests. (Behrendt et al., 2013). See a more detailed discussion on the process of deforestation caused by this driver below.

Artisanal mining

The CAR has a lot of mining resources throughout the country – diamonds, gold, uranium, iron and copper are present in the northeast (prefecture of Haute-Kotto) where some part of the project area is located). It is mainly artisanal alluvial diamond and gold mining where riparian and gallery forests are systematically destroyed. In some localised cases, artisanal mining has diverted watercourses or contaminated water, damaging the local ecosystem (Francis et al., 2016).

Illegal mines can emerge within a few weeks and fundamentally change the land use, local economy, and society. Some examples from northern CAR illustrate how illegal mines initiated by transhumance pastoralists and later managed by professional miners from Sudan lead to deforestation of large areas within few months. Local authorities and the government of the CAR are currently not able to mitigate the migration of Sudanese miners into the country.



Figure 14: Mining operations along the Kotto River

Deforestation process

The sections above provided information regarding the agents and drivers acting in the region. This section provides an explanation on the deforestation process occurring, the connection between the agents and drivers, and how the deforestation would have occurred in the project area in the absence of the project.

Pastoralism

As explained in the section above, transhumance is the main direct driver of deforestation in the region, caused by transhumant pastoralists.

During the baseline period the migration process was done by the pastoralists moving inside the CCA during the dry season to reach the southern part of CAR, that sustains humid conditions and pasture needed for the cattle. During their migratory route they cause deforestation through fires as they migrate through the area to facilitate their movement and to ease access in the following years. In addition, as stated by the South Sudan Government report,[66] the most important contribution of livestock to deforestation is the compaction of soils and removal of seedlings, which eliminates the capacity of the forest to regenerate. Heavily grazed forest therefore often shows a very open structure on the ground. If the off-take by livestock is above the re-growth capacity of vegetation and is combined with other factors (e.g. fire, tree cutting for different purposes, low rainfall, drop of water table) the open tree savannas may convert and turn into grasslands or deserts.

[66] Ministry of Environment. 2011. Environmental Impacts Risks and Opportunities Assessment: Natural resources management and climate change in South Sudan.

The government of CAR identified pastoralism as a driver of deforestation in the country in the submission of the Readiness Preparation Proposal in 2011[67]: "The direct threats on forests include (i) unsustainable extensive livestock farming, (ii) unsustainable slash-and-burn agricultural practices..." The document states that transhumance has played and will continue to play a role in the destruction of ecosystems despite governmental efforts to permanently settle livestock farmers and intensify their production systems.

Extensive transhumance is a source of significant pressures on the vegetation cover. Without a clear definition of rangeland to preserve forests (and crops) and provision of fodder in the dry season, maintaining the livestock causes negative impacts on the vegetation.

In the Midway Progress Report prepared by the CAR Government in 2020[68] and the study on the identification of the driving forces behind deforestation and forest degradation in the CAR carried out in the context of the development of the REDD+ National Strategy it was confirmed that wildfires and transhumant pastoralism must be considered as deforestation factors in the CAR.

As shown in the references from national sources in CAR and Sudan, mentioned in the paragraphs above, transhumance is a deforestation factor in the region and also in the country, the causality of pastoralism practices and destructive exploitation of natural resources by transhumance pastoralists is the main driver of deforestation of humid woodland and tree savannas in Central Africa.

At a project level, this is well illustrated by the examples of:

i) the Bambari-Alindao region,
ii) the headwaters of the Chinko River drainage at the South Sudanese border
iii) former "March Bangui" within the current Chinko Conservation Area.

Bambari-Alindao:

Before 1925, there were no cattle in most of what is now the Central African Republic.[69] In the 1940s herders from western CAR started to colonize the Bambari-Alindao area.[70] Only in the 1960s, livestock communities were created in the Bambari-Alindao region of the eastern Central African Republic to stabilize migration.[71] Suchel (1967)[72] described that in the 1950's, about 100,000 cows were reported to have grazed permanently in the Bambari-Alindao. At that time, no livestock occurred further east of Bambari-Alindao in Bria and beyond.[73] Already in the early 1980's, experts speak of large-scale overgrazing and destruction of woodland savanna in the Bambari-Alindao region.[74]

The inaccessible tree and woodland savannah in the northeast of Alindao was not used for agriculture and was almost exclusively used for grazing due to the lack of roads and infrastructure. The constant

[67] https://forestcarbonpartnership.org/system/files/documents/CAR-RPP%20Revised%20March%2005%2C%202011_0.pdf

[68] https://forestcarbonpartnership.org/system/files/documents/MTR_REDD_FCPF_CAR_20200924_Fr_final.pdf

[69] Suchel Jean-Bernard. L'élevage des bovins en République Centrafricaine (ex Oubangui-Chari). In: Cahiers d'outre-mer. N° 78 - 20e année, Avril-juin 1967. pp. 137-149

[70] Brizard, H. Le problème de la viande en Oubangui-Chari : son évolution, son importance économique et sociale. Revue d'élevage et de médecine vétérinaire des pays tropicaux 6, no. 1 (1953): 9-15.

[71] Julie Roselyne Betabelet, Alexis Maïna Ababa et Ibrahim Tidjani, « Élevage bovin et conflits en Centrafrique », Les Cahiers d'Outre-Mer [En ligne], 272 | Octobre-Décembre 2015; DOI : https://doi.org/10.4000/com.7655

[72] Suchel Jean-Bernard. L'élevage des bovins en République Centrafricaine (ex Oubangui-Chari). In: Cahiers d'outre-mer. N° 78 - 20e année, Avril-juin 1967. pp. 137-149

[73] Brizard, H. Le problème de la viande en Oubangui-Chari, son évolution, son importance économique et sociale (1953).

[74] Vennetier, Pierre, and Yves Boulvert. Atlas de la République Centrafricaine [document cartographique]. Editions Jeune Afrique, 1984.

overgrazing led to the destruction of the habitat. The bare soil was exposed to erosion from wind and water as well as to chemical and physical changes caused by solar radiation and high temperatures. Native shrubs and trees seem to have difficulty reproducing in these man-made desertic conditions.

As a result, the disturbed ecosystem is also prone to being overgrown by invasive and inedible plants such as *Chromolaena odorata*, *Lantana camara* and other potentially detrimental exotic shrub species that lower recruitment of native tree and shrub species further by competition for resources. The depleted, bare soil combined with invasive plants and ongoing destruction by herders and livestock led to large-scale deforestation of woodland savannas in the Bambari-Alindao region.

Publicly available information from the past 21 years, from Global Forest Watch and remote sensing satellite pictures from Google Earth show such deforestation (see Figure 15 and Figure 16).

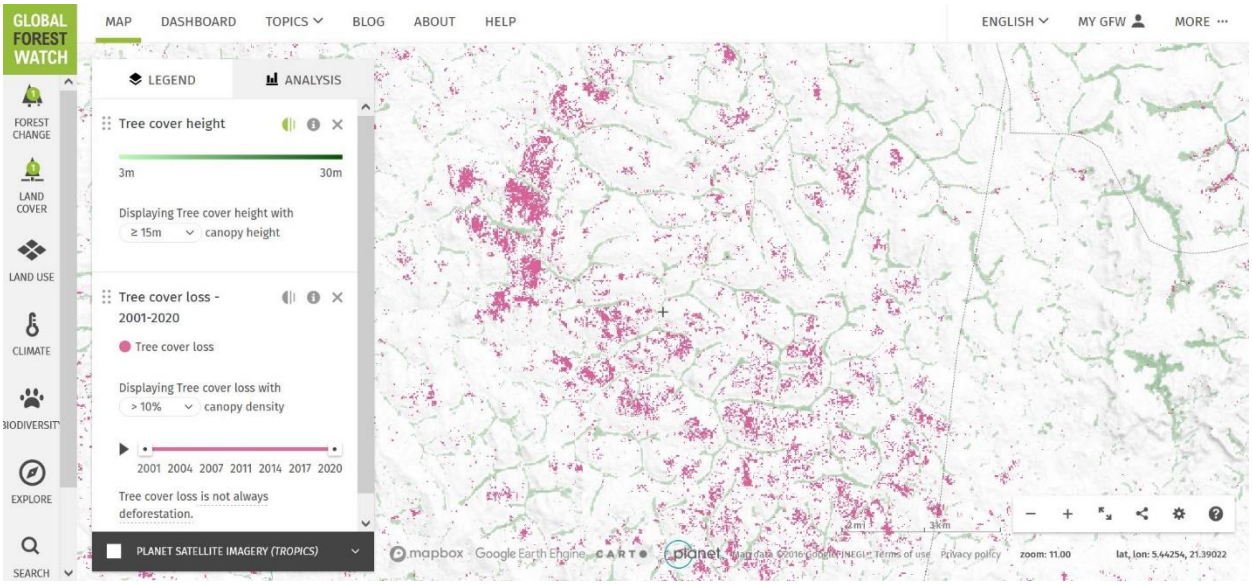


Figure 15: Deforestation in Alindao as shown by GFW, occurring in the woodland savanna due to pastoralism[75]

Source: Global Forest Watch

[75] For confirmation check the following coordinates: Lat: 5.44254, Lon: 21.39022



Figure 16: Deforestation in Alindao, as illustrated by the bare, sandy soil where well wooded savannah would have been expected. Although the riverine forest remains relatively intact the woodland further deteriorates over time.

Source: Google Earth



Figure 17: A typical woodland savanna with undisturbed vegetation in the Eastern Central African Wilderness is shown as a comparison. Riverine forest in the back of the picture

Source: African Parks, taken during a surveillance flight

Headwaters of the Chinko River drainage at the South Sudanese border

Since 2010/2011 this area is reportedly frequently visited by transhuman pastoralists from South Darfur.

Google Earth data (Figure 18) shows areas recently exposed to pastoralism with clear signs of overgrazing and conversion of forest cover. Interestingly, Global Forest Watch data indicates deforestation in these overgrazed areas along the CAR - South Sudanese border within the last 21 years in the absence of any other land-use changes in the same period (see Figure 19).



Figure 18: Deforestation inside the CCA at Vovodo source, as illustrated by the patch of sandy soil without trees in the middle

Source: Google Earth

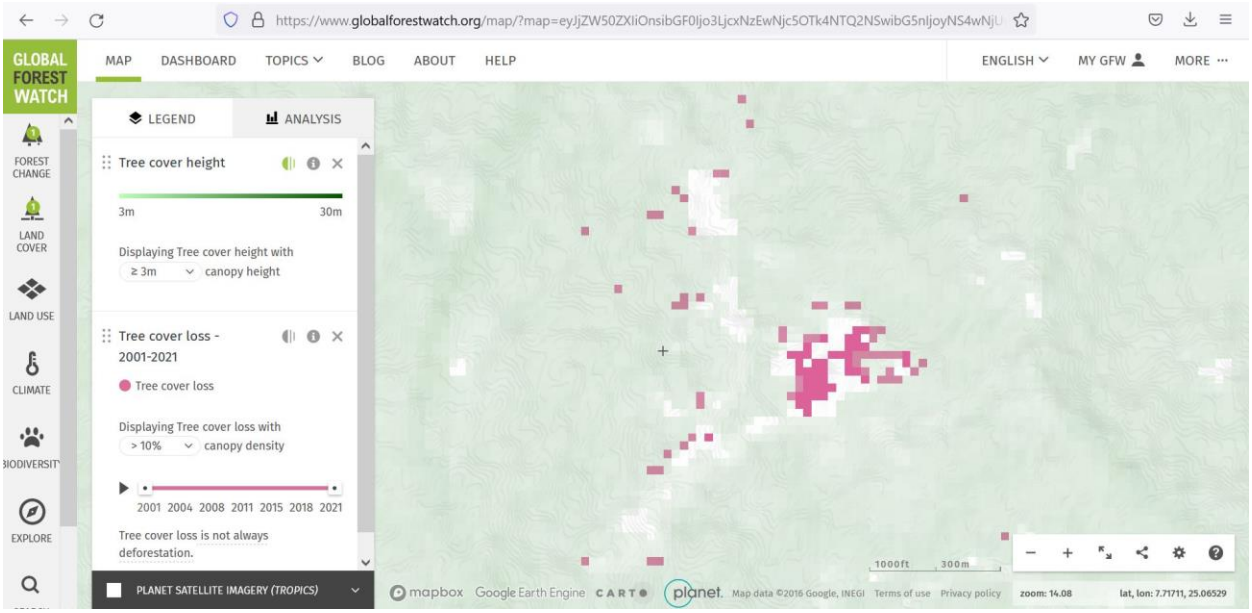


Figure 19: Same location as in the above figure, the Vovodo sources, deforestation confirmed in GFW[76]

Source: Global Forest Watch

March Bangui

Finally, another example is inside CCA. Vegetation inventories in virtually pristine areas within the actively protected core zone compared to plots on the former “March Bangui” – a recently established local transhumance path between Mboki and Alindao (International Peace Information Service, 2018) clearly shows the long-lasting effects of pastoralism on the natural vegetation.

Vegetation inventories and carbon plot analysis inside the CCA indicate a 77% reduction of tCO_2e/ha due to the activities of pastoralists. This pronounced reduction of carbon stocks happened in a short period and seems to be long-lasting if not irreversible. Erosion scars of the former “March Bangui” are still visible on the ground and during aerial surveys 5 years after livestock stopped using it.

In conclusion, the situation in Bambari-Alindao region, the Chinko drainage headwaters and along the "March Bangui" in Central Africa provide clear evidence that the activities associated with pastoralists put heavy pressure on this ecosystem leading to deforestation of woodland savannas in the region.

Subsistence activities by local communities

In addition to the pastoralists, the other group of deforestation agents are the local communities, who exploit the natural resources through subsistence farming. Local communities have limited capacity and knowledge to implement sustainable agriculture practices that would allow the system to recover, causing a quicker depletion of natural resources.

Slash and burn agriculture is used to continually expand farm plots, clearing forested areas as the soil and nutrients in old agriculture plots is depleted and yields are reduced. Artisanal mining is concentrated in the riparian zones, deforesting the edges of the river in order to establish small ponds to extract the mining resources. Once they can guarantee that a specific area has the resources they need, they further clear the forest to establish settlements and agriculture to support their mining activities.

Ultimately, population growth is especially relevant as a driver of deforestation in the medium term. With increased stability and security in the area it is expected that the previously displaced population during the

[76] For confirmation check the following coordinates: Lat: 7:71711, Lon: 25.06529

years of civil war will return to localities that are currently abandoned in the areas bordering the project boundary.

In conclusion, the agents of deforestation acting in eastern CAR have different preferences of land cover and dynamics leading to deforestation. For these reasons there is a need to have two baseline scenarios in the project, one for the areas with predominance of Open Woodland Savanna (OWS) in which the transhumant pastoralists are generally acting and one for the areas with predominance of Closed Canopy Forest (CCF) in which the subsistence activities by local communities are present.

Delineating Project Accounting Areas

The Project Accounting Areas are defined in the methodology as an area within the project area that meets the definition of forest and is subject to conversion in the baseline scenario.

As stated in section 6.2 of the methodology, the PAAs must be defined based on the constraints associated with the identified agents and drivers of deforestation, considering that for some specific contexts some agents may be constrained by factors such as topography, roads, rivers or perennial streams and land use/vegetation type classification. Section 6.2 of the methodology also states that the PAA may be optionally delineated based on the results of a participatory rural appraisal or expert knowledge.

Considering the methodological requirements, an initial delineation of the accounting areas was done based on the national definition of forest at least 10 years prior to the project start. The predominance of land cover and other scientific studies done in the area by external universities (e.g., Tidjani, 2015[77], Aebischer et al. 2019, Ondoua Ondoua, G et al. 2017) as well as expert knowledge from the project proponent itself were subsequently considered in a stepwise manner.

Land Cover predominance in Chinko Conservation Area:

The area composed of four hunting zones (39, 40, 41 and 48) was initially divided into two sectors based on the two dominant land cover types in the area. PAA 1 represents the predominance of CCF land cover and is located in the south and southeastern section while PAA 2 has predominantly OWS land cover and is located in the central and northern section. The separation between the two sectors was done following the drainage basins of major rivers.

Finally, the area composed only of hunting zone 36, which started being managed by African Parks in 2020, is selected as a single PAA (PAA 3) with a predominance of OWS.

Constraints to conversion:

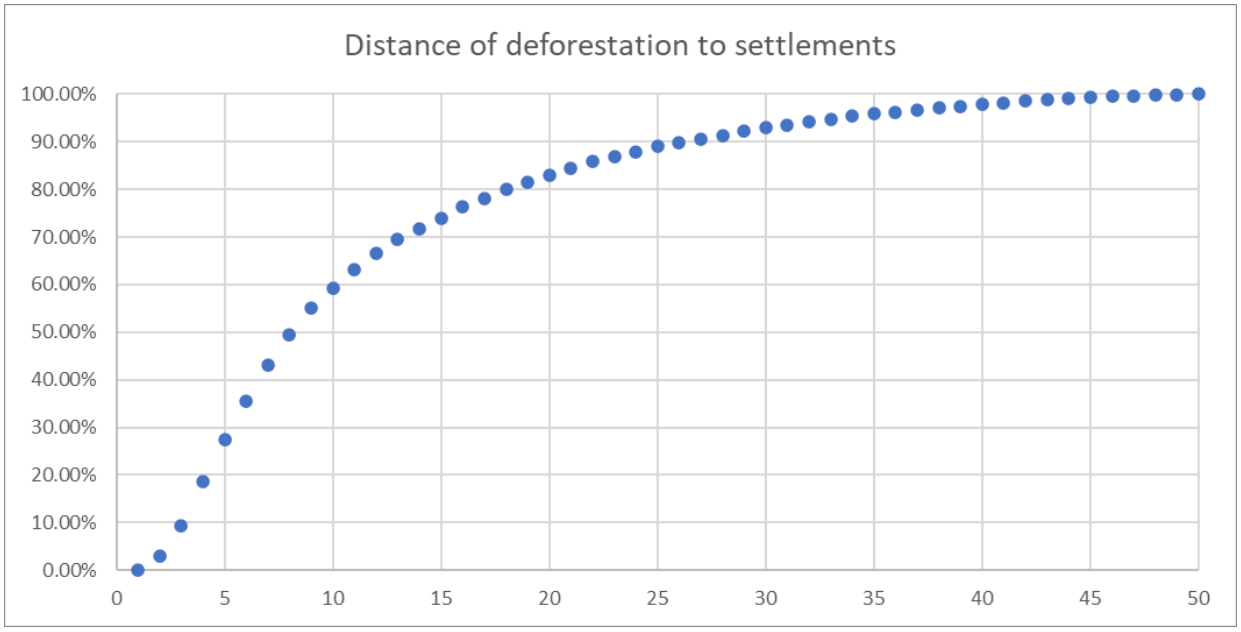
In order to improve the delineation of the PAA the constraint factors mentioned in the methodology were assessed in each PAA.

Firstly, for PAA1, the land cover constraint was considered. In PAA 1 there is a predominance of CCF which is threatened by slash-and-burn agriculture and artisanal mining from local communities. It is, therefore, assumed that areas covered with CCF in PAA 1 are subject to these drivers of deforestation. On the other hand, the OWS cover within PAA 1 is an area with minor interest from local communities and, therefore, it was not included as an area under risk of conversion in the following steps of the baseline scenario or in the Biomass Emissions Model (BEM).

[77] The study done by Ibrahim Tidjani has: The characterization of the herders inside CCA, the identification and analysis of the motivations related to their incursions into the said area and the proposal of operational recommendations in order to considerably reduce this negative pressure of livestock and induced human practices (poaching) on wildlife resources. Available in the references folder

In addition, we evaluated other constraints, such as agent mobility and accessibility of the PAA. As stated above in the subsection Identification of Agents and Drivers of Deforestation and according to local expert knowledge from African Parks staff who have been working and travelling in the area since 2014, the local communities do not generally have major constraints to mobility. Despite their sedentary nature they are known to travel large distances for longer periods of time (e.g harvest season). Especially miners and hunters are extremely mobile in the Eastern Central African Republic and local people can invest a lot of time and effort to reach the most remote areas in search of valuable natural resources. Also, it is important to note that mining often acts as a threat multiplier once the agents find valuable resources new people migrate to the sector and new settlements are created around the relevant area.[78]

To further delineate PAA 1 based on historical data that can be verifired, we analysed deforestation events prior to project implementation (2001 – 2016 period) using Global Forest Watch data. The analysis determined the distance of deforestation within Reference Area 1 (see more details of its delineation below in subsection Delineating Reference Areas) from the nearest roads and human settlements.[79] The results confirms that local communities are willing to move long distances. The cumulative distribution plot (Figure 20) shows that 95% of the conversion occurred within 23 km of the nearest road and 32 km to the nearest settlement.



[78] This has been identified elsewhere by African Parks in Garamba, Democratic Republic of Congo. There, in the Ganga na Bodio hunting zone, despite the lack of roads, artisanal miners have attracted a large swath of other people that are practicing slash-and-burn agriculture to provide food for the miners, despite being over 20 kms from the nearest village. More on the link between artisanal mining and deforestation available here: https://voxdev.org/topic/energy-environment/role-artisanal-mining-deforestation-new-insights-africa-wide-data

[79] Details included as supporting documentation

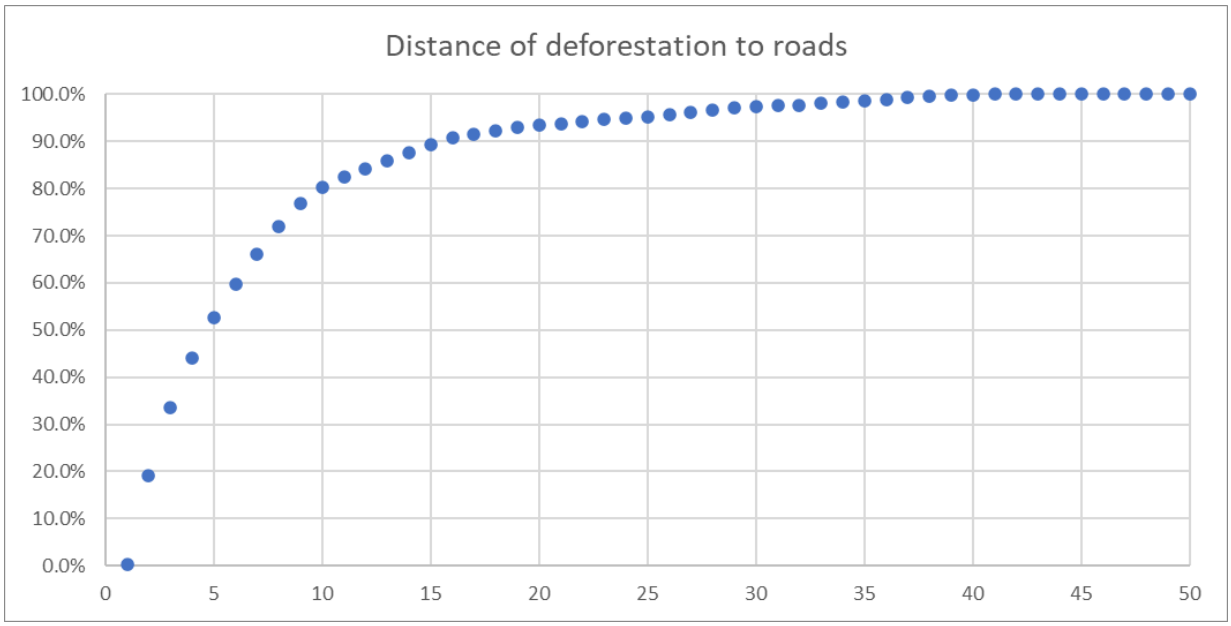


Figure 20: Distance of deforestation to settlements (above) and to roads (below), in km, during the 2001 – 2016 period

Based on the results we considered that any forested area inside the initial delineation of PAA1 beyond that distance is under no major risk of deforestation by the agents. Therefore, the final delineation of PAA 1 included only the CCF land cover that fell within the 23 km and 32 km buffers described above. Despite this categorization and final size of PAA 1, the project proponent will continue to manage the entire CCA, including all areas within the project area that are not categorized as PAA 1, 2, or 3.

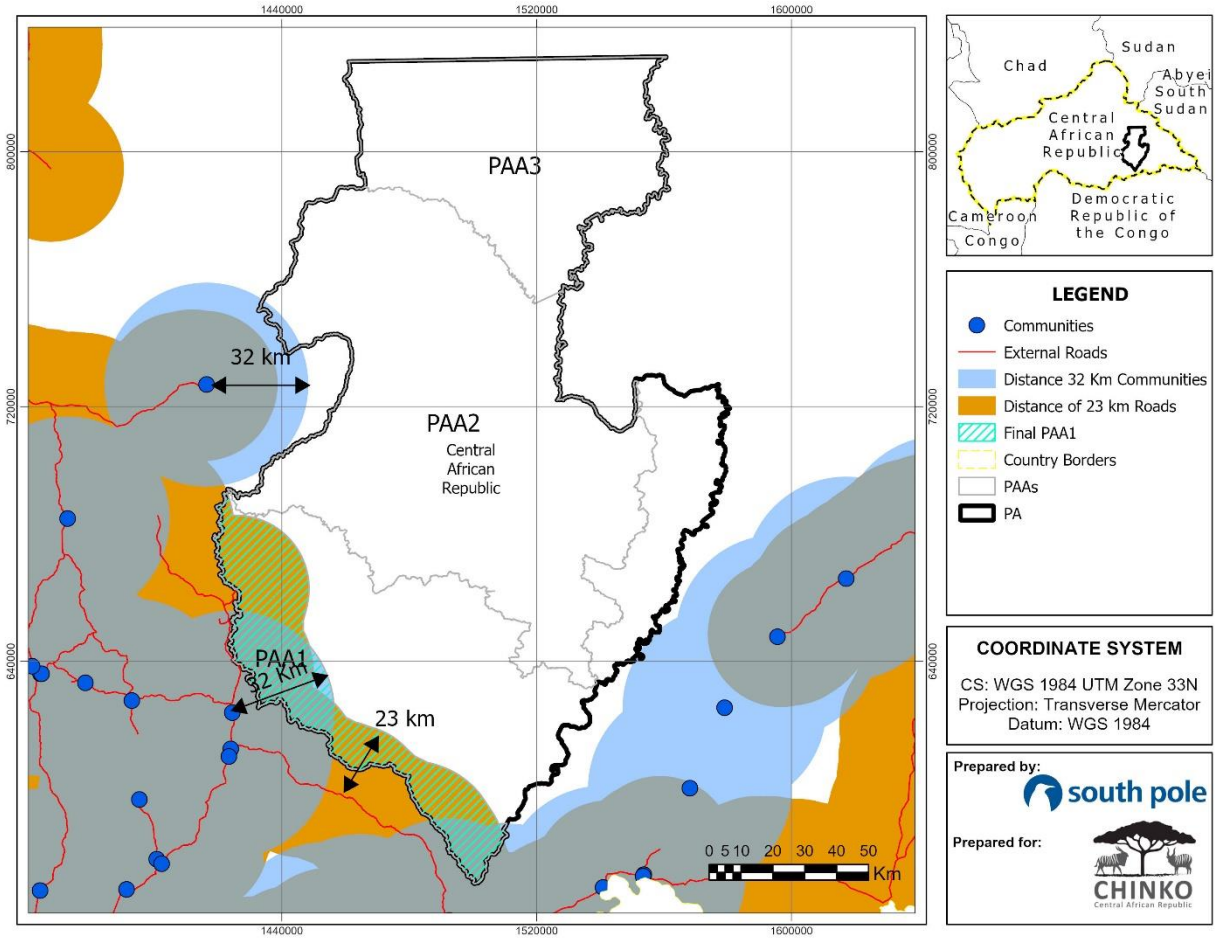


Figure 21: Area selected as PAA 1 after adding the distance as a constraint to conversion. The area included in the PA not selected as any PAA was excluded due to the constraints mentioned above.

With regards to PAA 2 and PAA 3, areas with a predominance of OWS are threatened with conversion from transhumant pastoralists. Within PAA 2 and PAA 3 there is also the presence of CCF (mostly riparian forest), however, the analysis done for determining the historical conversion found no major historical conversion in those areas and, therefore, were excluded as areas under risk of conversion in the following steps of the baseline scenario or in the Biomass Emissions Model (BEM). That said, the project proponent will continue to manage and monitor all threats to deforestation of all habitat types within the entire project area.

The studies mentioned earlier (e.g., Tidjani, 2015[80], Aebischer et al. 2019, Ondoua Ondoua, G et al. 2017), describe pastoralism as an activity occurring in a widespread manner inside the CCA prior to the start of the conservation activities. Based on these studies, the PAA 2 and 3 were subject to conversion, requiring

[80] The study done by Ibrahim Tidjani is available in the references folder. It studies the characterization of the herders inside CCA, the identification and analysis of the motivations related to their incursions into the said area and the proposal of operational recommendations in order to considerably reduce this negative pressure of livestock and induced human practices (poaching) on wildlife resources. Available in the references folder

the implementation of activities that reduce and restrict the threat of pastoralism in the CCA. Furthermore, it is also clear that in the absence of the project, pastoralism would have continued and expanded.

The main agent of deforestation in PAA 2 and PAA 3 are transhumant pastoralists. As explained in section 3.1.4, subsection Identification of Agents and Drivers of Deforestation, the pastoralists' mobility is not subject to any spatial constraint across the PAAs (e.g., CCA does not have steep slopes or impassible rivers that would constraint them). The pastoralists are not constrained by the lack of a road network to perform their activities and the selected PAAs within the CCA contain desirable, high quality grazing area. Moreover, as recently seen in other areas in the region, pastoralism activities result in an influx of other agents of deforestation in later stages (e.g., Northern areas of hunting zone 17 are subject to deforestation by the establishment of illegal settlements and transformation of natural vegetation into farmland)[81]. Therefore, it is possible to conclude that OWS areas within PAA 2 and PAA 3 would be subject to the effects of pastoralism in the absence of the project implementation as was the case inside the CCA in years prior to implementation (as described in Tidjani et al, 2015).

Final PAAs description

Tables below present the perimeter of each PAA including vertices coordinates for guidance and the total area of each PAA[82].

Table 10: PAA 1 delineation

Range	Description	Length (m)
A-B	River direct affluent to Chinko river	66,257.68
B-C	Land cover	71,970.57
C-D	Mbari River	120,192.94
D-E	Buffer with respect to urban areas (32km) and external roads (23km)	151,688.25
E-A	Chinko river	25,772.38

Table 11: Forest vegetation type inside the PAA 1 perimeter (total area)[83]

Cover	Area (ha)	Percentage
Closed canopy forest	148,395.64	61.52%
Open woodland savanna	74,105.52	30.72%
Non-forested area	18,707.44	7.76%

[81] See the special report on the status and strategy for hunting zone 17, developed by AP in 2022

[82] For more details of the selection of the eligible area determination, please refer to Appendix 5 – Land-cover assessment (Post-classification), which explains the stratification process.

[83] The total area of PAA 1 used for the Biomass Emissions Model calculations is the eligible CCF cover. The forest cover of OWS is not included.

Cover	Area (ha)	Percentage
Total	**241,208.59**	**100.00%**

Table 12: PAA 2 delineation

Range	Description	Length (m)
F-G	River Mbari	1,184.28
G-H	River	129,708.86
H-I	Limit Basin of direct affluent to Mbari river	22,983.47
I-J	Land cover	6,288.62
J-K	Riparian forest	67,243.76
K-V	River	108,365.86
V-N	Limit Mbomou prefecture	9,922.91
N-O	Chinko River	54,010.99
O-P	River	49,335.78
P-Q	Limit basin of direct affluent to Chinko river	208,913.59
Q-R	Limit Chinko basin	105,040.07
R-S	Limit subbasin	50,903.35
S-T	Limit subbasin	59,985.61
T-U	Limit Chinko basin	65,642.69
U-F	Boundary sub-basin of the direct tributary to the Mbari River	53,689.34

Table 13: Forest vegetation type inside the PAA 2 perimeter (total area)[84]

Cover	Area (ha)	Percentage
Closed canopy forest	248,452.15	22.50%

[84] The total area of PAA 2 used for the Biomass Emissions Model calculations is the eligible OWS cover. The forest cover of CCF is not included.

Cover	Area (ha)	Percentage
Open woodland savanna	713,408.61	64.59%
Non-forested area	142,597.22	12.91%
Total	**1,104,457.97**	**100.00%**

Table 14: PAA3 delineation

Range	**Description**	**Length (m)**
K-L	River	51,170.02
L-M	Latitude	100,026.57
M-N	Chinko River	183,717.98
N-V	Limit Mbomou prefecture	9,922.91
V-K	River	108,365.86

Table 15: Forest vegetation type inside the PAA 3 perimeter (total area)[85]

Cover	Area (ha)	Percentage
Closed canopy forest	81,678.95	16.16%
Open woodland savanna	363,225.39	71.84%
Non-forested area	60,682.05	12.00%
Total	**505,586.39**	**100.00%**

Table 16: Vertices and coordinates for the PAA delineation

Vertex	Latitude	Longitude
A	5° 5' 43.157" N	23° 59' 19.917" E
B	5° 25' 48.497" N	23° 43' 41.464" E
C	5° 40' 28.852" N	23° 21' 45.819" E

[85] The total area of PAA 3 used for the Biomass Emissions Model calculations is the eligible OWS cover. The forest cover of CCF is not included

Vertex	Latitude	Longitude
D	6° 12' 13.807" N	23° 18' 49.357" E
E	5° 15' 46.566" N	24° 4' 59.041" E
F	6° 12' 23.837" N	23° 19' 0.655" E
G	6° 12' 52.384" N	23° 18' 53.823" E
H	6° 36' 47.716" N	23° 32' 24.945" E
I	6° 41' 39.430" N	23° 26' 1.924" E
J	6° 42' 44.556" N	23° 24' 34.807" E
K	7° 3' 20.137" N	23° 42' 52.024" E
L	7° 24' 29.337" N	23° 40' 31.974" E
M	7° 24' 12.416" N	24° 34' 6.288" E
N	6° 45' 18.217" N	24° 15' 53.702" E
O	6° 26' 50.752" N	24° 14' 33.612" E
P	6° 29' 47.163" N	24° 27' 41.017" E
Q	5° 39' 11.855" N	24° 20' 22.572" E
R	5° 43' 39.095" N	24° 5' 44.508" E
S	5° 52' 38.021" N	24° 1' 51.617" E
T	5° 57' 35.438" N	23° 47' 30.015" E
U	6° 7' 40.289" N	23° 34' 33.933" E
V	6° 43' 5.622" N	24° 11' 3.160" E

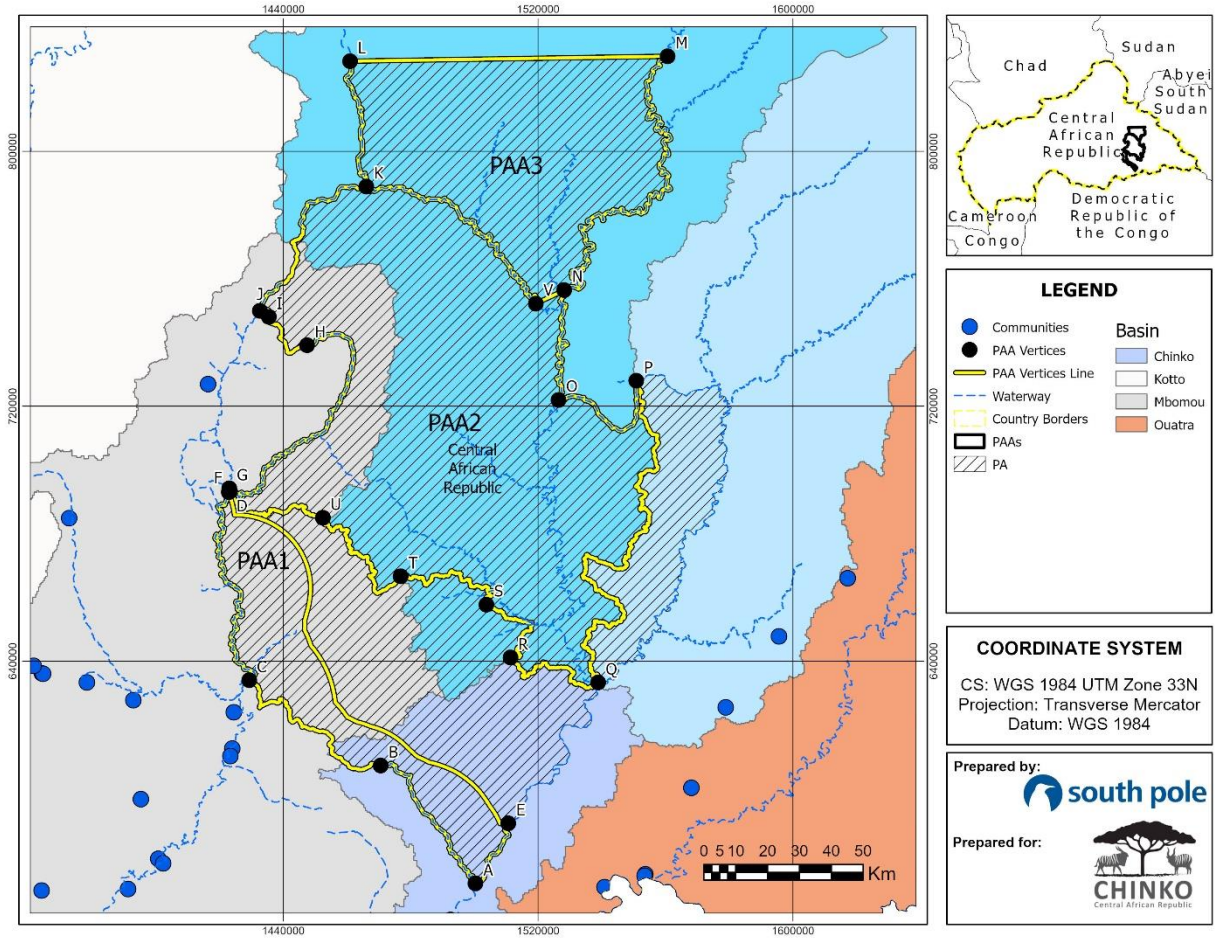


Figure 22: PAAs perimeter and vertices

(Source: South Pole, 2023)

Finally, to comply with the PD requirement 22, Figure 23 shows the current Project Accounting Areas, including aerial or satellite imagery showing that they are forested as of the project start date and 10 years prior to the project start date.

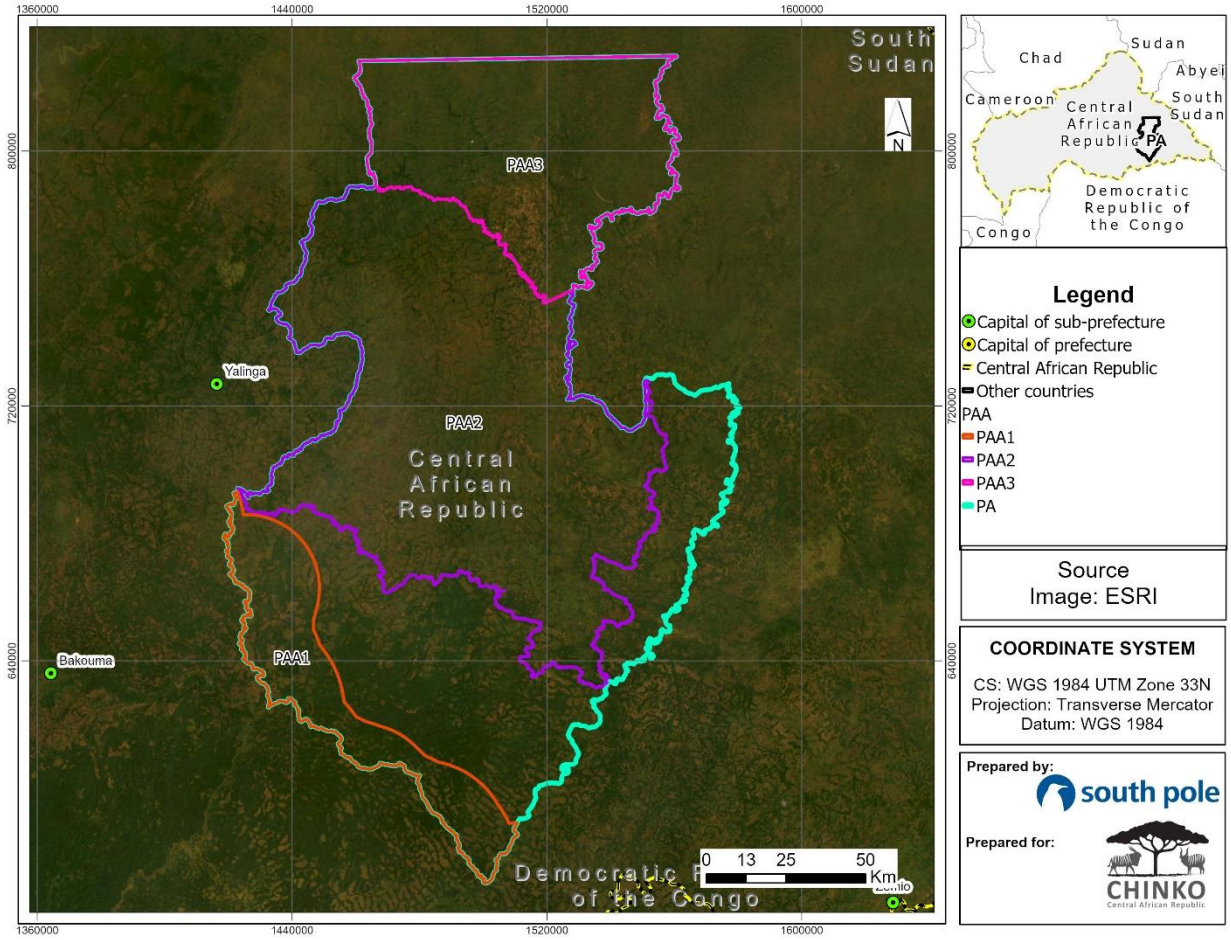


Figure 23: Project accounting areas at validation

(Source: South Pole, 2023)

Identifying Baseline types

The baseline type was identified through a spatial analysis of the project area following the decision tree guideline from section 6.3 of the methodology. As the project meets the definition of unplanned conversion, the evaluation for identifying the baseline type consisted in determining the percentage of perimeter of the project area within 120 meters of conversion that occurred within 10 years prior to the project start date.

The project area encompasses a perimeter of 1,245,802.43 metres. Additionally, the portion of perimeter that intersects with deforestation occurring within 120 meters has a length of 49,102.53 metres (Refer to Figure 24 for a visual representation of the project area with the adjacent deforestation). As this length represents less than 25% of the total perimeter of the project area, we can infer a low conversion along the perimeter, thereby determining a baseline type of F-U3.

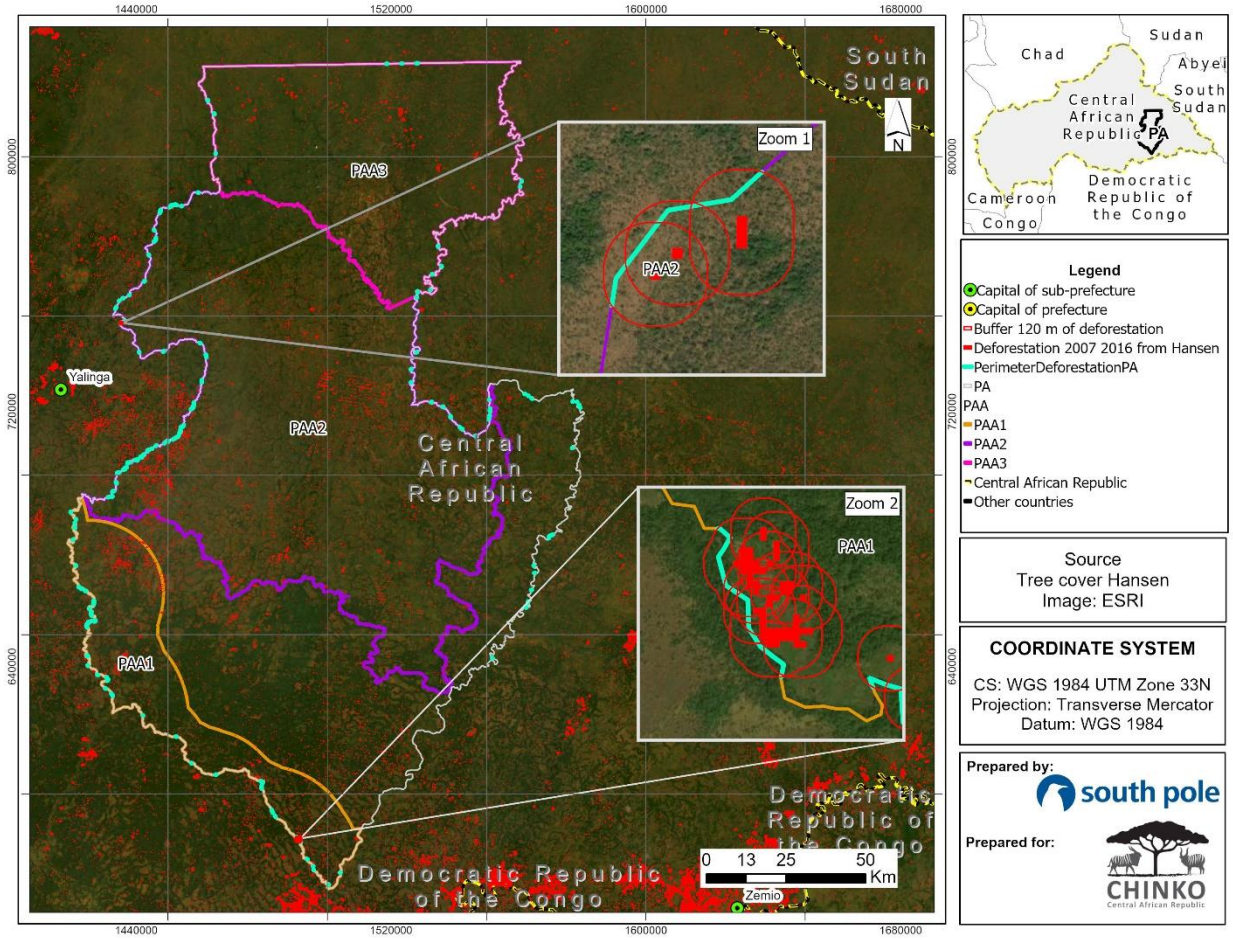


Figure 24: Delimitation of the perimeter of deforestation in the PA, highlighting deforestation as red hotspots in the 10 years before the project start date.

(Source: South Pole, 2023)

Delineating Proxy Areas

For the proxy areas, the closest active agricultural sites and exploited mines in the southwest of the CCA were selected as valid post deforestation scenarios for PAA 1. The sites were selected given the accessibility even in difficult conditions like the height of the rainy season (characterized by broken bridges and impassable roads) and keeping security in mind (see Figure 25). These areas have very similar vegetation, soil and climatic conditions and are very close to the actual reference sites where vegetation and biomass inventories were conducted (4-33 km from the CCA borders and 36-78 km from reference plots on the same altitude).

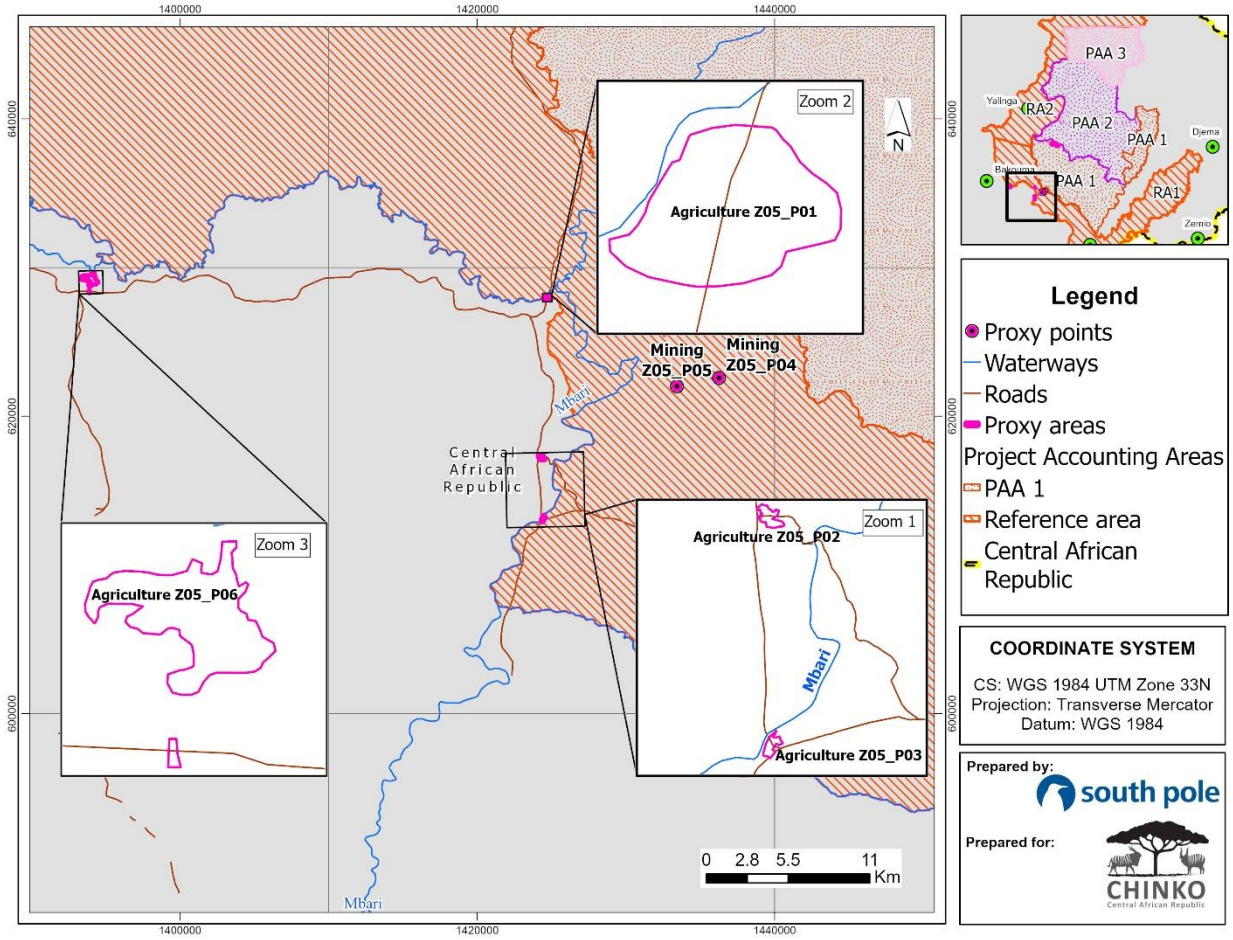


Figure 25: CCF areas converted to agriculture and mining, selected as proxy areas for PAA 1.

(Source: South Pole, 2023)

The proxy area selected for PAAs 2 and 3 were overgrazed areas within the CCA. They have similar vegetative conditions compared to the modified landscape around the CCA. Thousands of livestock crossed the area of the CCA from 2010 to 2017 on a corridor from east to west that is locally known as “March Bangui” (see Figure 26). This transhumance path was illegally established in managed hunting zones (48-Bas-Chinko, 49-Dembia) to avoid conflicts with the local communities in Rafaï and Bangassou and to have access to better pastureland and rich wildlife areas for poaching. Even though “March-Bangui” was only active for about 6 years and (was halted by the project proponent in 2017), signs of trampling and unsustainable grazing are still visible today. Therefore, the ancient “March Bangui” was chosen as proxy-area to quantify the effect of pastoralism on the natural vegetation of Eastern CAR. However, in the near future, if security conditions allows, it will be very important to measure plots around Alindao to document the long-term effect of livestock on the natural vegetation. The negative effects of unsustainable grazing and trampling that were measured within the CCA should be regarded as conservative since these negative effects seem to be marginal compared to the long-term impact on heavily grazed areas outside of the CCA. Another good proxy area would be selected areas around Zémio and Mboki since effects of livestock from local and international transhumance is already well pronounced there. However, ongoing political tension

prohibit any field work in this area at this stage. The land cover analysis shows that the areas selected as proxy areas were all classified as non-eligible – converted for the 2015 – 2016 period (see Figure 27).[86]

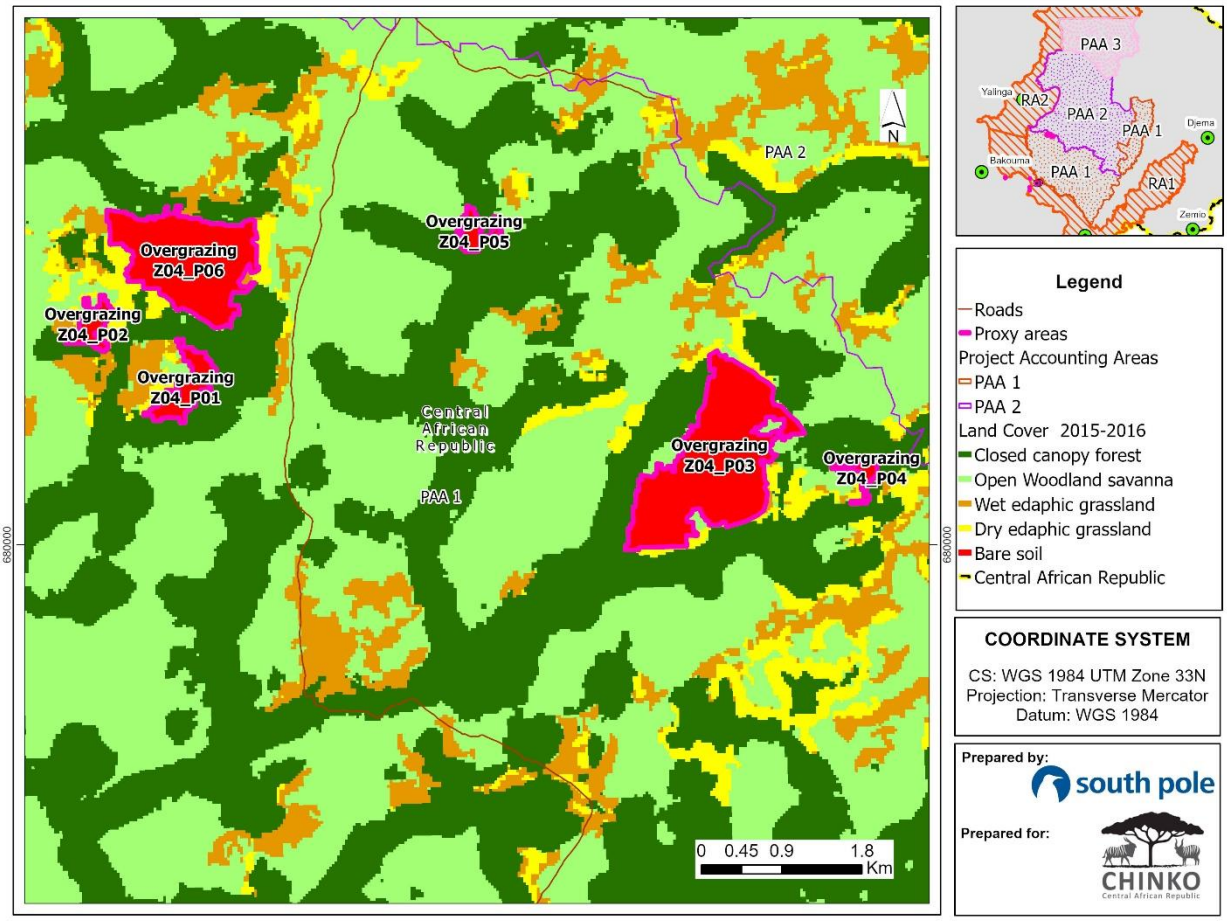


Figure 26: OWS areas converted by pastoralism and unsustainable grazing, selected as proxy areas for PAAs 2 and 3.

(Source: South Pole, 2023)

[86] Results of the spatial analysis to demonstrate the proxy area is converted, on average, as of the project start date on each proxy site is available on the supporting information.

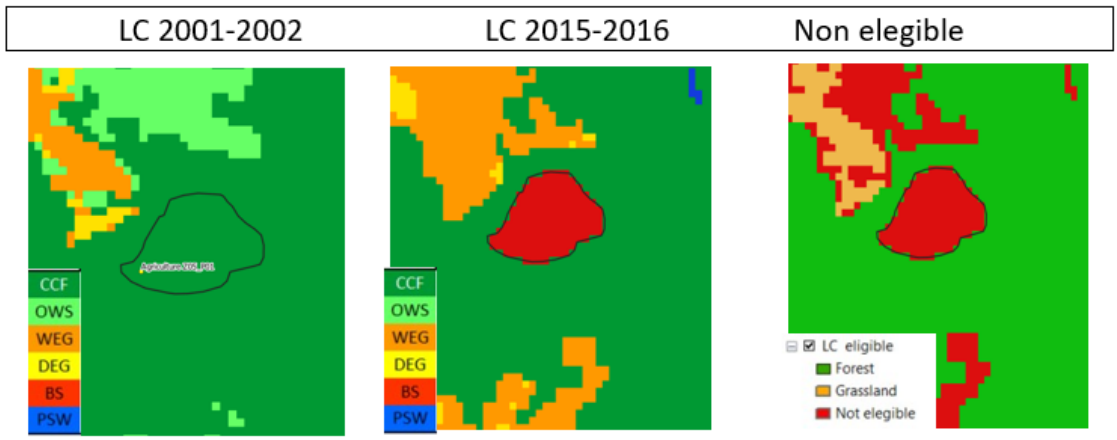


Figure 27: Agriculture proxy site conversion analysis. As illustrated, deforestation from agriculture primordially takes place in Closed Canopy Forest.

(Source: South Pole, 2021)

Baseline scenarios for selected carbon pools

A qualitative description of the baseline scenario for each selected carbon pool follows.

Above-ground other tree (AGOT): assumed to be completely removed from the forest during the degradation and deforestation process for the baseline scenario. The trees in this pool are assumed to have an immediate loss to CO_2e emissions. As the forest PAA baseline type is F-U3, it is also assumed to be converted to an emission first in the stratum with the lowest carbon stocks, and last in the stratum with the highest carbon stocks.

Above-ground non-tree (AGNT): assumed to be completely removed from the forest during the degradation and deforestation process for the baseline scenario. The stocks in this pool are assumed to have an immediate loss to CO_2e emissions. As the forest PAA baseline type is F-U3, it is also assumed to be converted to an emission first in the stratum, with the lowest carbon stocks and last in the stratum with the highest carbon stocks.

Below-ground other tree (BGOT) and below-ground non-tree (BGNT): assumed to be minimally impacted by the activities of the agents, therefore, the below-ground carbon pool is assumed to decay over a ten-year period. As the forest PAA baseline type is F-U3, it is also assumed to be converted to an emission first in the stratum with the lowest carbon stocks, and last in the stratum with the highest carbon stocks. Emissions from the pool are determined using a root-to-shoot ratio.

Determining Historical Conversion

Delineating Reference Areas

As stated in section 6.8.1.1 of the methodology, a reference area must address the following criteria to ensure that the agents and drivers of conversion are similar to those of the project accounting area, as well as to prove that those agents performed similarly in the reference area to the way they would have performed in the project accounting area under the baseline scenario.

1. The location and size of the reference area relative to the project accounting area
2. A description of the drivers of conversion relative to the project area
3. The location(s) of the agents of conversion relative to the project accounting area and surrounding region

4. The mobilities of the agents of conversion relative to the project accounting area
5. Landscape configuration of the reference area and the project accounting area

Below is a description of the different steps taken to ensure that each of these criteria are considered in the delineation of the reference area for each baseline scenario (local communities impacting in the CCF land cover and transhumant pastoralists impacting the northern areas with a predominance of OWS).[87]

Reference Area 1: Local communities baseline scenario – PAA1

The first criterion considered for the delineation was the location and size of the RA relative to PAA 1. As shown below (and previously discussed in section 3.1.3), both PAA 1 and RA 1 are in the same broader region of eastern CAR. Furthermore, the areas are contiguous along the western limit of PAA 1. Figure 34 displays a map delineating the boundaries of the RA 1, the PA and the PAA 1, including an indication of their locations relative to each other.

The second criterion considered was the description of the drivers of deforestation relative to the project area including a written description of the socio-economic and cultural conditions in RA 1 and PAA 1. Section 2.1.6 Social parameters presents a written description of the main settlements, the socio-cultural activities and land use and economic information in the region. In addition, Section 3.1.4, subsection Identification of Agents and Drivers of Deforestation, provides details of the agents (local communities) and drivers of conversion (subsistence driven activities by local communities) as required by the methodology. Finally, Section 4.1.1 Descriptions of Communities at Project Start, provides extra details of the communities at the project start.

The third criterion was the location of the agents of conversion relative to the PAAs and surrounding region. Figure 28 shows the location of human settlements (as an indication of the location of agents of deforestation) relative to PAA 1 and RA.

[87] Besides the general description presented in this section, Appendix 2 presents a summary of tables confirming that each criterion was considered and the section in the project description where the requirement is explained.

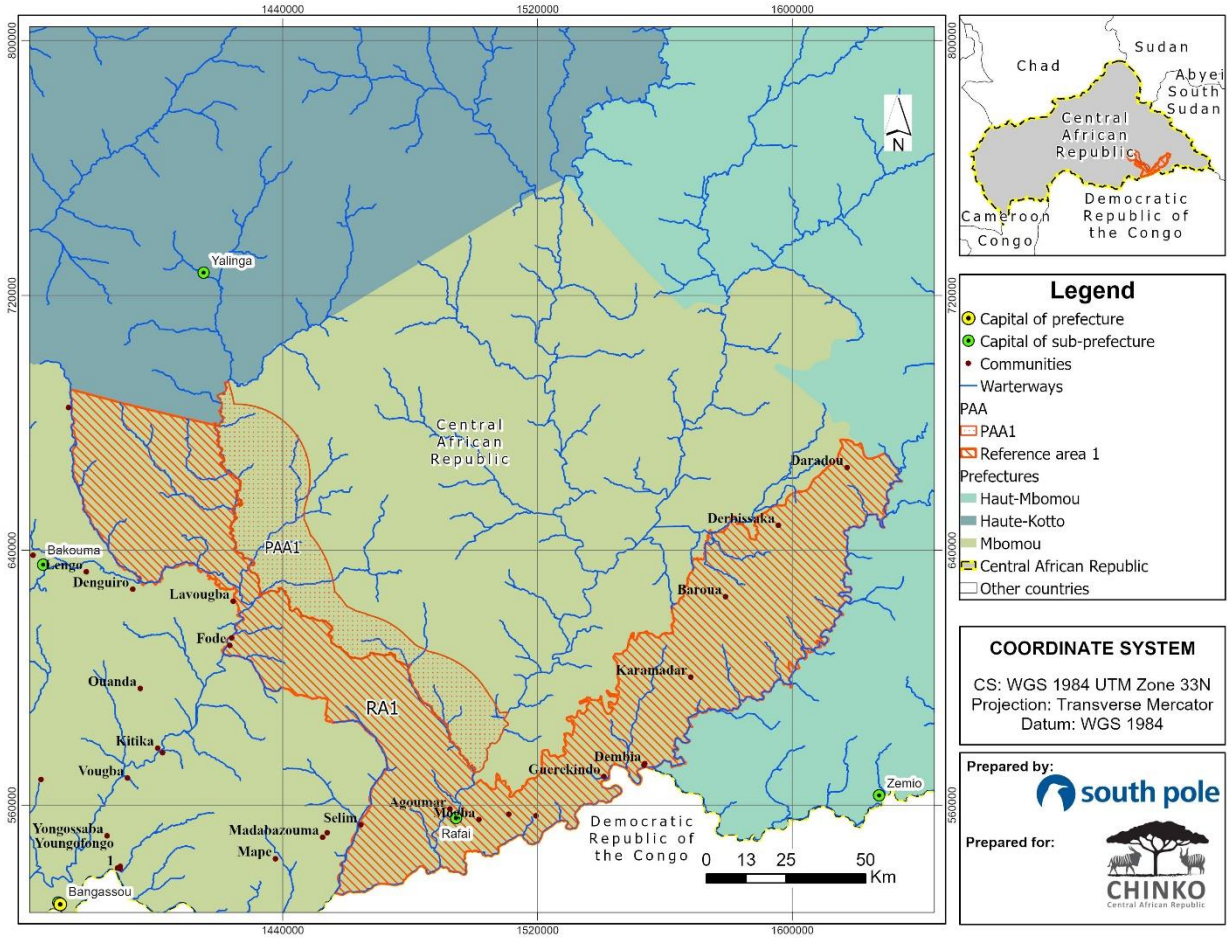


Figure 28: Location of agents of deforestation relative to PAA 1 and RA 1. The figure includes the villages in Mbomou prefecture closest to PAA 1

(Source: South Pole, 2023)

The fourth criterion was agents' mobility, described in subsection Identification of Agents and Drivers of Deforestation. In summary, there are no major physical constraints to the mobility of communities, and they are, thus, limited only by their distance to natural resources.

According to local expert knowledge from African Parks staff, as well as proof from other hunting domains where AP operates, miners and hunters are extremely mobile and local people can invest a lot of time and effort to reach the most remote areas in search of valuable resources. For example, miners and hunters from Rafaï traveled more than 100 km in a straight-line distance from town to an area inside the CCA before APN applied the law within hunting zone 48. Hunters, miners and fishermen from Yalinga often worked 50 km from their village without access to any infrastructure. Miners from Bangassou travelled 170 km from the city to remote mine sites on small trails and through the bush on foot or by bicycle. This confirms that deforestation agents from within the Mbomou prefecture would perform the same activities in PAA 1 under the baseline scenario.

The fifth criterion considered was landscape configuration of the reference area and the project accounting area, including:

- Topographic factors (elevation and slope)

- Land cover
- Soil map
- Infrastructure
- Distance to markets
- Ownership/tenure boundaries

As a first variable the elevation was considered, since it is a fundamental variable to define vegetation zones and also influence how some climate conditions differ/behave in certain regions. According to the minimum and maximum elevations of the PAA, and in order to delineate a RA with similar characteristics, all the areas with an elevation greater than 800 masl and lower than 485 masl were excluded. Information available in Table 17 demonstrate the predominance of low elevation in both PAA 1 and RA 1 (see Figure 29 for graphic details of the elevation ranges in the region including the PAA 1 and RA 1).

Table 17: Total area and percentage falling within elevation ranges of 200m in the area inside the perimeter of PAA 1 and RA 1

Elevation range	**PAA 1**		**RA 1**	
	Hectares	**Percentage**	**Hectares**	**Percentage**
400 – 600	159,710.09	66.21%	508,928.13	49.13%
600 – 800	81,498.50	33.79%	526,994.91	50.87%
Total	**241,208.59**	**100%**	**1,035,923.04**	**100%**

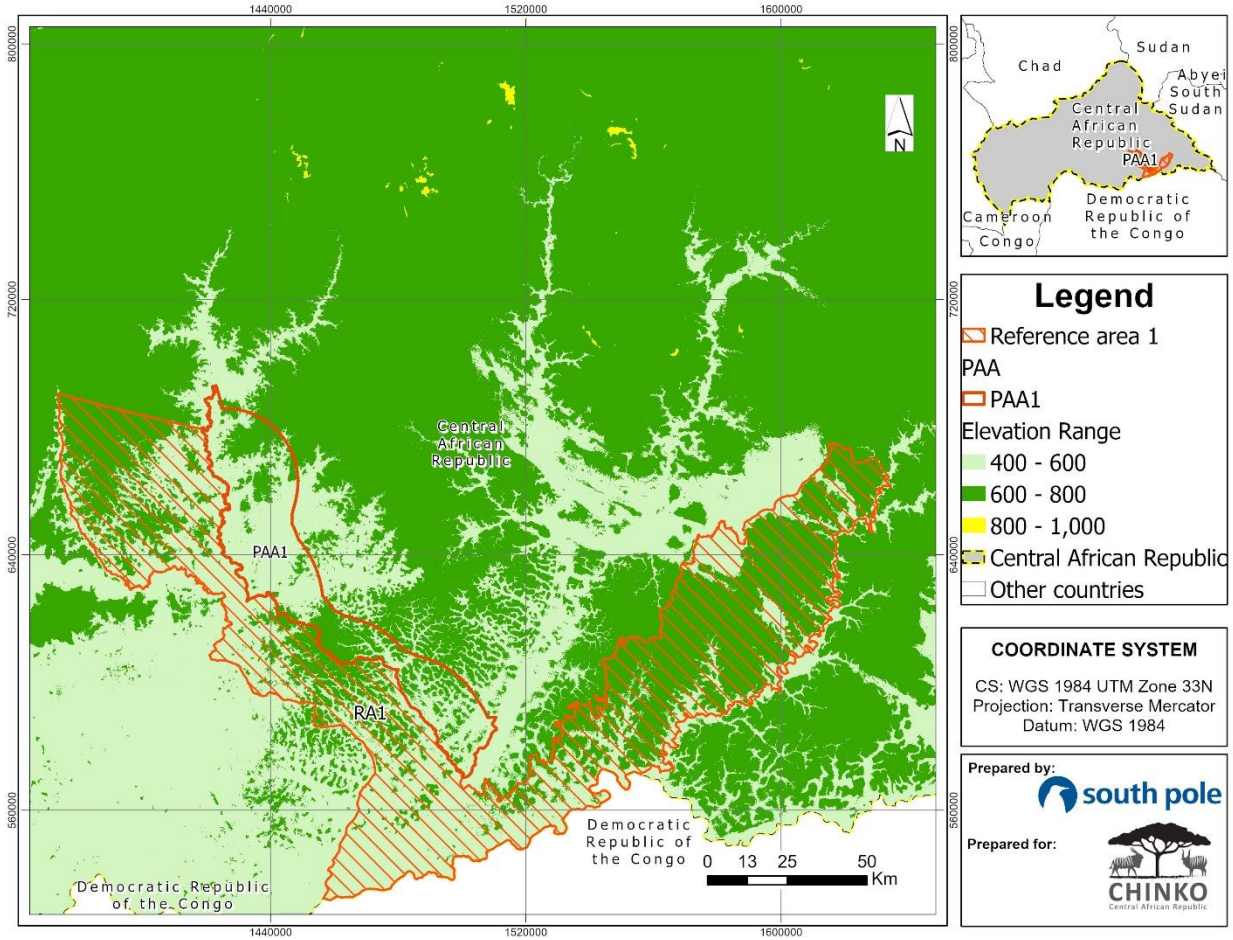


Figure 29: Elevation range within PAA 1 and RA 1. The figure displays the elevation in ranges of 200 m and shows the similarities of PAA 1 and RA 1 given the low elevation present in the region.

(Source: Elaborated by South Pole in 2023 using data from NASA SRTM Digital Elevation 30m GEE)

Secondly, the slope was also assessed, in more than 98% of the PAA the slopes are below or equal to 9%, therefore, we excluded areas with predominance of steeper slopes. Table 18 shows the slope profile, confirming that both PAA 1 and RA 1 have a predominance of little to no gradient (slope lower than 3%) followed by gentle gradient (slopes between 3 to 9%) and less than 2% of the area has a gradient higher than 9% (See Figure 30 for graphic details of the slope ranges).

Table 18: Total area and percentage falling within slope percentage ranges in the area inside the perimeter of PAA 1 and RA 1

Slope (%)	**PAA 1**		**RA 1**	
	Hectares	**Percentage**	**Hectares**	**Percentage**
[0 to 3)	141,427.59	58.63%	639,368.53	61.72%
[3 to 9)	96,808.60	40.13%	383,957.49	37.06%

Slope (%)	PAA 1		RA 1	
	Hectares	**Percentage**	**Hectares**	**Percentage**
[9 to 15)	2,940.06	1.22%	12,360.68	1.19%
>15	32.35	0.01%	236.35	0.02%
Total	**241,208.59**	**100.00%**	**1,035,923.04**	**100%**

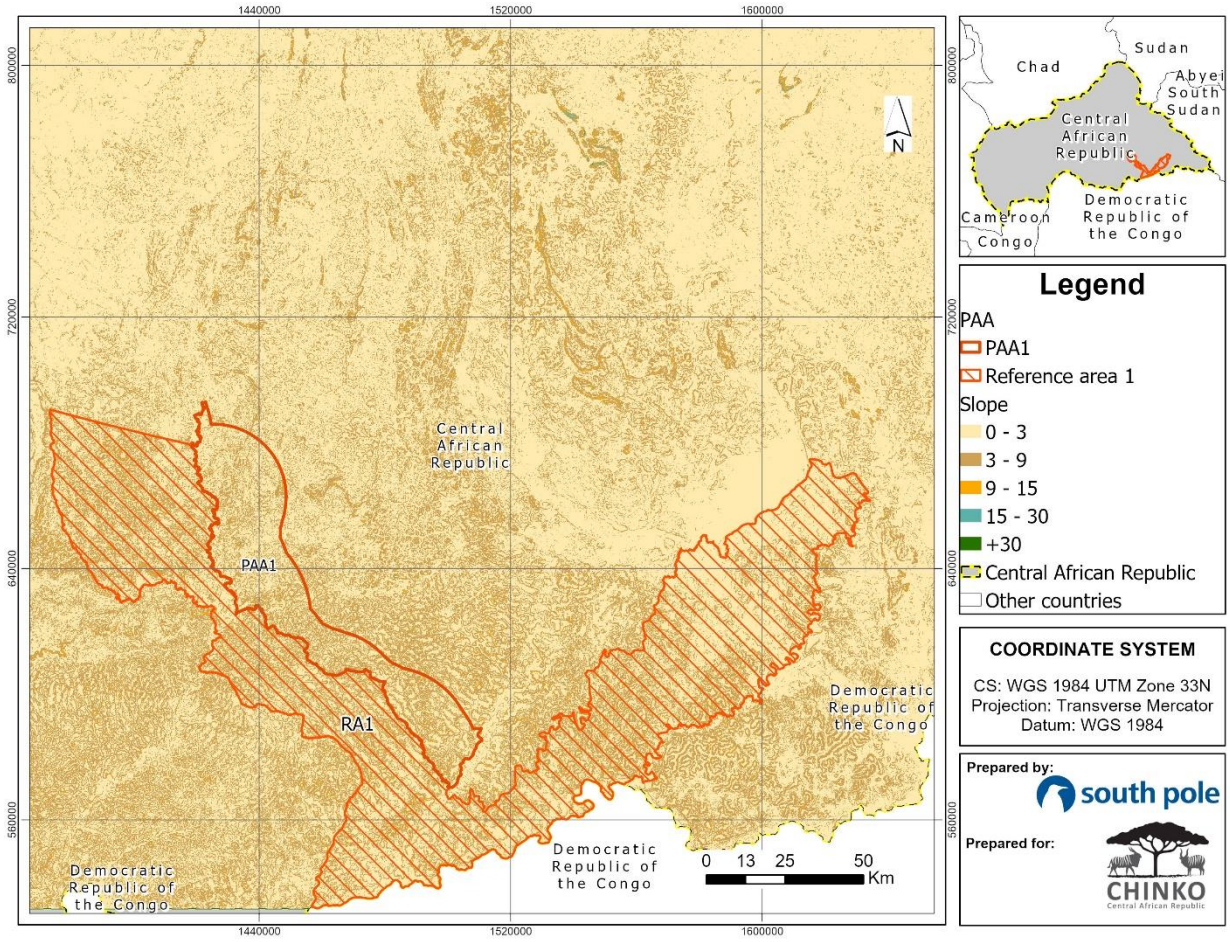


Figure 30: Slope ranges within PAA 1 and RA 1. The figure shows the similarities of PAA 1 and RA 1 given the low slope present in the region.

(Source: Elaborated by South Pole in 2023 using data from NASA SRTM Digital Elevation 30m GEE)

Thirdly, the land cover was considered. According to the results of the Land Cover analysis, two types of forest classes are demarcated in eastern CAR: closed canopy forest and open woodland savanna. For RA 1, used for PAA 1, we focused on areas with a predominance of CCF cover.

Table 19 shows that both PAA 1 and RA 1 have a predominance of CCF cover. It is important to highlight that the total area of PAA 1 used for the Biomass Emissions Model calculations is the eligible CCF cover.

However, for a more detailed comparison of the similarities between PAA 1 and RA 1, the polygons analysed cover the area inside the perimeter which also includes non-eligible area and OWS forest cover (Refer to Figure 31 for graphic details of the different land cover present in the region).

Table 19: Total area and percentage falling within specific forest cover types in the area inside the perimeter of PAA 1 and RA 1

Forest cover	**PAA 1**		**RA 1**	
	Hectares	**Percentage**	**Hectares**	**Percentage**
CCF	148,395.64	61.52%	793,463.77	76.59%
OWS	74,105.52	30.72%	82,990.28	8.01%
Non-forested area	18,707.44	7.76%	159,468.99	15.39%
Total	**241,208.59**	**100.00%**	**1,035,923.04**	**100.00%**

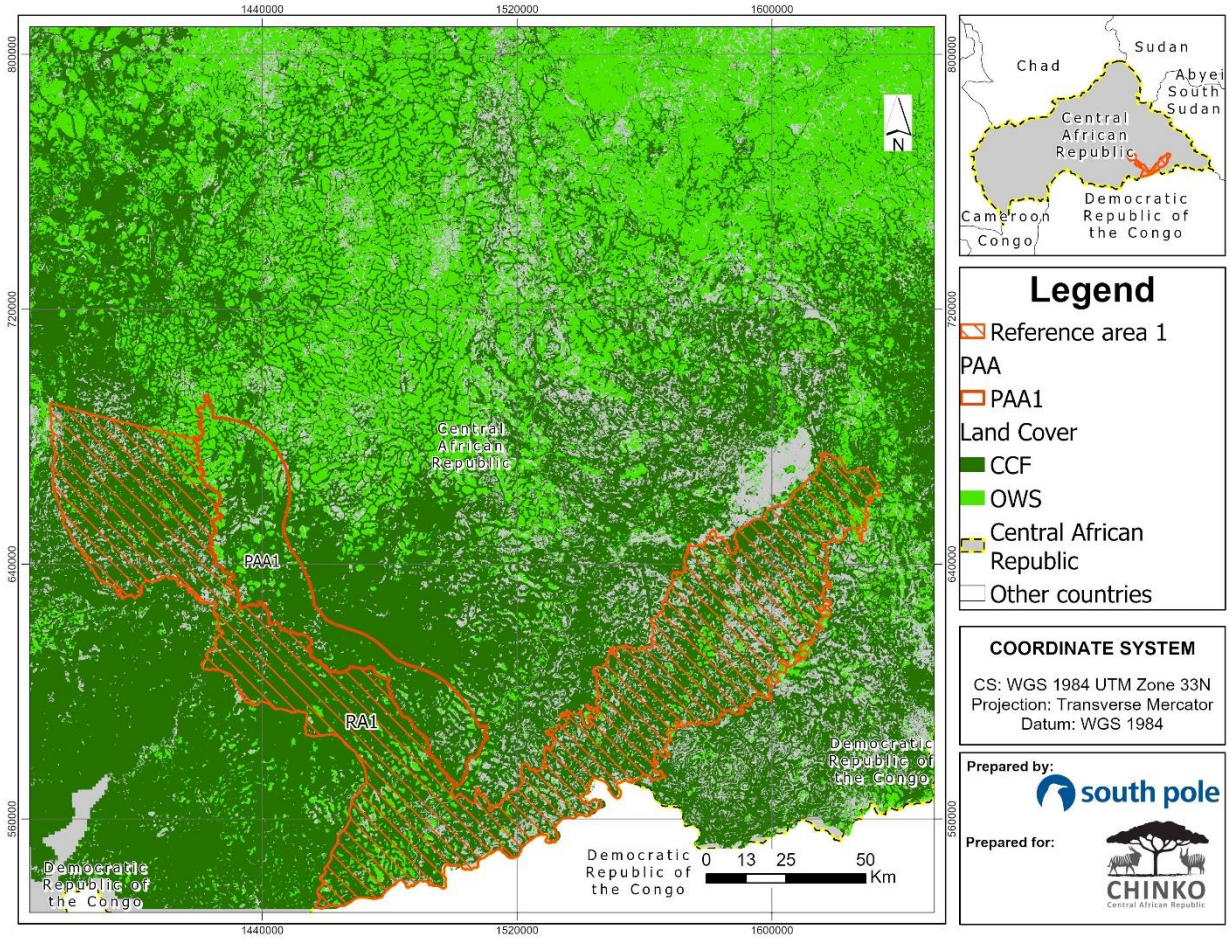


Figure 31: Forest land cover within PAA 1 and RA 1. The figure shows the similarities of PAA 1 and RA 1 given the predominance of CCF land cover.

(Source: South Pole, 2023)

Finally, the soil information was reviewed. According to the African Soil Atlas, the eastern part of the country has a predominance of arenosols, which are easily erodible sandy soil with low water- and nutrient holding capacity; ferralsols, strongly weathered soils with low nutrient-holding capacity and plinthosoils, soils with accumulation of iron that hardens irreversibly when exposed to air and sunlight (See details in Figure 32 and Table 20).

Table 20: Soils type description

Soil	Name	Description
Rgdy	Dystric Regosols	Weakly developed soil in unconsolidated material
Arfl	Ferralic Arenosols	Sandy soil, intensely weathered with high levels of iron
PTpx	Pisoplinthic Plinthosols	Soils with accumulation of iron that hardens irreversibly when exposed to air

Soil	Name	Description
FRpl	Plinthic Ferralsols	As FR with iron-rich, humus-poor, clay-rich horizon which hardens irreversibly
Frro	Rhodic Ferralsols	Strongly weathered soil with low nutrient levels, very red

It Is important to clarify that soil analysis was based on a soil map harmonised at a continental scale. This gives a scale of 1 to 3 M, that is, a cm on the map represents 30 km in reality. Consequently, the use of this map is more informational than analytical. Each polygon on the map corresponds to the most representative soil but does not provide detailed enough information for us to establish the relationship between soil and deforestation that occurs at a local scale in small patches.

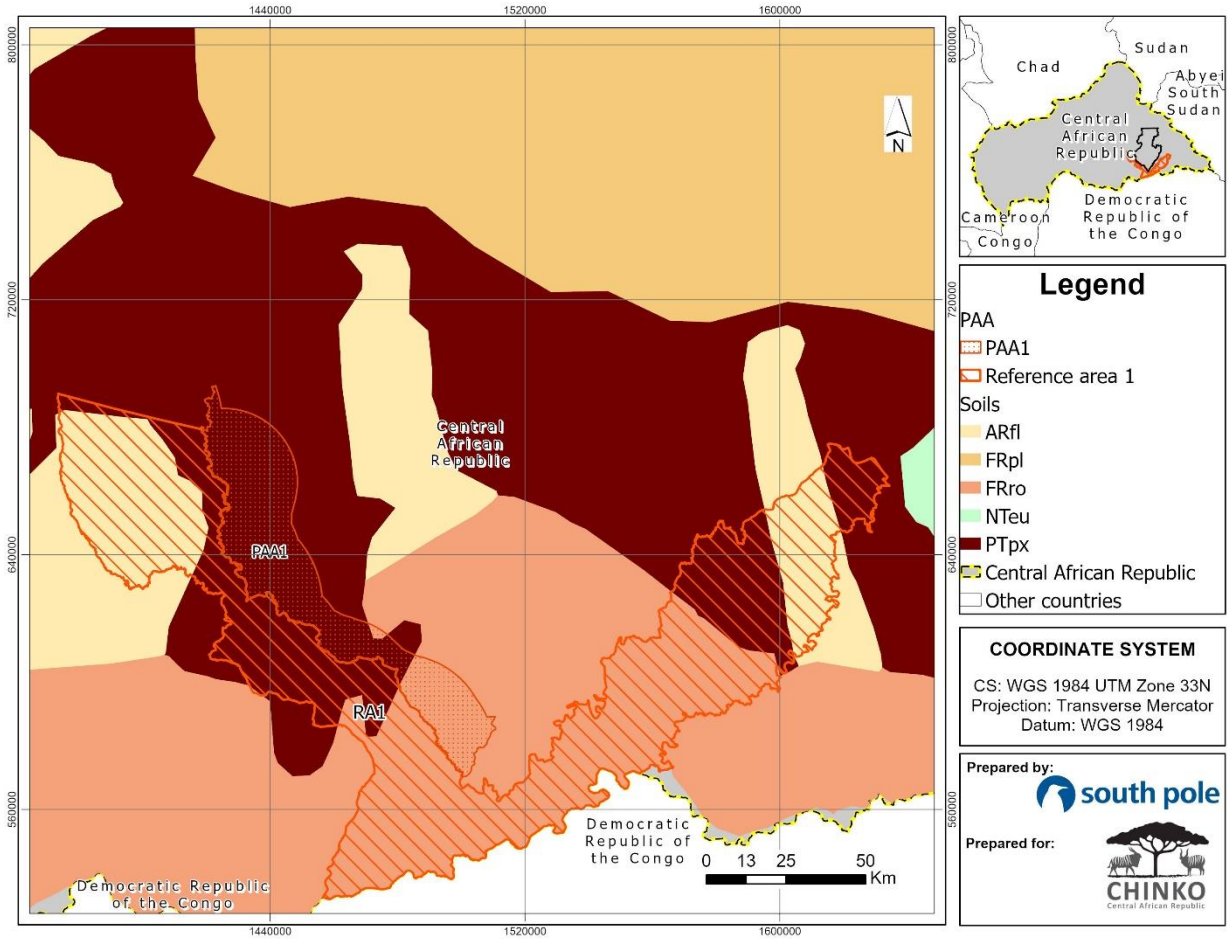


Figure 32: Soil categories present in the region, including the delineation of PAA 1 and RA 1, as showed in the table below there is a predominance of Pisoplinthic Plinthosols and Rhodic Ferralsols.

(Source: Elaborated by South Pole in 2023 using data from African Soil Atlas, 2013)

Table 21 compares soil types between PAA 1 and RA 1. As mentioned, the soil analysis was based on a harmonised soil map at a continental scale and was not a deciding factor for the delineation of the RA.

Table 21: Total area and percentage falling within specific soil types in the area inside the perimeter of PAA 1 and RA1

Soil type	**PAA 1**		**RA 1**	
	Hectares	**Percentage**	**Hectares**	**Percentage**
Ferralic Arenosols	0	0.00%	264,141.20	25.50%
Pisoplinthic Plinthosols	182,770.76	75.77%	324,294.08	31.30%
Rhodic Ferralsols	58,437.83	24.23%	447,487.76	43.20%
Total	**241,208.59**	**100.00%**	**1,035,923.04**	**100%**

To further delineate the reference area, we considered administrative boundaries (second administrative level) as a variable. Therefore, areas outside Mbomou prefecture (where the PAA 1 is located and where the agents of deforestation come from) were not considered. In addition, part of hunting zone 49, which complies with all the landscape characteristics described above was also removed from the delineation of the reference area so as to include it as a future PAA[88]. Finally, major rivers were also used as limit for the delineation of the reference area (see Figure 33 below).

[88] The project has been under registration and verification request since October 2021 and during that time African Parks has been working on conservation activities in the area from hunting zone 49 not included in the reference area, upon consultations with Verra they recommended not to include it as part of the reference area to avoid problems during future revalidations.

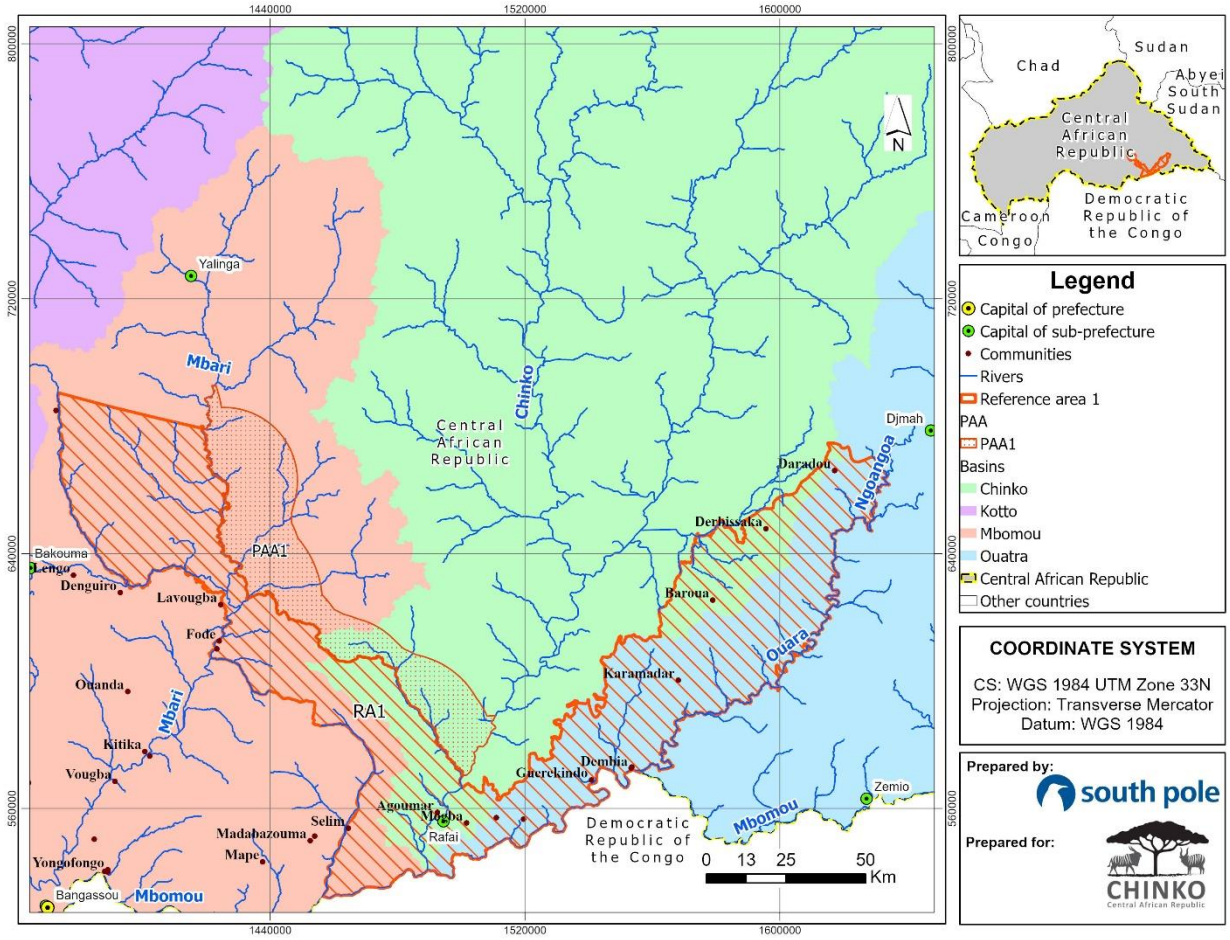


Figure 33: Rivers used for the delineation of RA 1

(Source: South Pole, 2023)

The combination of the landscape configuration variables (natural and anthropogenic factors) led us to determine the final shape of the reference area for the project, the result is presented in Figure 34.

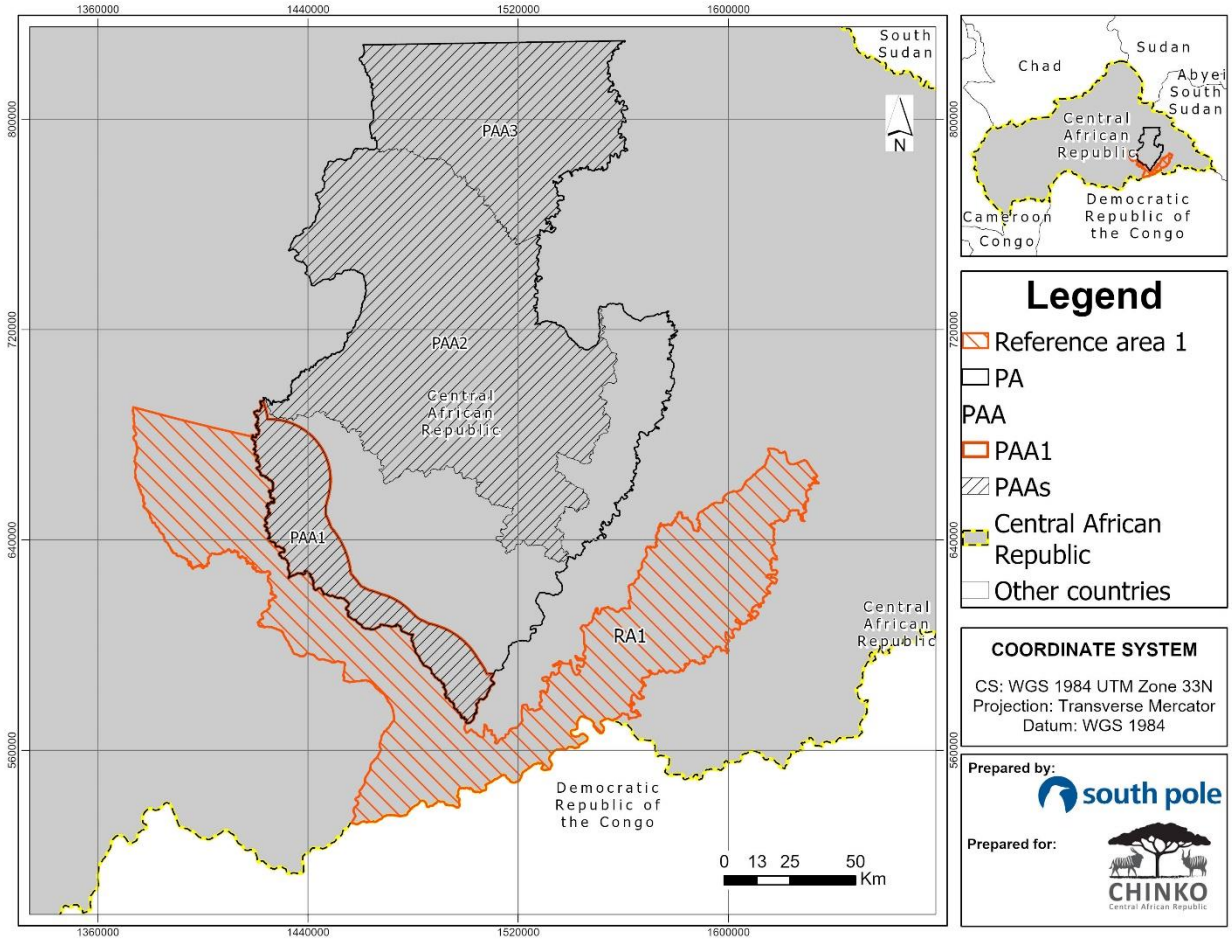


Figure 34: Final delineation of the RA 1, as seen RA 1 is located in the same region and shares the western limit of PAA 1

(Source: South Pole, 2023)

Three variables were used to assess the anthropogenic similarity between RA 1 and PAA 1: road density, distance to markets and land ownership/tenure.

Firstly, we compared the road density within RA 1 and PAA 1 (shown in Figure 35). In general, the region has a low population, and therefore road density. Even though the selection of the RA focused on areas with the least human impact there is still a higher density of roads in RA 1 than in PAA 1 (406.5 km vs 27.3 respectively). This can be expected due to the land tenure history though it should be noted that agents of conversion are not limited to road networks to access natural resources as mentioned above in subsection Identification of Agents and Drivers of Deforestation.

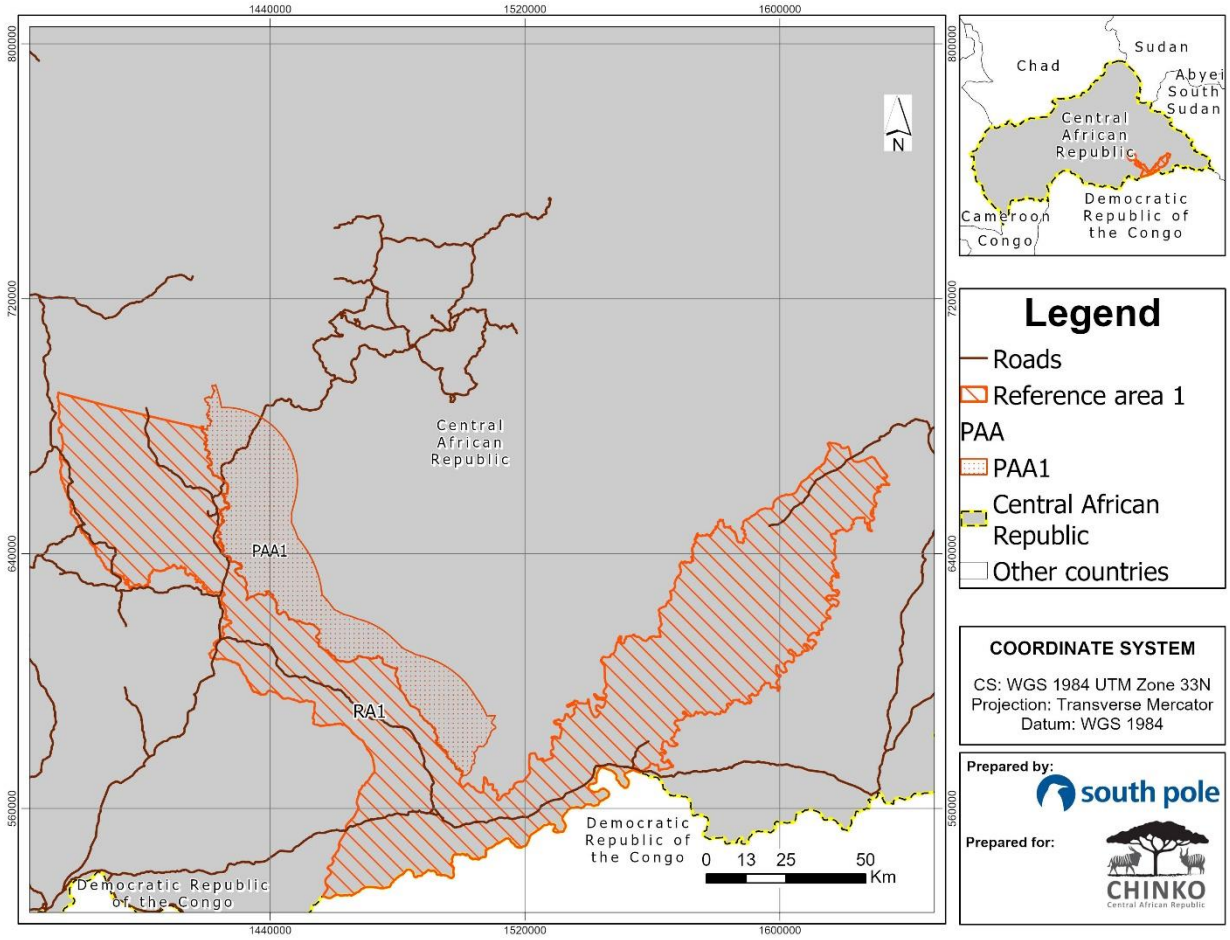


Figure 35: Main roads in the region including the delineation of PAA 1 and RA 1

(Source: South Pole, 2023)

Secondly, regarding the distance to markets, each subprefecture capital can be used as a proxy for relevant markets. RA 1 includes only one subprefecture capital and therefore one relevant market (Rafaï), and even though the project area does not contain any market, Rafaï is in close proximity to the border of PAA1 (see Figure 36 for details of the markets' location).

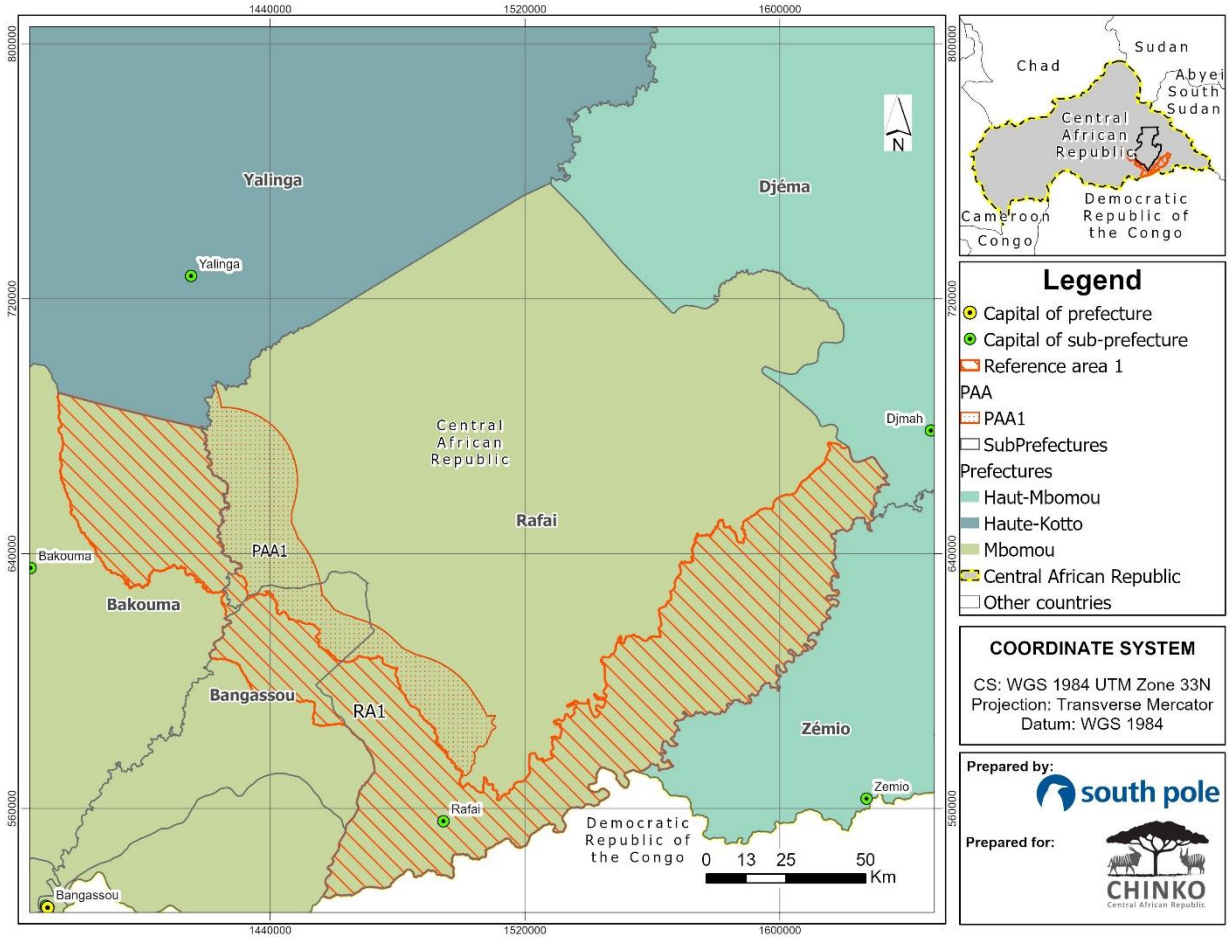


Figure 36: Prefecture and sub-prefecture capitals, where the main markets are located. As indicated, Rafaï is the only sub-prefecture capital included within RA 1.

(Source: South Pole, 2023)

For land ownership/tenure, according to the constitution of the Central African Republic, all land belongs to the state and can be used by its people in a customary way. Currently, all land in the Eastern CAR has been demarcated as either hunting area, national park, wildlife reserve or *"zone banale"* (open land able to be claimed by communities). As shown in Figure 37 RA 1 is categorized as either hunting areas or "*zone banale*" and PAA 1 is categorized entirely as hunting area.

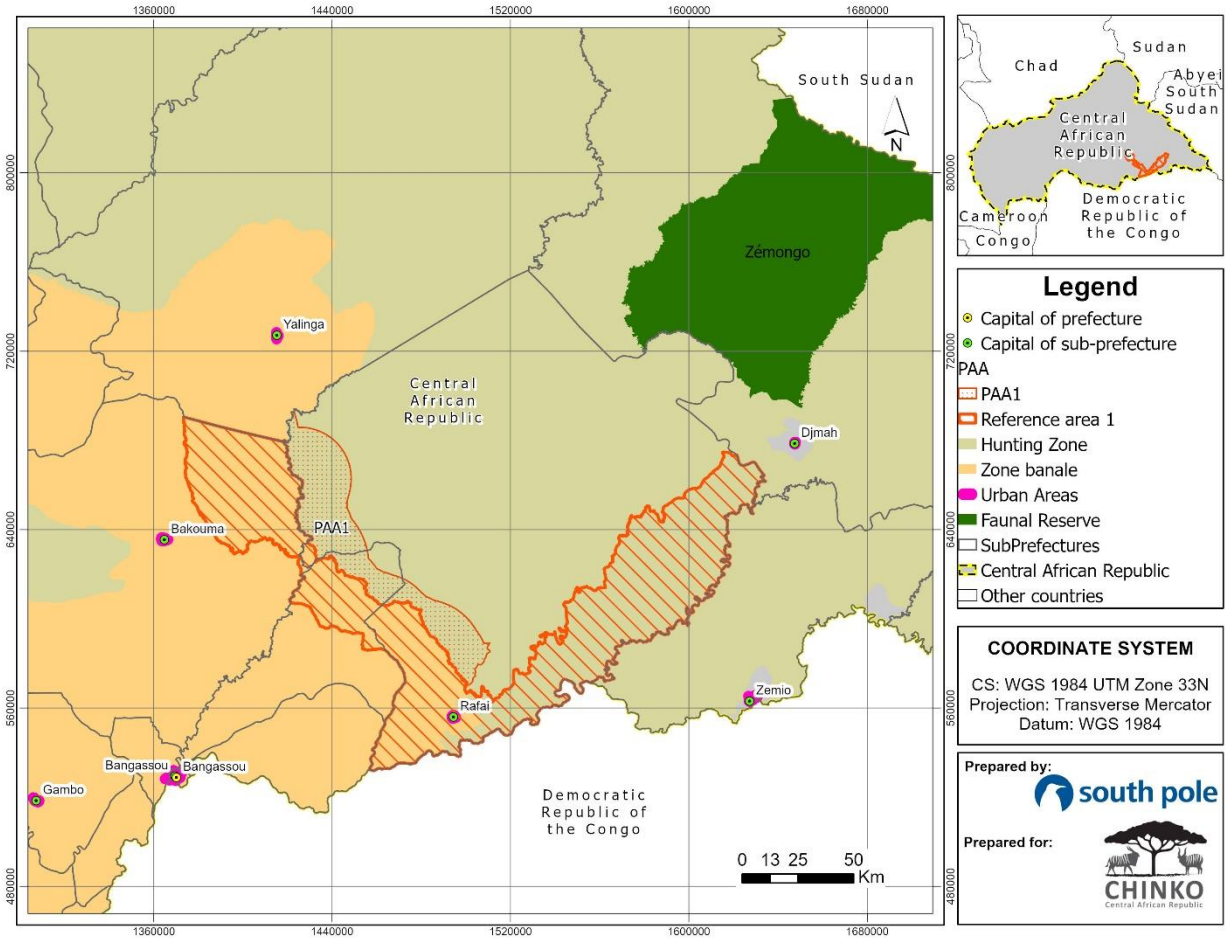


Figure 37: Different tenures present in the region including the delineation of PAA 1 and RA 1

(Source: South Pole, 2023)

Finally, to fully comply with the methodology requirements, section 6.8.1.3 of the methodology present four extra conditions, Table 22 below presents a description of each one and its compliance.

Table 22: Section 6.8.1.3 requirements

Condition	Compliance
The reference area must be in the same general region as the project area, but not necessarily adjacent to the project area.	Yes, the RA 1 and PAA 1 are in the same region, eastern CAR, in addition, RA 1 is located in the predominant prefecture of PAA 1, Mbomou.
At some point in time during the historic reference period, the reference area must contain as much forested area as the project accounting area.	Yes, in order to verify compliance, a comparison between the project area and the reference area was made. Table 19 above demonstrates that RA 1 had as much forest as the relevant PAA 1 at some point in time during the historic reference period date.

The reference area must not include the project area and must not be altered during the historic reference period.	Yes, RA 1 does not include the project area and won't be altered during the historic reference period, this is the reason for excluding part of hunting zone 49 of the reference area. Any alteration to the reference area that occurs in the future will be only to comply with any new methodological or standard requirements.
The boundaries of the reference area **must include one or more** of the following: i. Environmental, natural or political boundaries. ii. Major transportation infrastructure such as highways or railroads. iii. Land ownership/tenure boundaries. iv. Latitudinal or longitudinal degree boundaries.	Yes, the boundaries of the reference area were delineated including the following: i. Land cover, elevation range, slopes and prefecture limits ii. Land ownership and tenure

To conclude, the information presented above demonstrates clear similarities in natural characteristics between PAA 1 and RA 1. On the other hand, when considering anthropogenic variables, as one moves away from the village boundaries of inhabited and cultivated areas, one gradually finds remote areas with no real restrictions on access – apart from their geographical remoteness – opening the way to uncontrolled exploitation of natural resources, which rapidly leads to their decline. This is well illustrated with poaching where several mammal species went locally extinct despite the large distance from roads, villages or major markets.

CCA is one of the last remaining continuous uninhabited areas in a region already marked by low population density, therefore, when doing a direct comparison of anthropogenic variables, it is not possible to find a similar area at such a large scale. Therefore, while the selection of RA 1 brings as many similarities as possible, some variables will remain more predominant in RA 1 than in PAA 1. To overcome this, the grid analysis will be done in such a way that there will not be grid points covered within the borders of the subprefecture urban area to avoid the inclusion of deforestation data occurring by urban development and keep the focus on areas with little human development.

Reference Area 2: Transhumance pastoralism baseline scenario – PAA2 and PAA3

The first criterion considered for the delineation of RA 2 was its location and size relative to PAAs 2 and 3. As presented in section 3.1.3, the PAA 2 and 3 and the RA 2 are located in the same general region, eastern CAR and are adjacent to each other (reference area sharing the western boundary of the PAAs and the northern border of PAA 3). Figure 45 presents a map showing the boundaries of the RA 2, the PA and PAAs 2 and 3, including an indication of their locations relative to each other.

The second criterion considered was the description of the drivers of deforestation relative to the project area including a written description of the socio-economic and cultural conditions in RA 2 and PAAs 2 and 3. Section 2.1.6, "Social parameters" presents a description of the characteristics of the transhumance pastoralism situation in recent years. In addition, Section 3.1.4, subsection Identification of Agents and Drivers of Deforestation provides details of the agents (transhumant pastoralists) and drivers of conversion (pastoralism) as required by the methodology. Finally, Section 4.1.1, "Descriptions of Communities at Project Start", provides extra details of the transhumant pastoralists at the project start.

The third criterion was the location of the agents of conversion relative to the PAAs and surrounding region. As explained in section 3.1.4, subsection Identification of Agents and Drivers of Deforestation, the main agent of conversion in the reference area are pastoralists who move nomadically from Chad, Sudan and South Sudan throughout eastern CAR (see Figure 38) and would continue to use the project area in increasing intensity over time, in the absence of the project. This assumption is based on: i) the widespread signs of pastoralism within the project area prior to the implementation of the project and ii) the increasing need for transhumance pastoralists to move further south due to desertification of the Sahel, as widely illustrated elsewhere.

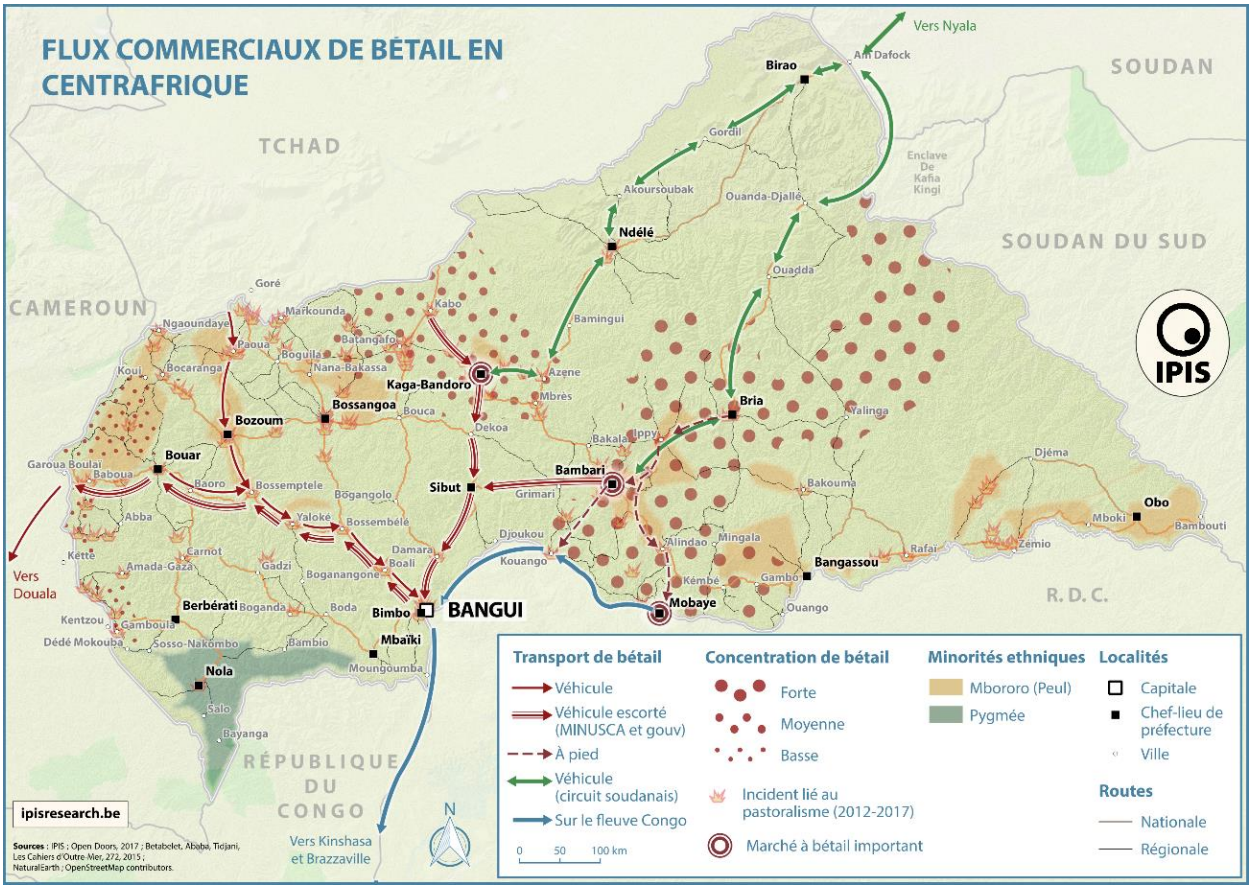


Figure 38: Pastoralism corridors in the Central African Republic, 2017[89]. This map shows that the project area was on the border of the main transhumance cluster with a very high concentration of livestock ("Forte") bordering and overlapping with the project area. It is realistic to assume that, in a without project scenario, this corridor would have shifted further South inside the project area. Also note the indications of incidents on the Southern and Western boundaries of the project area (e.g Rafaï) due to pastoralism

The fourth criterion was agents' mobility, described in section 3.1.4, subsection Identification of Agents and Drivers of Deforestation. In summary, transhumance pastoralists (the agents) have no major constraint to mobility and will travel the required distance to access pasture, often moving 800 km in a single season.

[89] Obtained from: https://ipisresearch.be/publication/pastoralism-corridors-central-african-republic/

Based on the above, it was clear that the agents of deforestation would continue to operate in PAAs 2 and 3 in the baseline scenario. RA 2 was then further delineated according to the fifth criterion: landscape configuration of the reference area and the project accounting area, including:

- Topographic factors (elevation and slope)
- Land cover
- Soil map
- Infrastructure
- Distance to markets
- Ownership/tenure boundaries

As a first variable the elevation was considered, since it is a fundamental variable to define vegetation zones and influence how some climate conditions differ/behave in certain regions. According to the minimum and maximum elevations of the PAA all the areas with an elevation greater than 1100 masl and lower than 485 masl were excluded. In Table 23 we can see that PAA 2 and 3, and RA 2 have most of their area in an elevation below 800 masl (see Figure 39 for graphic details of the elevation ranges in the region including the PAAs 2 and 3 and RA 2).

Table 23: Total area and percentage falling within elevation ranges of 200m in the area inside the perimeter of PAAs 2 and 3 and RA2

Elevation range	**PAA 2**		**PAA 3**		**RA 2**	
	Hectares	**Percentage**	**Hectares**	**Percentage**	**Hectares**	**Percentage**
400 – 600	134,750.64	12.20%	1,082.39	0.21%	53,976.80	2.73%
600 – 800	965,921.37	87.46%	501,494.29	99.19%	1,447,042.68	73.20%
800 – 1000	3,786.96	0.34%	3,009.72	0.60%	475,421.38	24.05%
1000 – 1200	0	0.00%	0	0.00%	283.82	0.01%
Total	1,104,458.97	100.00%	505,586.40	100.00%	1,976,724.68	100.00%

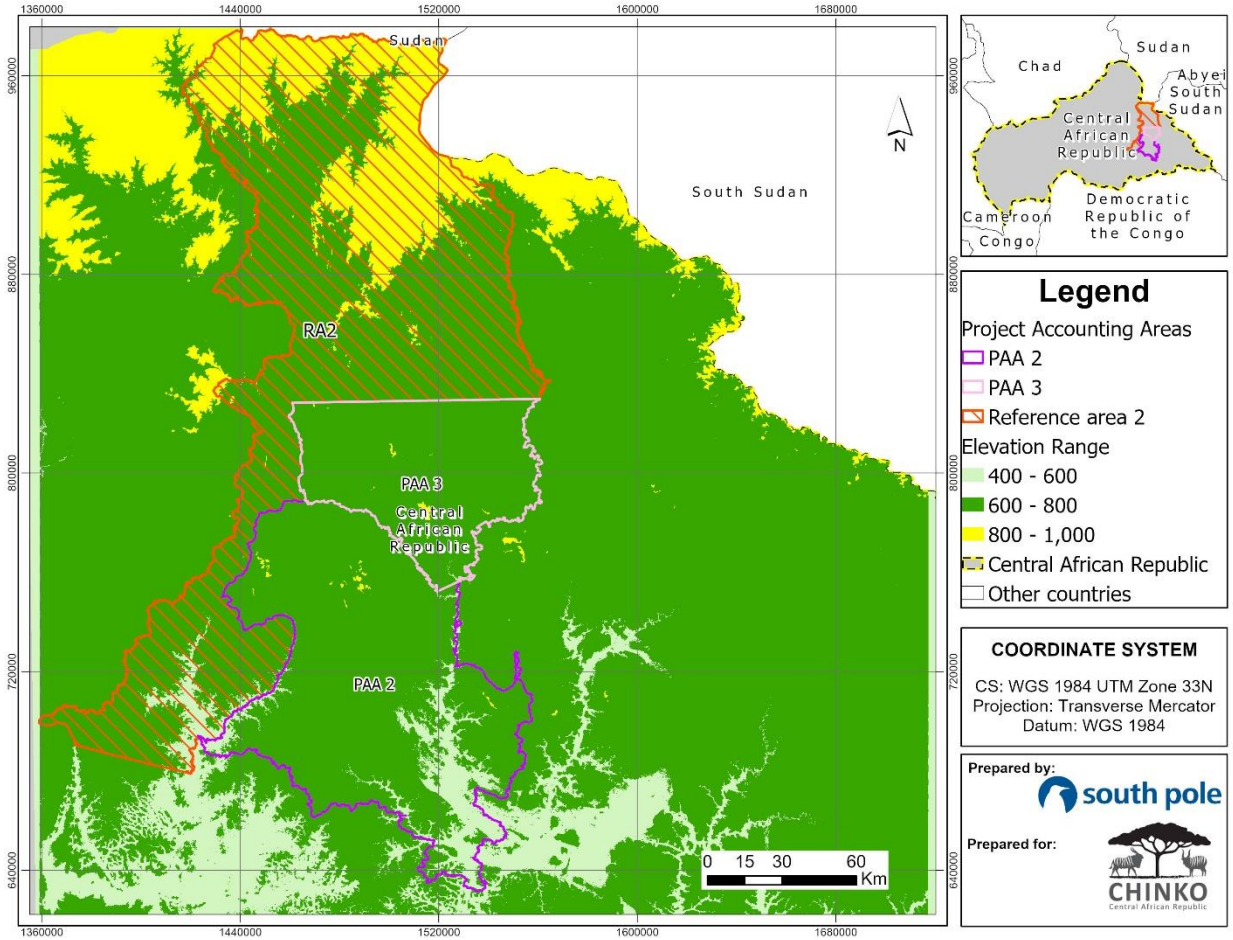


Figure 39: Elevation range within PAAs 2 and 3 and RA 2. The figure displays the elevation in ranges of 200 m and shows the similarities of PAAs 2 and 3 and RA 2 given the low elevation present in the region.

(Source: Elaborated by South Pole in 2023 using data from NASA SRTM Digital Elevation 30m GEE)

Continuing, the slope was also assessed. In more than 98% of PAAs 2 and 3 the slopes are below or equal to 9%. Therefore, we excluded areas with predominance of higher slopes. Table 24 presents the slope details confirming that PAAs 2 and 3 and RA 2 have a predominance of little to no slope (lower than 3%) followed by a gentle slope (between 3 to 9%) and less than 2% of the area has a slope higher than 9% (See Figure 40 for graphic details of the slope ranges).

Table 24: Total area and percentage falling within slope percentage ranges in the area inside the perimeter of PAAs 2 and 3 and RA2

Slope (%)	**PAA 2**		**PAA 3**		**RA 2**	
	Hectares	**Percentage**	**Hectares**	**Percentage**	**Hectares**	**Percentage**
[0 to 3)	813,473.19	73.65%	407,804.06	80.66%	1,765,474.93	89.31%
[3 to 9)	284,786.58	25.79%	92,559.96	18.31%	199,524.33	10.09%

Slope (%)	PAA 2		PAA 3		RA 2	
	Hectares	**Percentage**	**Hectares**	**Percentage**	**Hectares**	**Percentage**
[9 to 15)	5,820.86	0.53%	4,467.11	0.88%	9,610.02	0.49%
>15	378.33	0.03%	755.27	0.15%	2,115.39	0.11%
Total	**1,104,458.97**	**100.00%**	**505,586.39**	**100.00%**	**1,976,724.68**	**100.00%**

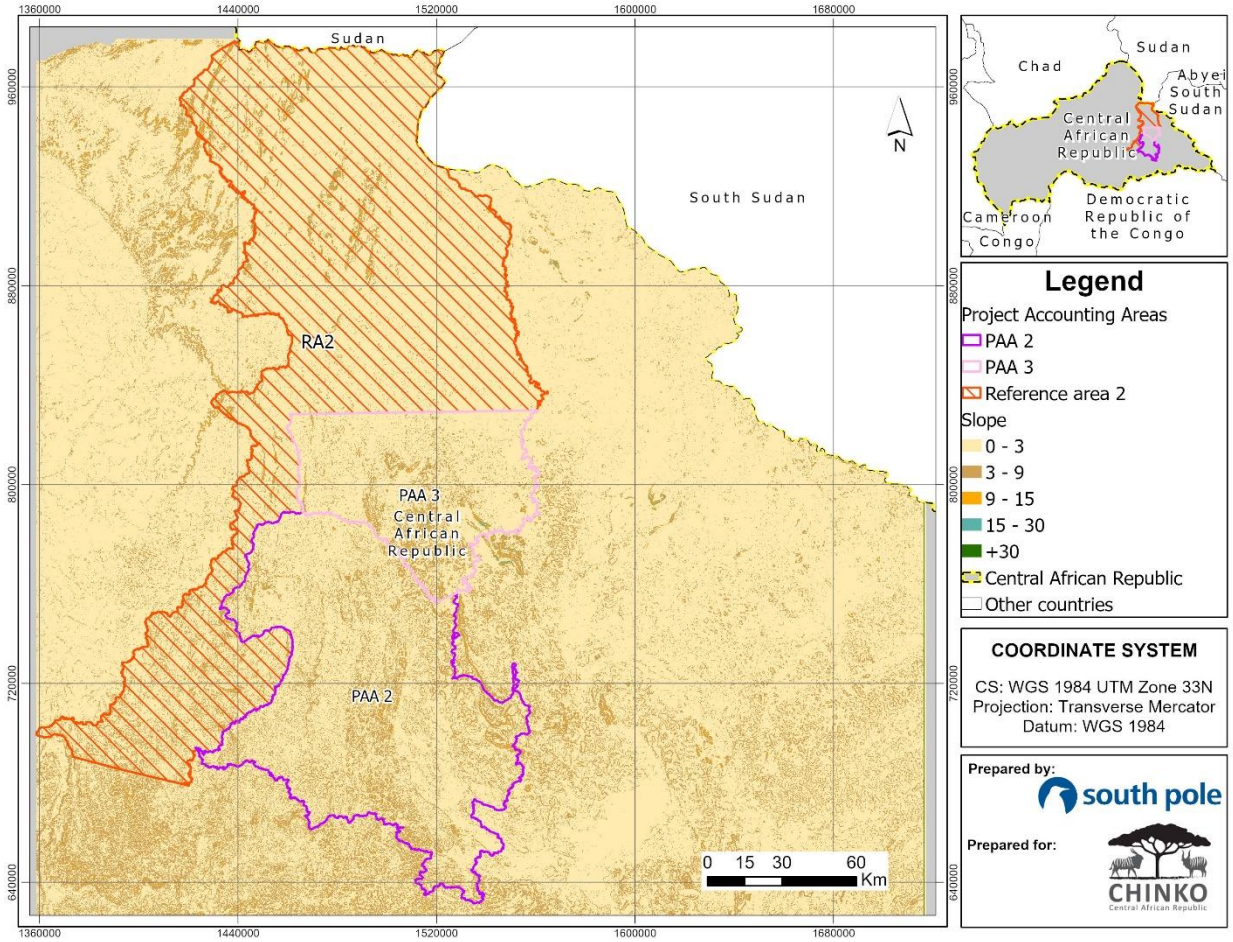


Figure 40: Elevation range within PAAs 2 and 3 and RA 2. The figure shows the similarities of PAA 2 and 3 and RA 2 given the low slope present in the region.

(Source: Elaborated by South Pole in 2023 using data from NASA SRTM Digital Elevation 30m GEE)

The land cover was then considered. According to the results of the Land Cover analysis, two types of forest classes are demarcated in eastern CAR: closed canopy forest and open woodland savanna but for the RA 2, used for PAAs 2 and 3, we focused on areas with a predominance of OWS cover. It is important to highlight that the total area of PAAs 2 and 3 used for the Biomass Emissions Model calculations is the eligible OWS cover. However, for a more detailed comparison of the similarities between PAAs 2 and 3 and

RA 2, the polygons analysed cover the area inside the perimeter which also includes non-eligible area and CCF forest cover.

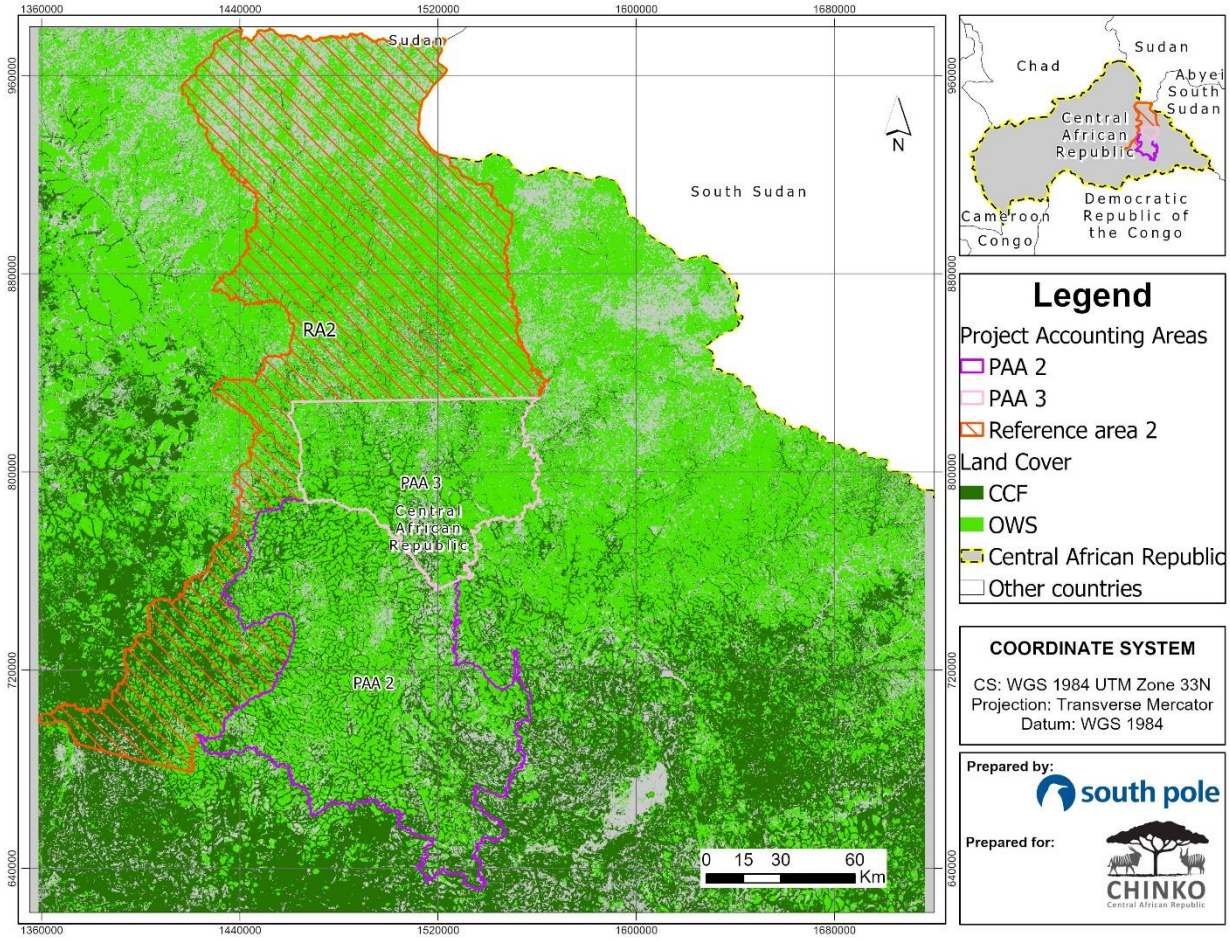


Figure 41: Forest land cover within PAAs 2 and 3 and RA 2. The figure shows the similarities of PAA 2 and 3 and RA 2 given the predominance of OWS land cover.

(Source: South Pole, 2023)

Table 25 shows that PAAs 2 and 3 and RA 2 have a predominance of OWS cover. PAA 2 has slightly higher proportions of CCF compared to those observed in PAA 3 and RA 2. This disparity can be attributed to the presence of a CCF/OWS mosaic configuration in the central part of CCA (seen in Figure 41). Such mosaic patterns are not found in the northern regions where OWS is the predominant land cover (as shown in the similar proportions of OWS found between PAA 2 and RA 2). However, as shown in the initial assessment of the location of pastoralism (Figure 42), the central part of CCA was a key resource used by pastoralists prior to the start of the project.

Table 25: Total area and percentage falling within specific forest cover types in the area inside the perimeter of PAAs 2 and 3 and RA2

Forest cover	PAA 2		PAA 3		RA 2	
	Hectares	**Percentage**	**Hectares**	**Percentage**	**Hectares**	**Percentage**
CCF	248,452.15	22.50%	81,678.95	16.16%	360,357.25	18.23%
OWS	713,408.61	64.59%	363,225.39	71.84%	1,273,789.79	64.44%
Non-forested area	142,597.22	12.91%	60,682.05	12.00%	342,577.63	17.33%
Total	**1,104,458.15**	**100.00%**	**505,586.39**	**100.00%**	**1,976,724.68**	**100.00%**

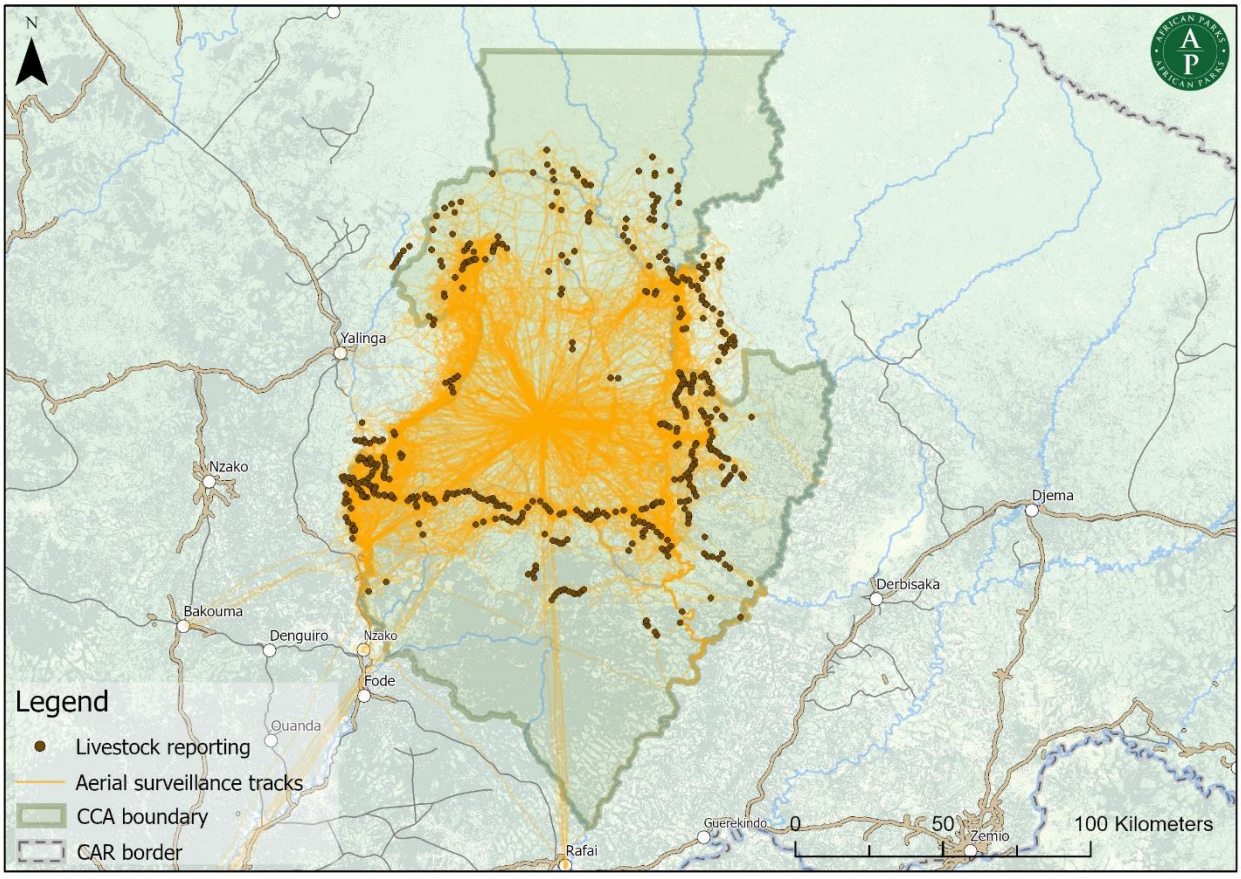


Figure 42: Aerial surveillance done during the 2016 – 2017 dry season shows that in the early years of the project the transhumance pastoralists were found in the central part of CCA (represented by the brown dots), the area with a mosaic of OWS/CCF

Finally, the soil information was reviewed. As mentioned for the delineation of RA 1, the scale of the African Soil Atlas is 1 to 3 M, that is, a cm on the map represents 30 km in reality. Consequently, the use of this

map is more informational than analytical. Each polygon on the map (Figure 43) corresponds to the most representative soil but does not provide detailed enough information for us to establish the relationship between soil and deforestation that occurs at a local scale.

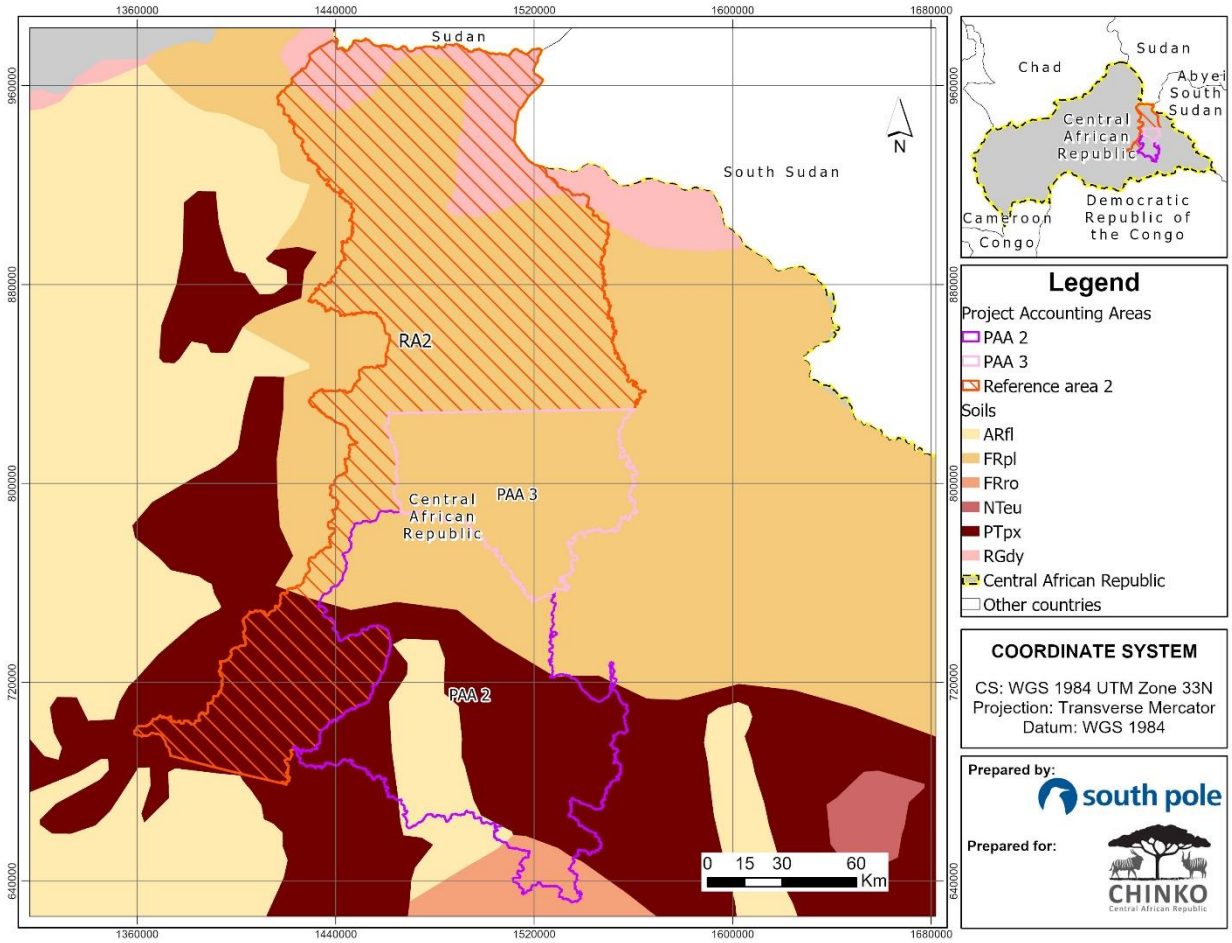


Figure 43: Soil categories present in the region, including the delineation of PAAs 2 and 3 and RA 2

(Source: Elaborated by South Pole in 2023 using data from African Soil Atlas, 2013)

Table 26 presents information of the soil types found in the region. As previously stated, this was not a deciding factor for the delineation of the RA.

Table 26: Total area and percentage falling within specific soil types in the PAA 2 and 3 and RA 2

Soil type	**PAA 2**		**PAA 3**		**RA 2**	
	Hectares	**Percentage**	**Hectares**	**Percentage**	**Hectares**	**Percentage**
Dystric Regosols	0	0.00%	0	0.00%	279,948.77	14.16%
Ferralic Arenosols	182,636.07	16.54%	0	0.00%	0	0.00%

Soil type	PAA 2		PAA 3		RA 2	
	Hectares	**Percentage**	**Hectares**	**Percentage**	**Hectares**	**Percentage**
Pisoplinthic Plinthosols	587,312.49	53.18%	0	0.00%	378,982.42	19.17%
Plinthic Ferralsols	291,826.42	26.42%	505,586.39	100.00%	1,317,793.48	66.67%
Rhodic Ferralsols	42,683.99	3.86%	0	0.00%	0	0.00%
Total	**1,104,458.97**	**100.00%**	**505,586.39**	**100.00%**	**1,976,724.68**	**100.00%**

To further delineate the reference area, we considered administrative boundaries (second administrative level) excluding all areas outside the Haute-Kotto prefecture (where a significant part of PAA 2 and all PAA 3 are located). Finally, both the borders of basins and rivers were used as limits for the delineation of the reference area.

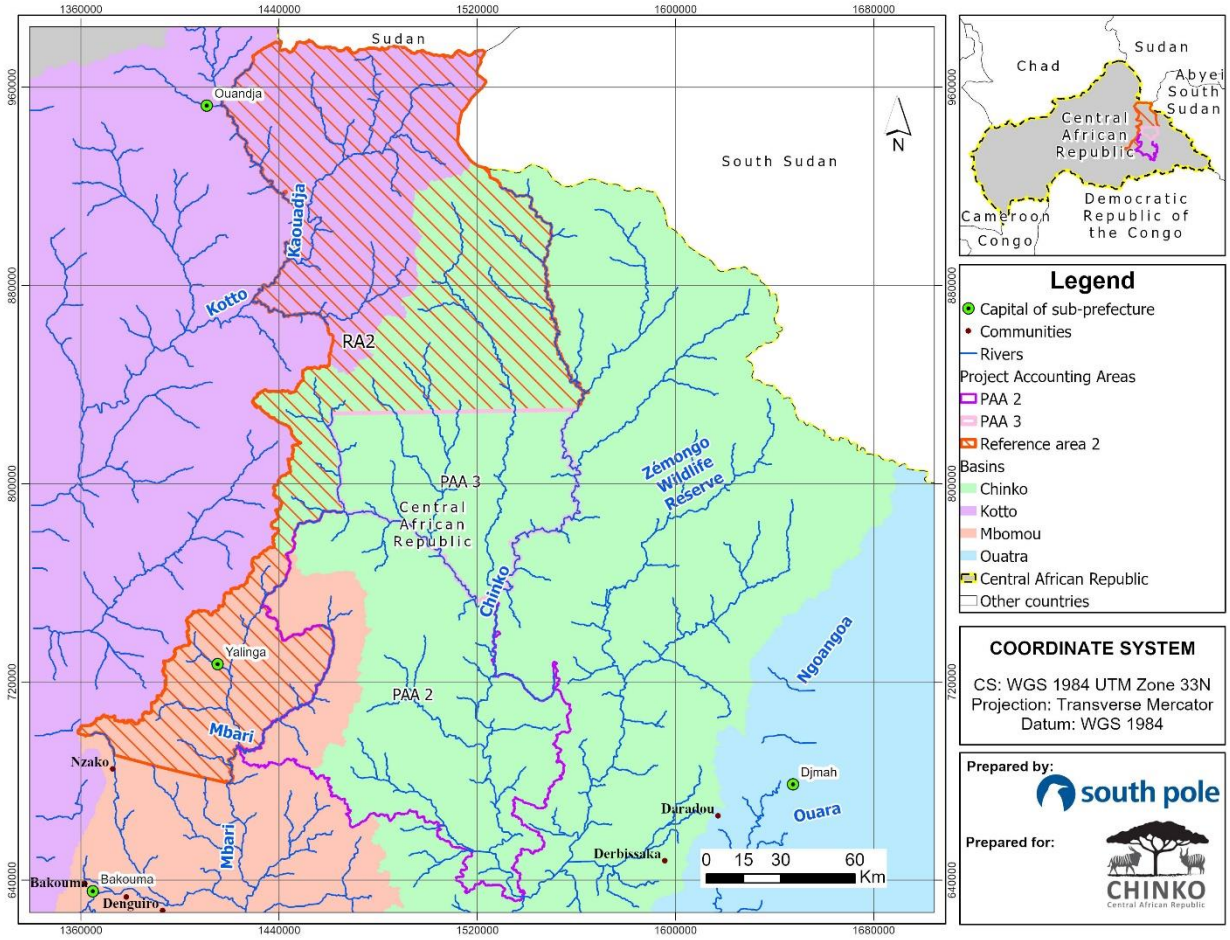


Figure 44: Rivers and basins used for the delineation of RA 2

(Source: South Pole, 2023)

The combination of the landscape configuration variables (natural and anthropogenic factors) led us to determine the final shape of the reference area for the project. The result is presented in Figure 45.

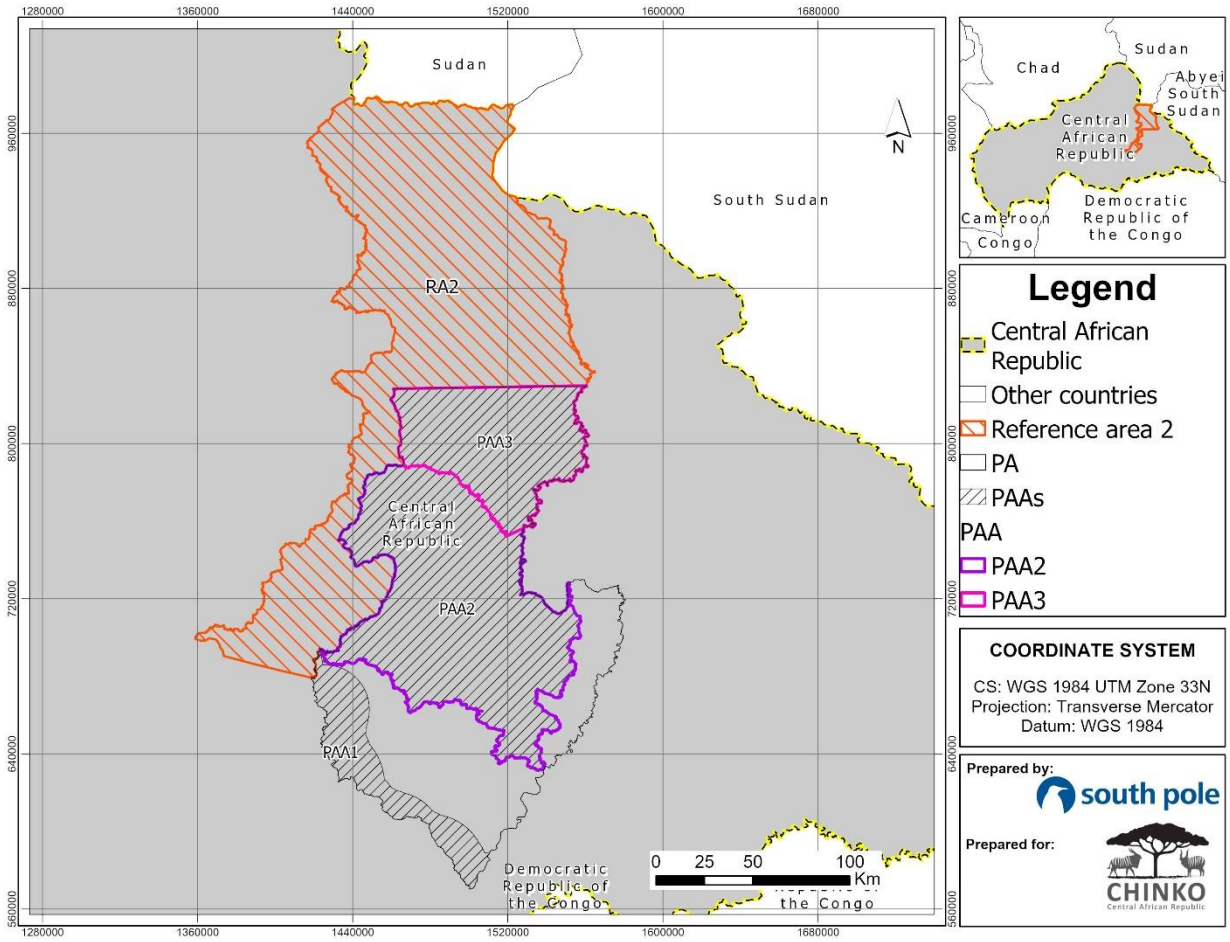


Figure 45: Final delineation of the RA 2, as seen RA 2 is located in the same region and shares the western limit of PAA 2 and the northern limit of PAA 3

(Source: South Pole, 2023)

To assess the anthropogenic similarity between the selected RA 2 and PAAs 2 and 3 three factors were considered: road density, distance to markets and ownership/tenure. An additional factor included is the transhumance clusters. These represent traditional groupings of pastoralists. As can be seen in Figure 46, the Darfur cluster is the most significant for the CCA and RA 2.

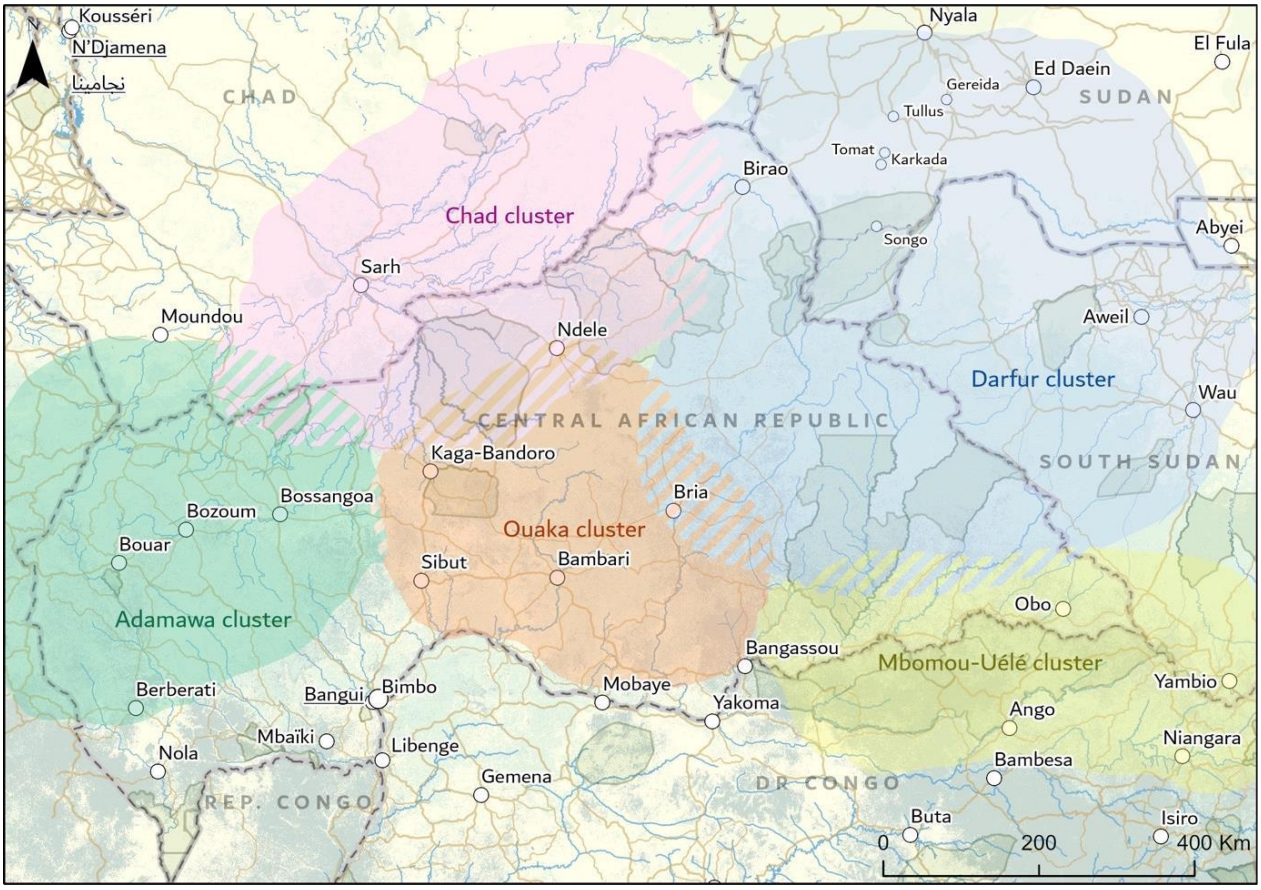


Figure 46: Pastoral clusters in eastern Central Africa.[90] The blue cluster (Darfur) represents the main sphere of influence in PAAs 2 and 3.

In general, the region has a limited road network with a higher road density in PAA 2 than in RA 2 (154.3 km vs 469.7 km in PAA 2) and no roads in PAA 3.

[90] This delineation of clusters was proposed in the document "Pastoralism in eastern Central Africa Implications for state, society and the environment". The Regional Information Coordination Center (2021) African Parks Network.

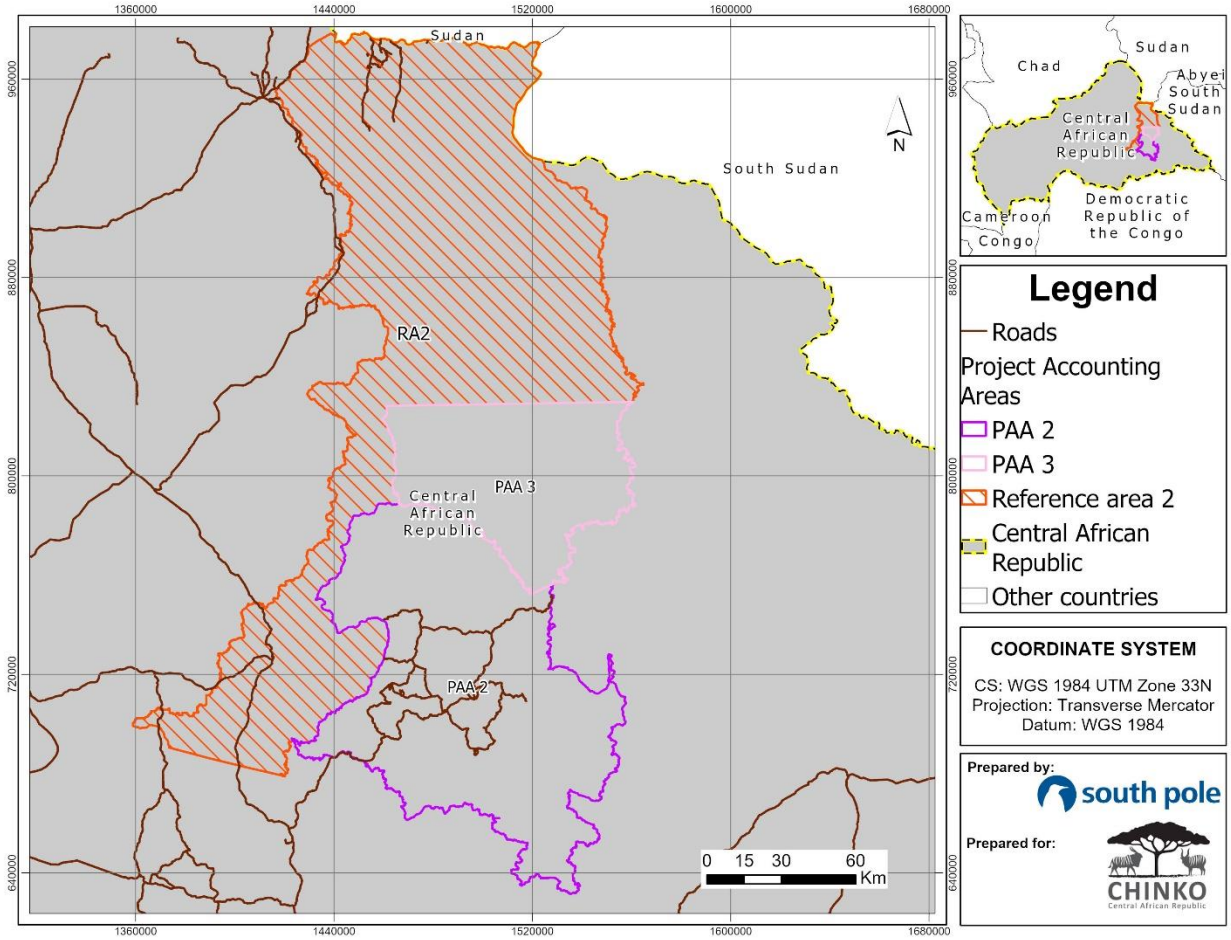


Figure 47: Main roads in the region, including the delineation of PAAs 2 and 3 and RA 2

(Source: South Pole, 2023)

It is important to note, however, that roads do not have any influence on the mobility of transhumant pastoralists and were not considered an important indicator of the similarity between PAAs 2 and 3 and RA 2. Figure 48 shows more detail on the movements of pastoralists from the Darfur cluster. The north and western sections of the CCA, where RA is located, are clearly dominated by the Fulani transhumance group.

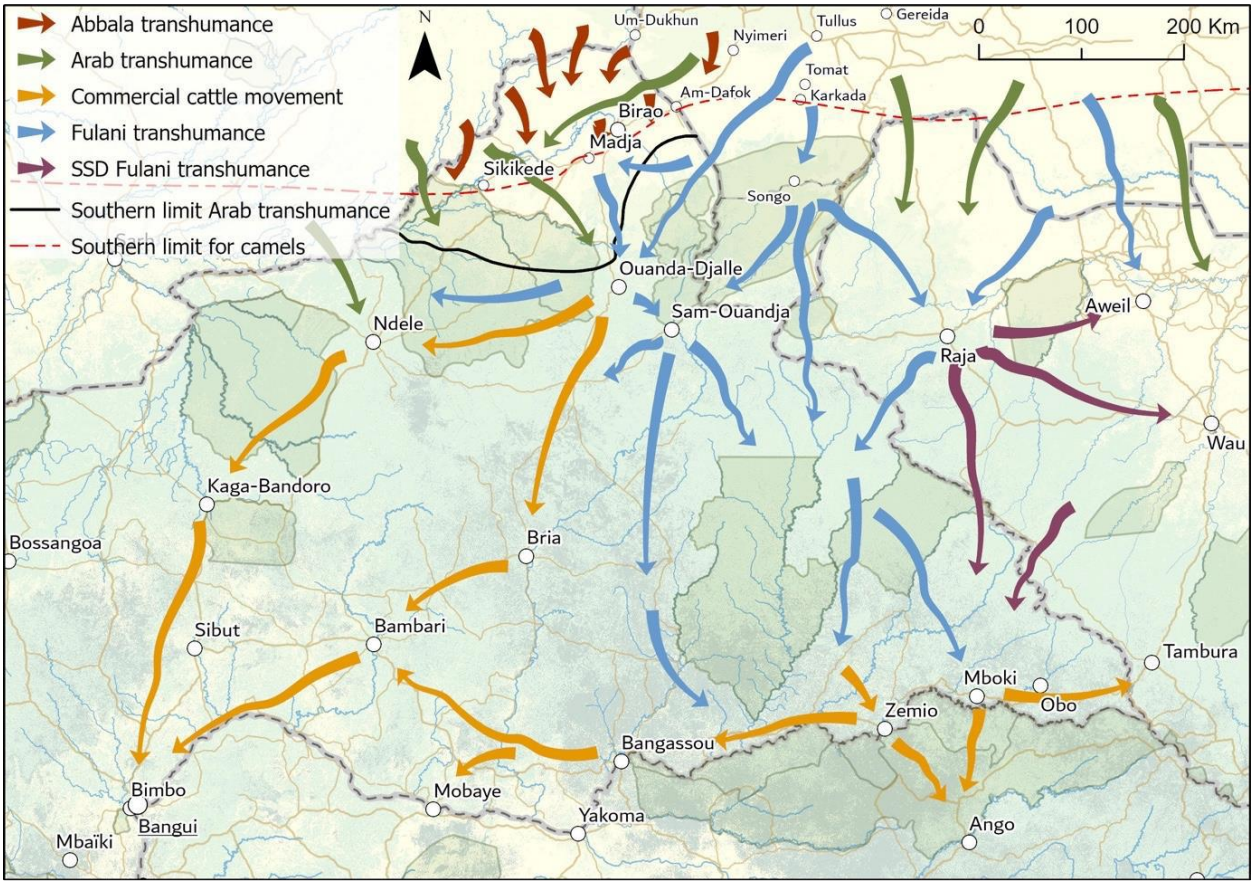


Figure 48: Current pastoral dynamics in the Darfur cluster.[91] Fulani (blue arrows) represent the major agents in the CCA.

Regarding the distance to markets, each subprefecture capital represents a relevant market. RA 2 entails only one subprefecture capital (Yalinga), as shown in Figure 49. On the other hand, as shown in Figure 48, according to the dynamic in the region, Fulani pastoralists congregate in Sam-Ouandja and most head west towards Yalinga while others move towards Derbissaka and Mboki overlapping the limits of the Mbomou-Uélé cluster.

[91] Pastoralism in eastern Central Africa Implications for state, society and the environment". The Regional Information Coordination Center (2021) African Parks Network

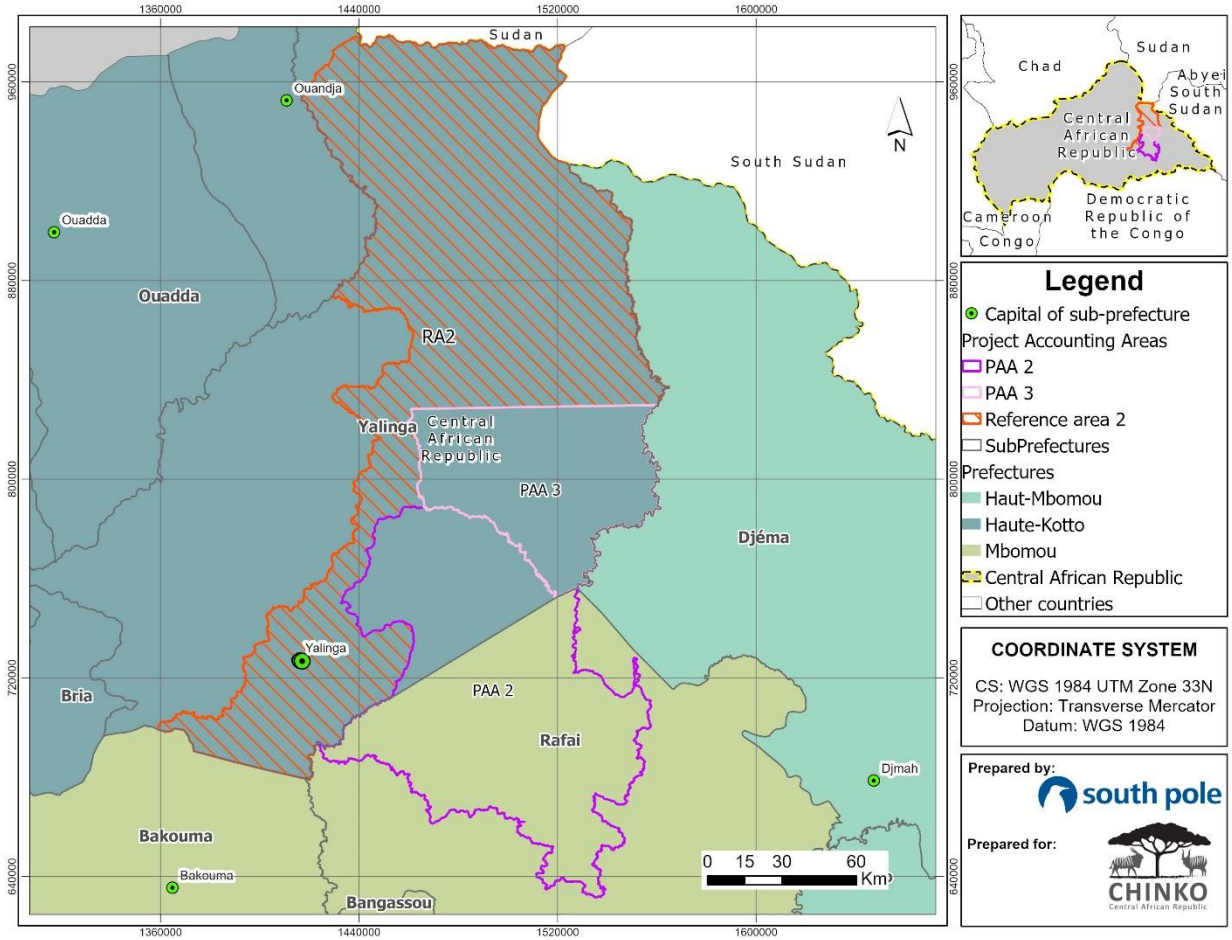


Figure 49: Prefecture and sub-prefecture capitals, where the main markets are located. As indicated, Yalinga is the only sub-prefecture capital included within RA 2.

(Source: South Pole, 2023)

Finally, with regards to the criterion on ownership/tenure, according to the constitution of the Central African Republic, all land belongs to the state and can be used by its people in a customary way. Land in the Eastern CAR has been demarcated as either hunting area, national park, wildlife reserve or *"zone banale"* (open land able to be claimed by communities). RA 2 is made up of a mix of hunting areas and "*zone banale*" and PAAs 2 and 3 are entirely made up of hunting areas (see Figure 50).

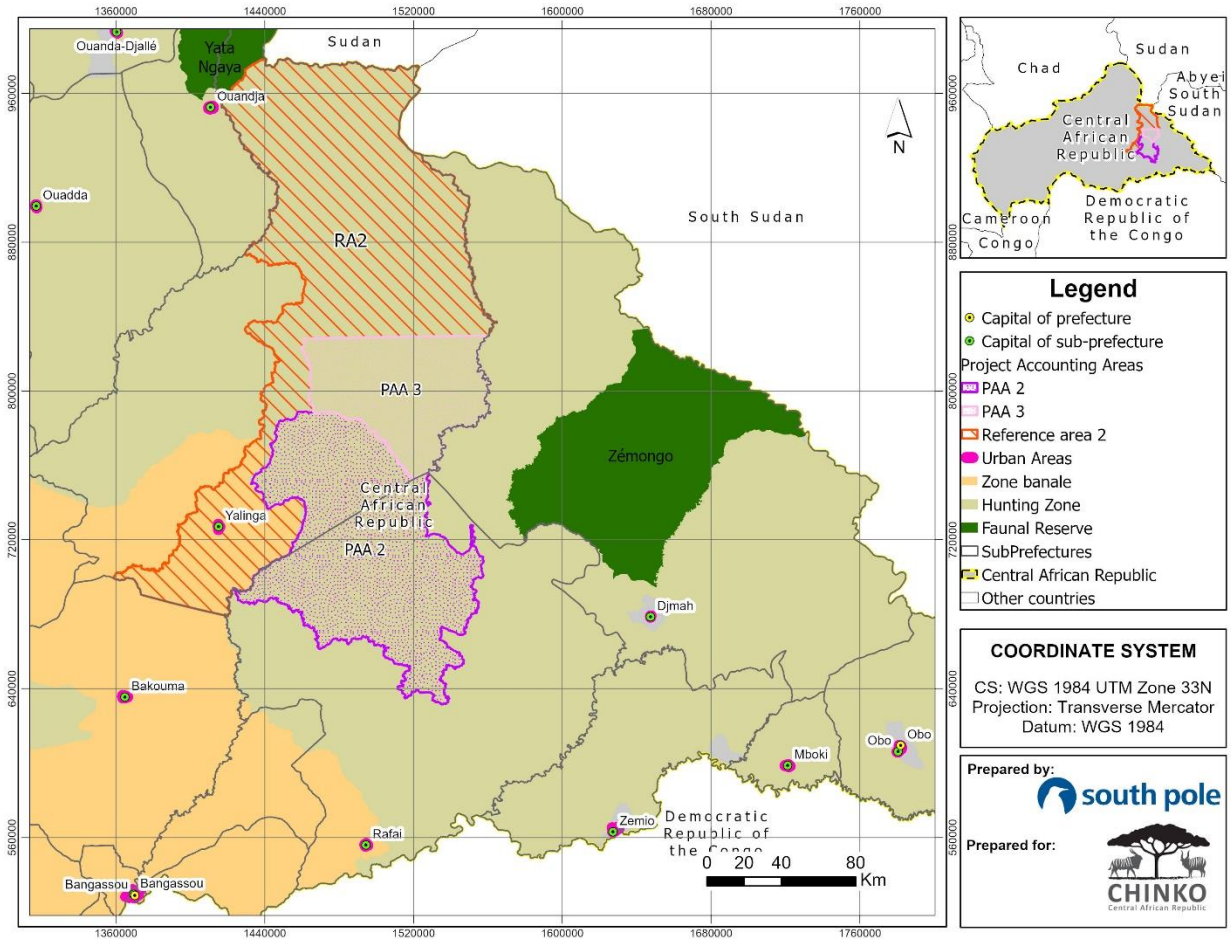


Figure 50: Different tenures present in the region including the delineation of PAAs 2 and 3 and RA 2

(Source: South Pole, 2023)

To fully comply with the four extra requirements set in section 6.8.1.3 of the methodology, Table 27 below presents a description of each one and an explanation of how this project complies.

Table 27: Section 6.8.1.3 requirements

Condition	Compliance
The reference area must be in the same general region as the project area, but not necessarily adjacent to the project area.	Yes, RA 2 and PAAs 2 and 3 are in the same region, eastern CAR.
At some point in time during the historic reference period, the reference area must contain as much forested area as the project accounting area.	Yes. Table 25 above demonstrates that RA 2 had as much forest as the relevant PAAs 2 and 3 at some point in time during the historic reference period.
The reference area must not include the project area and must not be altered during the historic reference period.	Yes, RA 2 does not include the project area and won't be altered during the historic reference

	period. Any alteration to the reference area that occurs in the future will only be to comply with new methodological or standard requirements.
The boundaries of the reference area **must include one or more** of the following: v. Environmental, natural or political boundaries. vi. Major transportation infrastructure such as highways or railroads. vii. Land ownership/tenure boundaries. viii. Latitudinal or longitudinal degree boundaries.	Yes, the boundaries of the reference area were delineated including the following: iii. Land cover, elevation range and country limits iv. Land ownership and tenure

To conclude, the information presented demonstrates clear similarities between RA 2 and PAAs 2 and 3 in natural characteristics (land cover, soil type, slope and elevation). Similarly, anthropogenic characteristics of human settlements, distance to markets and agent mobility (as driven by the Fulani pastoralist sub-group) show clear similarities between RA 2 and PAAs 2 and 3.

Defining the Historic Reference Period

The historic reference period for the project is 3 January 2001, to 9 March 2016. The period was selected to cover at least 10 years of analysis, and to consider important events related to the agents and drivers of conversion. These include the Bush War (covering the period from 2004 to 2007); the start of the pastoralist activities in the eastern CAR, which started in 2010 and intensified from 2013; and the current civil war in the country which began in 2012. [92]

Selecting Historical Imagery

The dates of the historic images used are spread evenly throughout the historical reference period, adhering to the stationarity and specific requirements of the methodology. This project has images which cover seven years: 2001, 2004, 2007, 2010, 2016, 2021 and 2023.[93] Multiple tiles were required to cover the reference area, as depicted below in Figure 51.

[92] The list of imagery used for the historical conversion analysis is available in the supporting documentation folder [3_Climate\Imagery]

[93] Even though 2021 and 2023 are dates outside the historical reference period they were used to provide a better adjustment to the logistic curve used for determining the Baseline emissions.

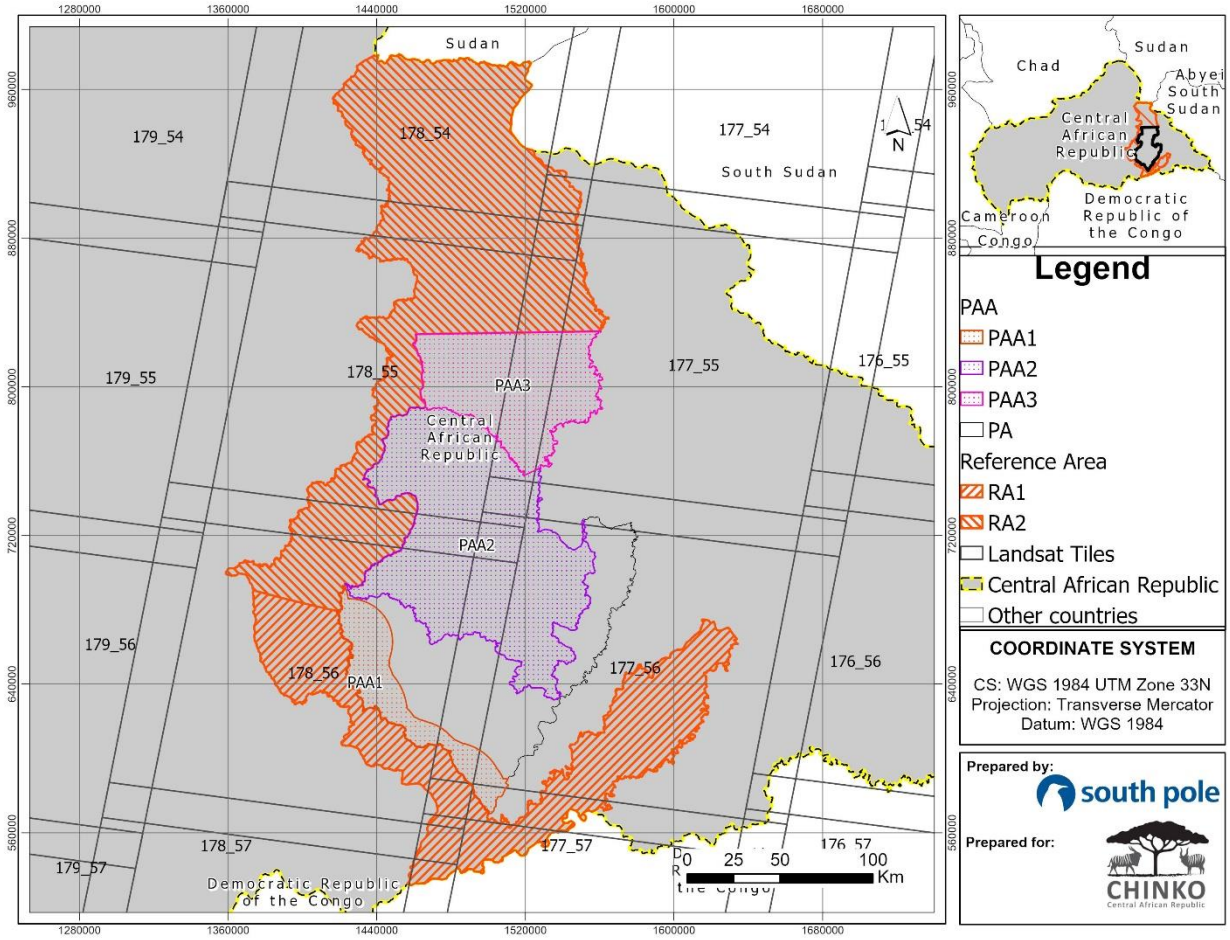


Figure 51: Locations of Landsat tiles overlapping the reference area

(Source: South Pole, 2023)

Figure 52 shows the selected periods for this analysis. These were compiled by maximising the number of available observations per year, keeping the temporal stationary through the reference period, and highlighting years of important events. Due to the extension of the reference area in Chinko, and the variation of climatic conditions in the north and south, we have images in some areas with clear observations, while others are not. Therefore, we performed the interpretation based on infrared composites (NIR, SWIR-1 and SWIR-2) of annual medians. The composites were constructed according to the available information of each program (Landsat 7: 2001 to 2010; Landsat 8: 2016 to 2021; Sentinel 2: 2023).

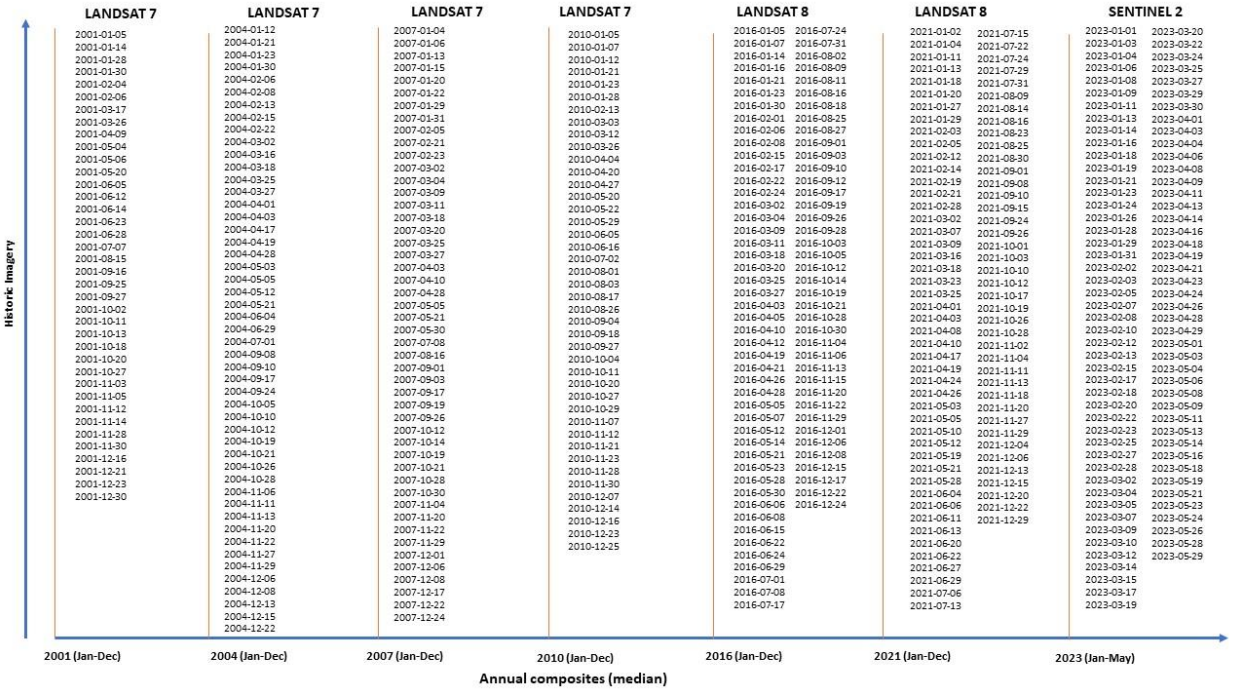


Figure 52: Timeline of the imagery used in the BEM[94]

All of the images used for the analysis of the historic reference period came from the Landsat[95] and Sentinel programs, and correspond to level 2: images that are geometrically and atmospherically correct, and show reflectance at the level of the surface, see Table 28 for spatial resolution information. According to the USGS/NASA website[96], each image passed a test in which two separate images were required to contain a maximum image to image error of 0.4-pixel (12 m) at a 90% confidence interval.

Table 28: Landsat Bands L8 and L7 and Sentinel 2

Landsat 7		Landsat 8		Sentinel 2	
Band	Resolution	Band	Resolution	Band	Resolution
B1-Blue	30	B1-Blue	30	B2-Blue	10
B2-Green	30	B2-Green	30	B3-Green	10
B3-Red	30	B3-Red	30	B4-Red	10
B4-NIR	30	B5-NIR	30	B8-NIR	10
B5-SWIR-1	30	B6-SWIR-1	30	B11-SWIR-1	20

[94] 2023 composite was created with January to May data

[95] Landsat Homepage | Landsat Science (nasa.gov)

[96] Landsat Collection 1 (usgs.gov)

B7-SWIR-2	30	B7-SWIR-2	30	B12-SWIR-2	20

Determining Sample Size

According to the methodology VM0009, the calculation of the number of observations over space used for the analysis of historical conversion in the reference area is based on the number of observations needed to achieve the required statistical precision to fit the logistic function for the BEM. Normally, a pilot sample can be distributed across the reference area, in order to estimate the population variance and the final sample size needed to estimate the conversion parameters $\alpha, \beta,$ and θ.

In this case, for RA 1 we started with the classification of 1,654 sites, but only kept 1,146 sites that were forest at the beginning of the reference period. For RA 2 we started with 2,566 out of which 1,802 were forest. The minimum sample size required to fit the logistic function is given by the following equation.

$$\hat{m}_{EM} \geq 0.5 \frac{\hat{\sigma}_{EM} * 1.64}{0.01}$$

The standard deviation at the 90% of confidence of the CDM is 0.09938 for RA 1 and 0.08182 for RA 2. The minimum number of points to work with was 133 and 90 sites for RA 1 and RA 2 respectively.

Figure 53 shows the double coverage map in the reference area.

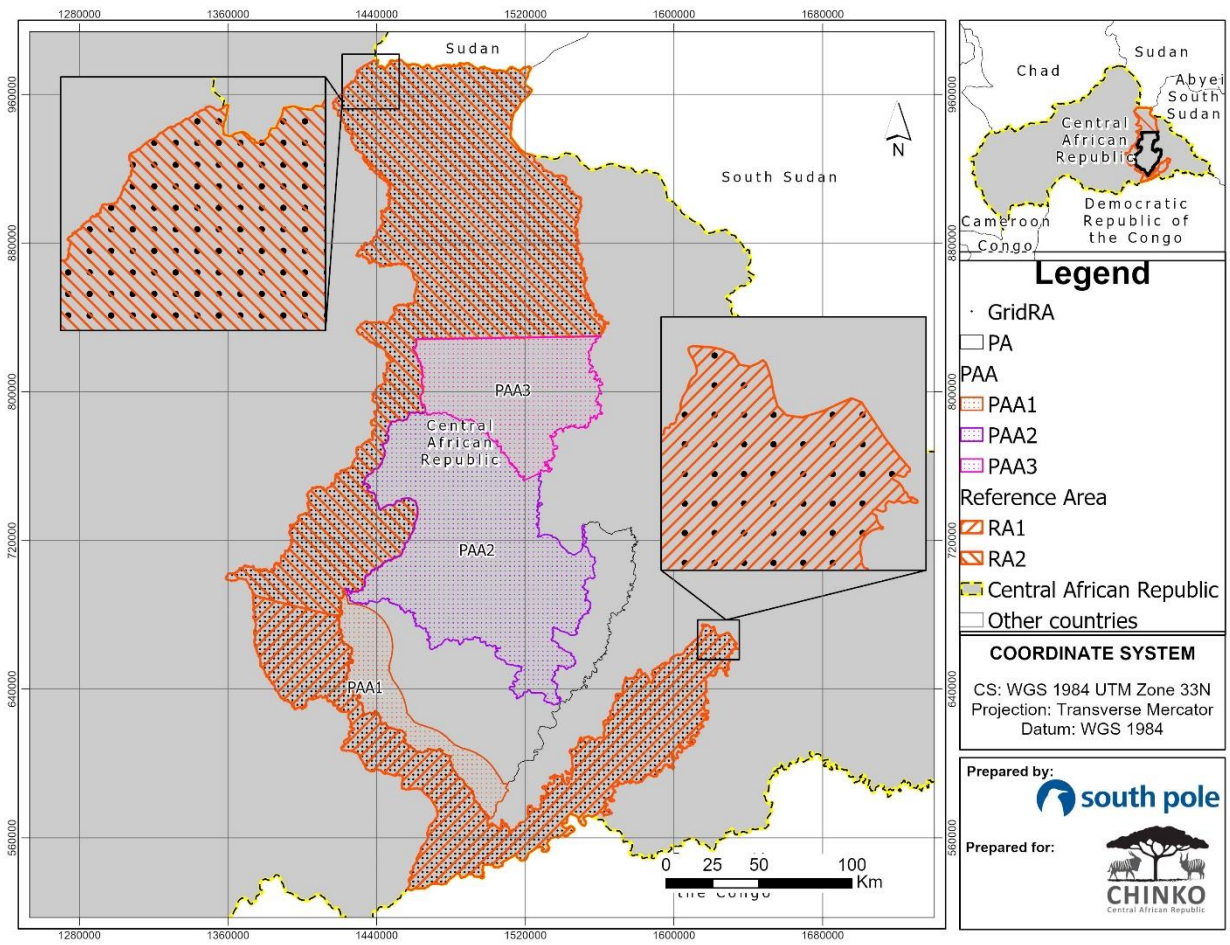


Figure 53: Double point coverage in Chinko's RAs for the Biomass Emissions Model (BEM)

(Source: South Pole, 2023)

Double coverage analysis shows that 100% of the reference area met the requirement.

Discarded Sample Points

We only considered sites that were forest from the beginning of the reference period. Therefore, we discarded the points that were already converted or were another land cover class in 2001 (508 in RA 1 and 764 in RA 2).

Parameterizing α, β and θ

We instigated this fitting under the assumption that the conversion in the CCA exhibits a logistic behaviour over time.

$$F_{DF}(t,n) = \frac{1}{1+e^{[-\eta(t,\theta)]}}$$
$$\eta = \alpha + \beta t$$

Where

F_{DF} = proportion of cumulative conversion,
η = linear predictor given time and conversion covariates,
t = time,
θ = parameter vector of covariates,
α = combined effects of β and θ at the start of the historic reference period,
β = effect of time on the cumulative proportion of conversion over time.

To estimate the parameters of this logistic regression, we prepared the Annex 5. When fitted to a logistic function, sample conversion data yielded the values for α and β (below) for the relevant PAAs (see Figure 54 and Figure 55).

According to the methodology, the parameter θ could be added in the model to provide information on the effect of certain covariates on the cumulative proportion of deforestation. However, to avoid the possibility of perverse incentives in model fitting, covariate data must originate from the following sources:

- Government publications.
- Publications by an independent third party.
- Peer reviewed literature.

After realizing that there is a lack of relevant data published from the area, and that adding global models for other variables such as climate or population would have led to an increase in the uncertainties, it was decided that the most conservative approach was not to use them. Therefore, no external covariates were employed.

Results from Reference Area 1

$$\hat{\alpha}^{Forest} = -4.436$$

$$\hat{\beta}^{Forest} = 2.488e-04$$

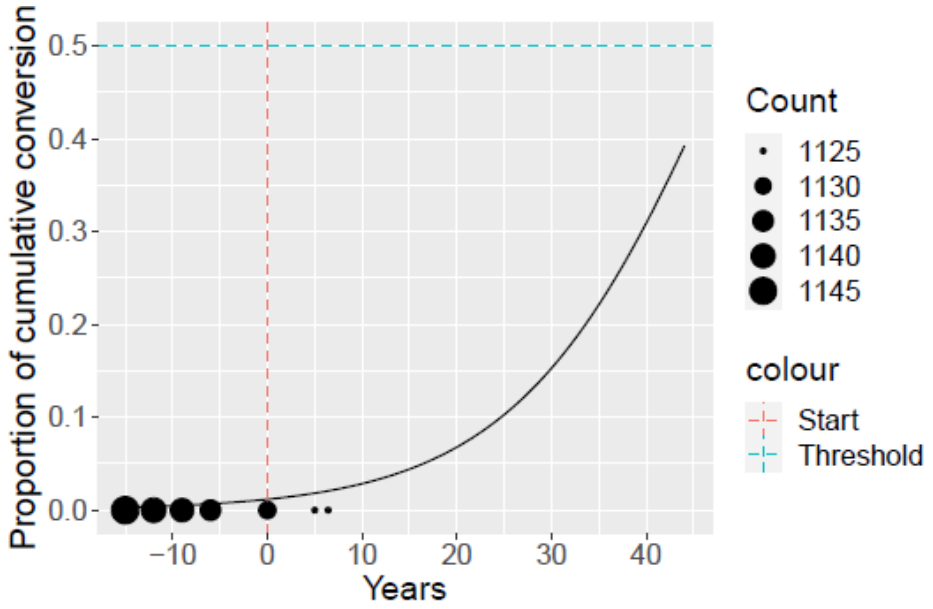


Figure 54: Cumulative conversion of forest BEM model, RA 1

Results from Reference Area 2

$$\hat{\alpha}^{Forest} = -4.841$$

$$\hat{\beta}^{Forest} = 1.509e-04$$

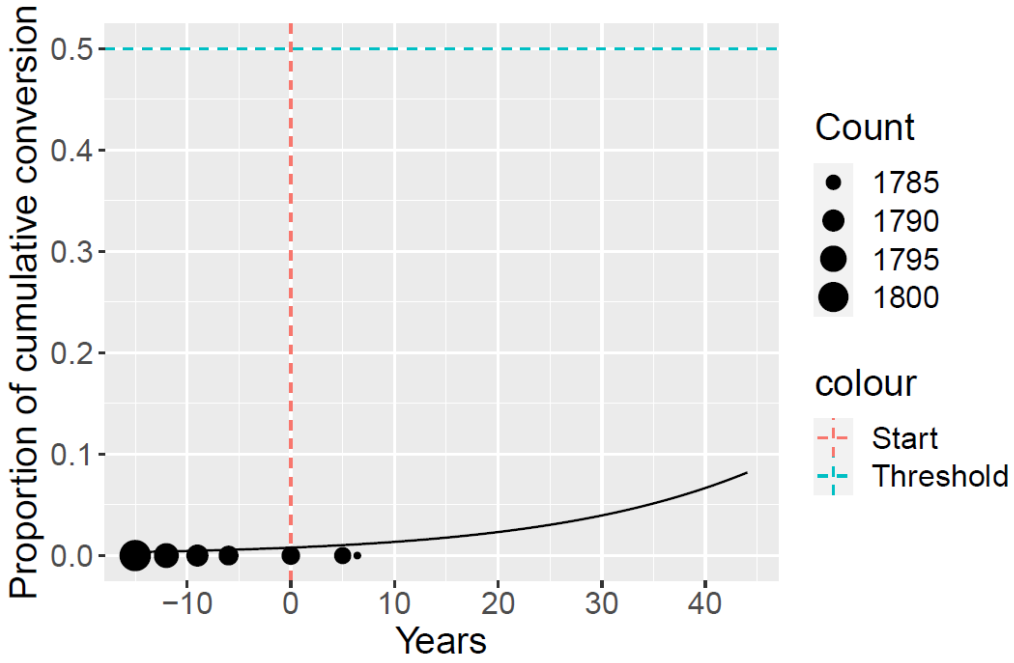


Figure 55: Cumulative conversion of forest BEM model, RA 2

However, after analysing the projected vs observed conversion in RA2 we were able to determine that the equation obtained was overestimating the conversion occurred from 2016 up to 2023 (the grid

assessment included two periods of data after the project starting date) and therefore, conservatively, we adjusted the beta parameter to a lower value to simulate the observed conversion instead. Therefore, the beta finally used for the baseline model is $\hat{\beta}^{Forest} = 1.18e - 04$.

Minimizing Uncertainty

Protocol for interpreting land cover state from imagery

An Image Interpretation protocol was constructed to ensure accurate and consistent classification of points.[97] This protocol attempts to describe the classification workflow of the grids, more specifically, the imagery used to discern conversion features and seasonal variability of the forest. Interpreters received training using this protocol and followed its principles to determine the ecosystem conversion state using derivatives of Landsat imagery, such as composites of false colour, NDVI and BURN ratio index. The ecosystem conversion state is often easily discerned on the image, either by the colour or land cover patterns. In cases where the conversion state could not be readily identified, either the context of the surrounding area was considered, or other sources of imagery (e.g. Google Earth), were used to inform the interpreter of the ecosystem conversion state.

Examining the Landsat imagery over the historic reference period revealed various alterations in the forest landscape that were not indicative of deforestation. These alterations included variations in the canopy cover, seasonal fluctuations, such as heightened forest canopy vigor in months from May to October and reduced photosynthetic activity during dry seasons, such as from December to February. Additionally, we identified areas affected by fires, where post-fire observations indicated a reduction in vegetation, potentially impacting the understory vegetation. It's important to note that these changes were not classified as deforestation.

Changes classified as deforestation, on the other hand, follow a distinct pattern that extends beyond these observed features. In cases of deforestation, the landscape undergoes significant modifications, often resulting in parcels with square or clearly defined shapes, signifying a complete transformation of land cover and its subsequent use.

Independent check of the interpretation

According to VM0009 methodology, construction of the BEM model requires the interpretation of samples overlaid on imagery from different years, and should be performed by different people. Each dataset was evaluated using the error module of the Wildlife Works tool. This tool did not present any errors in the interpretation of any of the datasets.

The Wildlife Works tool provides a module to verify possible inconsistencies and unlikely forest state transitions over time. After implementing it in the datasets, the tool produced a table that revealed that the dataset had no errors.

Estimating Uncertainty

Table 29 shows the estimated uncertainty $\hat{\sigma}$, which is used to calculate overall uncertainty in the BEM. This estimation was calculated using the Wildlife works tool.

[97] The list of imagery used for the historical conversion analysis is available in the supporting documentation folder [3_Climate\Image interpretation protocol]

Table 29: Standard error BEM model

Reference Area	Estimate standard deviation	Number of samples
RA 1	0.09938	1,654
RA 2	0.08182	2,566

Please refer to Annex 5 for more details of uncertainty calculations.

Determining q

The default value of zero was selected, which means a conservative assumption of no days between the onset of degradation and the beginning of conversion.

Determining r_u

r_u parameter is set to position the baseline emissions models relative to the onset rate of conversion immediately adjacent to the project accounting area at the project start date. To attain this parameter there are two methods available in the methodology.

In the first method, the ratio of converted perimeter to the total threatened perimeter along the boundaries of the project area must be measured as of the project start date. Threatened perimeter is defined as that which is vulnerable as of the project start date to conversion by being accessible to the local agents of conversion and has not yet been converted.

Alternatively, r_u can be quantified using the ratio of converted area within the project area to the sum of all project accounting areas less the area that is converted. Conversion is defined as area that has been converted prior to the project start date from forest to non-forest or from native grassland to anthropogenic conversion.

We followed the first method described, the selection was done considering the agents of deforestation identified in the project are established outside of the project area, i.e. local communities and pastoralists as well as the drivers of deforestation which include agricultural and overgrazing practices. Therefore, analyzing the historical conversion along the perimeter provides a better representation for the baseline emissions model than analyzing the converted area within the project area which are conservation areas with not local communities in it. The second method was not considered for the nature of the project as it consists in a different approach focusing on the converted area inside the project the results will not represent the behavior of agents and drivers of deforestation in and around CCA.

Below we describe the procedure followed to determine the converted and threatened perimeter for the calculation of r_u in each PAA.

Definition of the converted perimeter of forest

The information to determine the converted perimeter of the forest was extracted using the Tropical Moist Forests product (TMF) 1990–2022 (C. Vancutsem et al., 2021).[98]

TMF is a global forest and Annual change collection (1990-2022) map constructed by the European Commission. It was performed based on Landsat TM, ETM +, and OLI images with a size of a pixel of 30

[98] Tropical Forest Monitoring – TMF (https://forobs.jrc.ec.europa.eu/TMF). C. Vancutsem, F. Achard, J.-F. Pekel, G. Vieilledent, S. Carboni, D. Simonetti, J. Gallego, L.E.O.C. Aragão, R. Nasi. Long-term (1990-2019) monitoring of forest cover changes in the humid tropics. Science Advances 2021

m. Their mapping approach consists of observing the evolution of spectral signatures over time and of identifying potential disruption observations (i.e. detection of an absence of tree foliage cover within a Landsat pixel for a single-date observation) for each single-date image of the time series. The Tropical Moist Forest data are available to download in tiles 10°x10° and the project area is located between cells N10 – E20.

To perform the converted perimeter analysis information of deforestation per year from TMF dataset was downloaded, the following steps were taken:

- reclassification of deforestation to obtain the years covering the period 2007-2016 (PAA 1 and PAA2) and 2011-2020 (PAA3) to obtain forest loss accumulated in each PAA.
- an analysis of the minimum mapping unit is conducted to determine and remove the accumulated forest loss in areas smaller than 0.5 hectares, which corresponds to the national definition of forest. [99]
- a post-processing was carried out, which consisted of changing the projection system of the WGS84 geographic coordinate system to the flat WGS84-UTM 31N system, transforming the resulting layer (raster) to vector format, eliminating isolated polygons smaller than 0.5 ha for ensure the minimum mapping unit.

Definition of the threatened perimeter of forest

The threatened perimeter in each of the PAAs was delineated considering the areas with the highest risk of deforestation due to its proximity, for instance, to settlements, roads corridors and markets for livestock trading. In all cases the total value of the threatened perimeter does not include the converted perimeter. Below is an explanation of the areas covered in each PAA.

- the threatened perimeter of PAA1 covers the western part of the PAA perimeter, the one that is shared with areas outside CCA. The internal perimeter of PAA1, in the eastern part, was not included as threatened considering there are no agents coming from the central part of CCA.
- the threatened perimeter of PAA2 covers the northern part of the PAA perimeter, the one that the PAA2 shares with areas outside the initial delimitation of CCA. The internal perimeter of PAA2, in the south-eastern part, was not included as threatened considering there are no agents coming from inside CCA.
- the threatened perimeter of PAA3 covers all the border of the PAA perimeter excluding only the converted perimeter and the no forested areas. In this case all the eligible perimeter was included considering the historical mobilities of the agents of deforestation.

Finally, Figure 56 presents the graphic details of the converted and threatened perimeter of each PAA.

[99] FAO Forest Resource Assessment 2015: https://www.fao.org/3/az183f/az183f.pdf

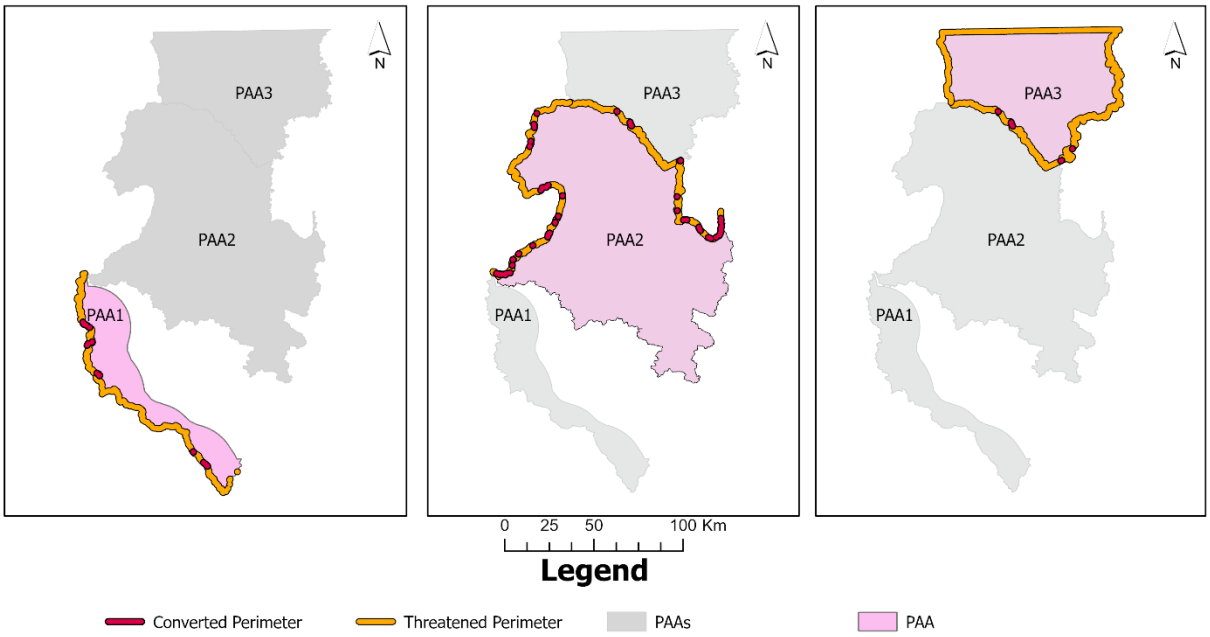


Figure 56: Converted and threatened perimeter of each PAA.

The results of the procedure displayed in Figure 56 are summarized in Table 30.

Table 30: GIS results to determine rU value

Parameter	Converted perimeter (m)	Threatened perimeter (m)	rU Value (%)
PAA 1	7,478.5	239,371.4	3.1242
PAA 2	21,840.8	390,616.8	5.5914
PAA 3	6,640-4	350,880.5	1.8925

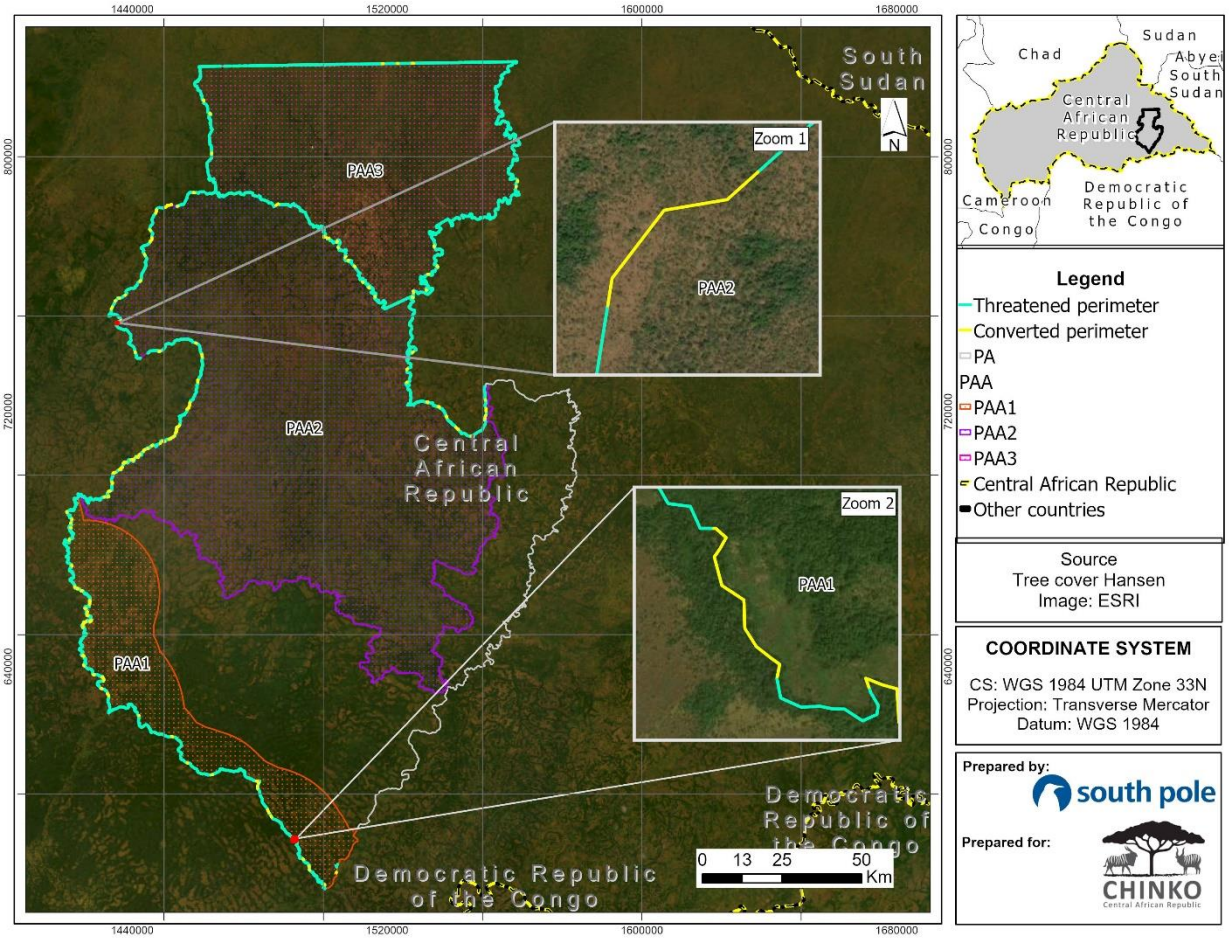


Figure 57: Converted perimeter forest

(Source: South Pole, 2023)

Soil Emissions Model (SEM)

SOC is not included in the baseline analysis.

3.1.5 Additionality

The additionality of the project was performed using the tool "VT0001 Tool for Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) project Activities", Version 3.0. Below are the steps that were followed to assess the additionality and determine the baseline of the project:

Step 1. Identification of alternative land-use scenarios to the proposed VCS AFOLU project activity.
Step 2. Investment analysis.
Step 3. Barrier analysis.
Step 4. Common practice analysis.

Step 1: Identification of alternative land-use scenarios to the AFOLU project activity

With this step, alternative land-use scenarios were identified for the proposed activities of the project. The baseline scenario was identified, through the following sub-steps:

Sub-step 1a Identification of credible land-use scenarios alternative to the proposed project activity under VCS AFOLU.

Alternative land-use scenarios were identified according to the proposed project activities, which could be defined as a baseline scenario. In addition, historical land uses, trends in the economic sectors, and economic activities that take place in the region of the project area were considered.

Alternative scenario 1: Subsistence agriculture

Although the CAR has more than 5 million ha with an agricultural vocation,[100] there is no doubt that the country is an agriculture-dependent nation, with mechanised agriculture almost non-existent, even in the pre-crisis situation.[101] Recently, the adoption of modern agricultural technologies and cultural practices such as irrigation, and fertiliser application, among others, have been introduced very slowly and have helped to reduce the agricultural area. However, the further adoption of these modern practices is hindered by logistical and financial constraints such as access markets and access to credit (Table 31), as these farmers are smallholder farmers with limited financial support. Moreover, commercial banks, private partners, and insurance companies are not prepared to support these farmers to adopt and apply these technologies because of high investment risk. Challenges in the agriculture sector are not only limited to cultivation, but there are also serious concerns when it comes to postharvest storage and marketing, related to a very poor road network. The major cause of food insecurity in the CAR is attributed to the greater percentage of postharvest losses (Senahoun, 2016).

The agricultural output is dominated by subsistence crops. The FAO estimates that about 2,020,000 hectares (around 3.2% of the total land area) are arable or under permanent agricultural use, with an additional 3,000,000 hectares (4.8% of total land area) being in permanent pasture. Subsistence farmers grow cassava, millet, corn, and plantain for their consumption and sale in domestic markets. Individual small-scale farmers use traditional agricultural methods to produce these crops (The World Bank Group, 2010).

In the prefectures where the project area is located (Mbomou, Huat Mbomou and Haute Kotto and Vakaga), the alimentary insecurity is ranked as a severe deficit by the World Food Program (WFP) (Figure 58):

[100] http://www.fao.org/countryprofiles/index/en/?iso3=CAF

[101] CAR Civil war 2012



Figure 58: Percentage of food insecurity per prefecture showing a high insecurity in the Eastern part of the country, where the project is located.

Source: (ENSA, 2019).

In 2018, overall food insecurity increased by 5 percentage points, from 45% to 50% of the population, reflecting a deterioration in comparison to the previous year. The volatility of the security situation, the constant movement of people, and the weakening of livelihoods highlights the alarming household food security and nutrition situation. However, the level of severe food insecurity has halved from 15% in 2015 to 7% in 2018.

The level of moderate food insecurity has increased from 35% in 2015 to 43% in 2018. There was also a significant increase in the proportion of homes dedicated to the practice of agriculture (92%) in comparison to the last three agricultural seasons (ENSA, 2019).

Evidently, subsistence agriculture is a key activity in the country and in a post-civil-war scenario, without the project development, the project area, which has been uninhabited, will be a key location to perform these activities by communities who have been searching for new opportunities and available land areas, primarily focusing on closed canopy forest for slash and burn agriculture.

Alternative scenario 2: Transhumance and pastoralism

Pastoralism

Cattle herders only began arriving in the CAR from the 1920s onwards, with successive waves of pastoralist migrations entering the country from the 1930s. Since then, Central African pastoralism has evolved over four principal phases (International Crisis Group, 2014):

1. An initial period of gradual herder migrations, principally from Cameroon and Nigeria, and the relatively peaceful integration of pastoralist communities into Central African life between the 1930s and 1970s.

2. Further waves of migration, principally from Chad, as well as Sudan, causing the rise of conflicts surrounding transhumance between the 1970s and 1980s.

3. A period of rising predation on pastoralist communities with the emergence of the Zaraguina phenomenon in the 1990s to 2000s.[102]

4. The current era of high pastoralist conflict and intense exploitation of the forestry resources, which began at the start of the crisis in 2013.

The numerous pastoralist groups in the CAR generally come from two broad groups: Arab tribes from Chad and Sudan, and Fulani. The Fulani, or Fula, are ethnic groups that have the largest nomadic pastoral community in the world. Mbororo people are predominantly nomadic communities of Fulani cattle herders. Mbororo, or "Bororo", translates to "Cattle Fulani", which means "those who dwell in cattle camps"; they do not live in fixed abodes or practice agriculture, but spend most of their time traveling in search of new pasture for their cattle (Ondoua Ondoua, G., Beodo Moundjim, E., Mambo Marindo, J.C., Jiagho, R., Usongo, L. & Williamson, 2017).

Being the pioneers of CAR's herder populations, Fulani breeders have traditionally dominated pastoralism and are still important players today. In the 1970s, these pioneer herders were joined by breeders from other minority ethnic groups, particularly Arab (and other Fulani) groups from Chad and Sudan, as well as Hausa and Borno pastoralists in eastern CAR. Whilst Fulani breeders continue to make up the majority of Central African cattle herders, their ownership of cattle has been reduced by insecurity over the few last years (International Crisis Group, 2014).

Transhumance

Transhumance is defined as the practice of moving different types of livestock from one grazing ground to another in search of water and food, and is characterized by regular seasonal movements. The herds generally leave an environment where the pasture has become scarce. This differs from nomadism due to the fact that only a few individuals accompany the herd, while the largest part of the pastoral group (generally the women and children) remains sedentary. Cross-border or long-distance transhumance predominantly involves cattle and, is usually north-south, with herds travelling several hundreds of kilometres annually (Ondoua Ondoua, G., Beodo Moundjim, E., Mambo Marindo, J.C., Jiagho, R., Usongo, L. & Williamson, 2017).

Transhumance corridors are strips of land reserved for the passage of livestock to access pasture, a water source, or other infrastructures such as a livestock market, vaccination area, or livestock-holding area. These corridors are usually 50–100 m wide, multidirectional, and should be marked by clear signs (e.g. paint marks on trees, planted vegetation, beacons, and plaques). Trails and accommodation are developed to allow animals to pass through farming areas and access to water. Water points, grazing areas, markets, salt licks, fords, resting areas, and passage routes are important elements in cross-border transhumance (Alidou, 2016).

There are several types of transhumance movements that cross the Central African Republic: internal transhumance, which involves around 250,000 pastoralists, mainly consisting of the Fulani and Mbororo ethnic groups, and cross-border transhumance during the dry season, where different species of Chadian or Sudanese grazing animals move through the Chinko area in search of pasture in the north, and sell cattle in the southern part (Figure 13).

Before the CAR crisis began at the end of 2012, pastoralism had been a source of conflict and even violence in rural areas for several years, mainly between pastoralists and farming communities.

[102] https://www.cairn-int.info/article-E_AFCO_239_0035--the-phenomenon-of-the-zaraguina-in-north.htm#

This crisis has further exarcerbated resentment and violence between these groups due to pastoralists' perceived links to ex-Seleka members. Livestock is targeted by both anti-balaka and ex-Seleka militiamen, and pastoralists often respond to cattle thefts with retaliations. The enrolment of vulnerable young pastoralists in armed groups, the crumbling of traditional agro-pastoralist mediation structures, and the yearly increase of pastoralists influx into the CAR may amplify the ongoing bush warfare (Landers, 2011).

Negative impacts are evident in the project area and its surroundings, as can be seen in Figure 38, the larger Chinko area is recognized by high concentrations of cattle. Transhumant pastoralists travel in the savannas and forests which brings them into geographic proximity to members of the LRA.

Clearly, transhumance and pastoralism are major activities in the Eastern part of the country, with each having a direct effect on the project area. Livestock movements from Chad into Central Africa have reorganized land use at the regional level and opened a new settlement front.

Alternative scenario 3: Hunting and Poaching activities

The difference between hunting and poaching comes down to the regulations and laws. While hunting is legal (under some circumstances and requirements), poaching is considered to be illegal. The killing of any species that is legally protected under national law is, by definition, illegal, regardless of whether the species lives in a protected area or not.

Large-scale commercial poaching by armed groups and militarized poachers is highly organized. According to project area administrators and local communities, these groups engage in poaching for purely economic purposes. In forest areas where there are roads, poachers camp for several weeks, following the movements of wildlife and killing large mammals such as chimpanzees, elephants, bongos, and buffalos.

The main actors involved in poaching in the project area are:

• Non-State armed groups.

• State actors, mainly from Sudan, Chad, and DRC. However, it is difficult to know how poaching activities from these countries in the Eastern CAR work and who coordinates them.

• Armed pastoralists.

• Independent militarized poachers.

• Armed groups.

As outlined by Aebischer et al. (2020), the greatest threat to the CCA comes from transhumance livestock farming between December and May each year: the seasonal movements of transhumant herders in and around the CCA. Fulani cattle herders from Darfur pose a serious poaching threat since many carry weapons. They also poison predators such as lions. It has also been reported that some Mbororo members obtain firearms from the Seleka. (Ondoua Ondoua, G., Beodo Moundjim, E., Mambo Marindo, J.C., Jiagho, R., Usongo, L. & Williamson, 2017). The magnitude of the poaching is evident from the apparent local extinction of elephants from the Bangassou Forest, which neighbours the CCA to the South. In the project area itself, the elephant population is estimated to have dropped to less than 100 individuals in 2017.

Contrastingly, when African Parks took over the management of the project area, they started to manage the road network and set up housing infrastructure to operate from. African Parks has then commenced with sensitization and law-enforcement campaigns to secure the area from any threats.

Alternative scenario 4: Artisanal gold and diamond mining

Gold and diamonds are mined almost exclusively by artisanal means in Eastern CAR. According to accumulated diamond export figures since 1931, more than 84% of the extraction takes place manually.

Since independence, industrial exploitation has almost completely disappeared (Matthysen & Clarkson, 2013).

Central African authorities face two major challenges concerning the minerals sector: addressing its role in insecurity and conflict financing, and combating illicit flows as a means of reducing conflict financing and improving government revenue. By doing this, addressing the problems of capacity, corruption, and the industry's high opacity will be key to the government's success and stability and security nationwide (International Peace Information Service, 2018).

Mining was a recurrent activity inside the project area prior to the establishment of the project, and since 2014, there have been three main regions within the area where illegal gold and diamond mines have been established. As mining is illegal in the project area under the CAR law, two out of the three mines were closed between 2015–2016. The last illegal mine in the project area was peacefully closed on the 26th November 2020. This reveals that without the project activity, illegal mining would continue and likely expand.

Alternative scenario 5: Project activity without being registered under VCS.

In 2014, Chinko signed a 50-years land management agreement with the government, which was later renewed, including an expansion of the areas to a 25-years mandate in 2020. This agreement does not only show the government trust in the project proponent but is also a benefit-sharing initiative among the parties, which guarantees solid support for the development of the project. However, African Parks caries 100% of the investment risks and makes great efforts to deploy conservation and community activities on its own. Due to the reasons mentioned above, it is difficult for private companies to invest in CAR, with large scale foreign investment being perceived as a risky activity. The long-term financing of the project intervention is therefore at risk which could lead to unsustainability and instability in a without VCS registered project scenario.

Outcome from sub-step 1a:

A list of credible alternative land-use scenarios that could have occurred on the land within the project boundary of the VCS AFOLU project:

1. Subsistence agriculture.
2. Transhumance and pastoralism.
3. Hunting and poaching activities.
4. Artisanal gold and diamond mining
5. Project activity without being registered under VCS.

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

To demonstrate the consistency of credible land-use scenarios, according to the tool VT0001, the following steps were applied:

I. Demonstrate that all land-use scenarios identified in sub-step 1a, follow all mandatory applicable legal and regulatory requirements.
II. If an alternative does not comply with all mandatory applicable legislation and regulations then show that, based on an examination of current practice in the region, the mandatory law or regulation applies, those applicable mandatory legal or regulatory requirements are systematically not enforced and that non-compliance with those requirements is widespread, i.e., prevalent on at least 30% of the area of the smallest administrative unit that encompasses the project area.

III. Remove from the land-use scenarios identified in sub-step 1a, any land-use scenarios which are not in compliance with applicable mandatory laws and regulations unless it can be shown that these land-use scenarios result from a systematic lack of enforcement of applicable laws and regulations.

The project area is one of the largest conservation area in CAR. As a result, not all of the scenarios listed above are in compliance with all mandatory applicable legal and regulatory requirements. However, it is important to note that the forests in the CCA are subject to multiple pressures by agents whose activities are uncontrolled and overlooked by most standard entities. Therefore, many of the applicable mandatory legal or regulatory frameworks are not systematically enforced, with non-compliance being widespread, as explained below. The proposed project activities are essential to help enforcing the national laws and ensuring that the project area is not deforested or degraded in the future.

Subsistence Agriculture:

In CAR, 80% of the population relies on subsistence agriculture and livestock for their livelihoods. Most cultivated land in the country is used for subsistence farming; farm sizes average between 1.5 and 2 hectares – the amount an average family can cultivate and protect. Most farmers use traditional cultivation methods, which means that productivity is very low and soils are quickly exhausted/eroded.

Law No. 63 of 1964 recognizes user-rights to land based on the principles of customary law. Customary law is a localized and evolving system, and no comprehensive studies have been published detailing the nature of the system which is operating in CAR. Some general principles of customary law that are common to the central African region, include land being held collectively by the lineage or clan and the right of a first clearer of land to use the land. As the commercial value of land has increased, customary landholdings have become increasingly individualized and have been inherited within families.

Most people typically obtain access to agricultural land through inheritance and allocations from the villaged headmen or lineage heads, who control land distribution and allocation under customary law.[103]

Transhumance and Pastoralism

Both activities are highly regulated in CAR, as can be seen in the table below. However, as explained previously, mandatory legal or regulatory requirements are not systematically enforced because the main agents performing this activity in the project and reference area are mostly illegal groups who originate from multiple bordering countries.

Regulation	**Object**
Law 62/348 of 14 December 1962	Creating and demarcating rural livestock communes from Niem-Yellowa to Bouar; Koui to Bocaranga; and Gaudrot to Baboua.
Law 64/48 of 2 December 1964	Creating a chamber of agriculture, livestock, water, forests, and hunting.
Law 65/61 of 3 June 1965	Regulating the livestock sector in the Central African Republic.

[103] Obtained from: Landlinks, Central African Republic https://www.land-links.org/country-profile/central-african-republic/#land

Regulation	Object
Law 64/32 and 64/33	Creating and organizing local authorities and administrative districts in the CAR. Section III of Law 64/32 concerns the establishment of rural livestock communes, the appointment of mayors, and the management of municipal councils.
Law 65/85 of 23 December 1965	Creating and demarcating the rural livestock commune between Ouro-Djafoun and Bambari.
Law 94/008 of 20 October 1994	Amending the provisions of Order 86/057, creating and organizing agropastoral action zones in the CAR.
Law 94/009 of 28 October 1994	Creating the Interprofessional Fund for Livestock Development (FIDE).
Law 01/009 of 16 July 2001	Creating the National Order of Central African Veterinarians (OVECA) and the framework for exercising the veterinary profession.
Law 07/015 of 19 June 2007	Creating the Agriculture and Pastoral Development Fund (FDAP).
Order 83/064 amending Law 64/48 of 2 December 1964	Creating a Chamber of Agriculture, Livestock, Water, Forests, and Hunting.
Order 66/55 of 30 August 1966	Creating and demarcating a rural livestock commune from Ewou to Alindao.
Order 75/014 of 15 February 1975	Creating the State Company for the Management of Abattoirs (SEGA).
Order 81/033 of 20 July 1981	Creating and demarcating the rural livestock commune from Pombolo to Gambo.
Order 82/025 of 30 June 1982	Creating the Yaloké Commune rural livestock commune in the prefecture of Ombella-Mpoko.
Order 86/045 of 4 August 1986	Conferring the status of a public institution on the National Federation of Central African Livestock Farmers (FNEC).
Order 86/057 of 15 September 1986	Creating and organizing Agropastoral Action Zones (ZAGROPs) in the CAR.

Regulation	Object
Order 88/005 of 5 January 1988	Creating local authorities and administrative districts.
Order 88/006 of 12 February 1988	Concerning the organization of local authorities and administrative districts.
Decree 75/079 of 15 February 1975	Regulating the professions of cattle traders and butchers, and regulating cattle and meat markets, the slaughter of livestock for food, and the transport of animals.
Decree 82/568 of 30 December 1982	Approving the statutes of the Chamber of Agriculture, Water Resources, Forests, Hunting, Fishing and Tourism.
Decree 86/260 of 15 September 1986	Creating and demarcating two ZAGROPs in the rural livestock commune of Ombella-Mpoko (Djobé, Yérémo).
Decree 89/153 of 18 July 1989	Creating the National Livestock Development Agency (ANDE).
Decree 05/009 of 13 January 2005	Organization and operation of the Ministry of Agriculture and Livestock and defining the minister's powers.

Hunting and poaching activities

The hunting sector in the CAR has been severely affected by the current instability and insecurity. Additionally, cross-border poaching by heavily armed poachers crossing the Chadian and Sudanese borders wiped out both black and white rhinoceros in the 1980s and decimated the local elephant population, especially in savanna dominated regions. These factors, together with the increasing prevalence of uncontrolled grazing of domestic animals in protected areas, have severely affected the viability of this important source of foreign exchange.

A new sport hunting model has been developed: *Projet de zone de chasse villageoise* (ZCV), which aims to involve communities in a more meaningful way in the management of hunting areas. In addition to the revenue generated for the state and communities, sport hunting also contributes to the local economy through employment and provision of game meat.

Sport hunting is administered by the MEFCP's Division of Wildlife Exploitation (DFAP). DFAP is responsible for issuing hunting permits, licenses, hunting areas, and trophies as well as managing the various fees involved. The most important legal document related to hunting in the CAR is the Ordinance N° 84.045 on the protection of wildlife and the regulation of hunting in the country.

Artisanal gold and diamond mining

Mining activities are regulated in CAR, as can be seen in the table below.

Regulation	Object
Law 09.005 of 29 April 2009	Stipulates that all mineral resources, in the ground or on the surface, are the property of the Central African State.
Decree 09.126 2009	Stipulates the associated regulations, that the State can consequently grant any person access to these resources.
Mining code	Recognize customary property rights to a certain extent by ordering mining license holders to compensate holders of customary rights for any loss of land due to the mining activities.
2007 Environmental code, law number 07/018	The code mandates the Ministry of Environment and Ecology to supervise environmental issues within the mining sector.

Even though regulations are in place, artisanal mining is still a common practice, with a systematic lack of enforcement of applicable laws and regulations. Despite the fact that CAR's artisanal supply chain is quite structured, the informality of this process is quite significant. About 30% of the country's diamonds and 95% of the country's gold leaves the country secretly. Furthermore, no more than 5% to 10% of miners are officially registered (Matthysen & Clarkson, 2013).

Project activity without being registered under VCS.

The Central African Republic Government and African Parks signed a new 25-year public-private partnership (PPP) agreement for the management of the Chinko area in 2020, and as a result, this land-use scenario is in compliance with all mandatory applicable legal and regulatory requirements.

Outcome from sub-step 1b

The alternative scenarios are:

1. Subsistence agriculture.
2. Transhumance and pastoralism.
3. Hunting and poaching activities.
4. Artisanal gold and diamond mining.
5. Project activity without being registered under VCS.

Sub-step 1c: Selection of the baseline scenario

The identification of the baseline scenario is done in section 3.1.4 according to the guidelines of the methodology used. The most likely scenario of land use in the absence of the proposed project correspond to those that give continuity to the productive activities predominant in the region of study that means a combination of the Scenarios 1 to 4 interacting at different levels of relevance to conversion.

Step 2: Investment analysis

An investment analysis was not carried out, the barrier analysis was performed instead as allowed by the tool.

Step 3: Barriers analysis

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

A barrier analysis was performed instead of an investment analysis. The barrier analysis demonstrates that there are significant barriers that prevent the type of proposed project activities from being implemented without income from the sale of greenhouse gas (GHG) credits. Similarly, the barriers that have been identified will not prevent alternative land-use scenarios 1, 2, 3 and 4 from occurring.

Economic barriers

Financial risks in the CAR are classified as "Very high – D".[104] In rural areas of southeast CAR, a formal economy is almost non-existent, due to the geographic isolation, lack of development, and persistent insecurity in this region; rural communities have few employment or other economic opportunities. This lack of formal economic opportunities also intensifies the exploitation of wildlife and forest resources for commercial purposes. Therefore, instead of consuming meat from domestic animals, local people depend heavily on bushmeat (Ondoua Ondoua, G., Beodo Moundjim, E., Mambo Marindo, J.C., Jiagho, R., Usongo, L. & Williamson, 2017).

In addition, the CAR energy sector is in a dire financial state, which poses serious risks in the coming years with regards to fuel wood demand. The energy sector faces high costs due to its excess energy capacity and natural gas supply, which are exacerbating the existing income gap.

In the World Bank's Doing Business 2020[105] report, the CAR ranked at 144 out of 190 economies for "getting credit". The category was assessed by looking at (a) movable collateral laws (which is the strength of legal rights of borrowers and lenders in secured transactions) and (b) credit information systems and the sharing of credit information (Mehler, 2013).

Access to credit is a major barrier to the REDD project because it limits financing additional conservation activities, which have a considerable payback period (Table 31).

Table 31: Access to credit in the Central African Republic

Indicator	**CAR**	**Sub-Saharan Africa**	**OECD high income**	**Best regulatory performance**
Strength of legal rights index (0–12)	6	5.1	6.1	12 (5 economies)
Depth of credit information index (0–8)	1	3.9	6.8	8 (53 economies)
Credit registry coverage (% of adults)	5.1	8.3	24.4	100 (2 economies)

[104] https://www.coface.com/News-Publications/Publications/Country-risk-assessment-map-June-2020

[105] See https://www.doingbusiness.org/content/dam/doingBusiness/country/c/central-african-republic/CAF.pdf

Credit bureau coverage (% of adults)	0	11	66.7	100 (14 economies)

Source: (Mehler, 2013 The World Bank's Doing Business 2020 Report, 2019[106].)

Despite some macroeconomic achievements, several challenges remain, including the high level of debt; the narrow fiscal base; the fragility of the financial system; a relatively low level of reserves; the depreciation of the Central African Franc CAF (the country currency); price fluctuations; and rising transport costs. Furthermore, development gains are not equitably distributed, and there is significant inequality in poverty and nutrition indicators and persistent and systemic gender inequalities (Mehler, 2013).

Therefore, it is important to highlight that African Parks do not receive financial support from the government with the operation relying mainly on donor and self-generate incomes, currently these incomes are not enough and there is a financial gap. There is a risk that transfers to the beneficiaries of social programs, budgetary plans, and financial resources that are intended to help solve inequalities, eliminate poverty, malnutrition, and access to education, all of which will be affected. The role of the Chinko REDD project is to contribute to social development and sustainable use of forest resources through conservation activities.

There is no economic barrier for scenario 1, 2, 3 and 4, they are mainly performed without the need of big financial support and have been occurring prior to the establishment of the project.

Climatic conditions barriers

By analysing the covariant risk in the country, it means that all those events that could cause a reduction in the forest stocks and therefore, in the amount of carbon kept, having a direct influence on the risk of financial return, it is evident that the CAR is a country that has high vulnerability to climatic conditions such as extreme heat and forest fires (Figure 59). In the country the danger of extreme heat is classified as high;[107] this means that prolonged exposure to extreme heat is expected to occur at least once in the next five years, causing heat stress. The danger of forest fires is also classified as high; this means that there is more than a 50% probability of favourable weather conditions for a major forest fire that could cause loss of life and property each year. As in many African countries, there are no financial institutions that offer products to insure against climate risk, especially for activities with long payback periods such as forest plantations. This means unfavourable events relating to agricultural and forestry activities may discourage investment.

The climatic barrier does not affect the other scenarios from occurring, on the contrary, the degradation caused by activities such as subsistence agriculture is likely to expand without the project scenario under climate change vulnerability projections.

[106] https://www.doingbusiness.org/content/dam/doingBusiness/country/c/central-african-republic/CAF.pdf

[107] See https://thinkhazard.org/en/report/49-central-african-republic

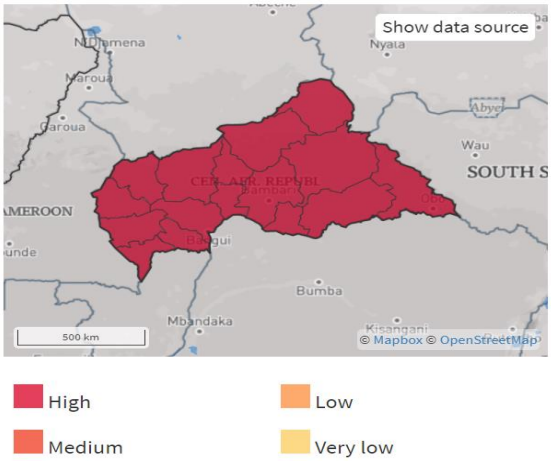


Figure 59: Forest Fire risk in CAR

Source: Think Hazard, 2020.

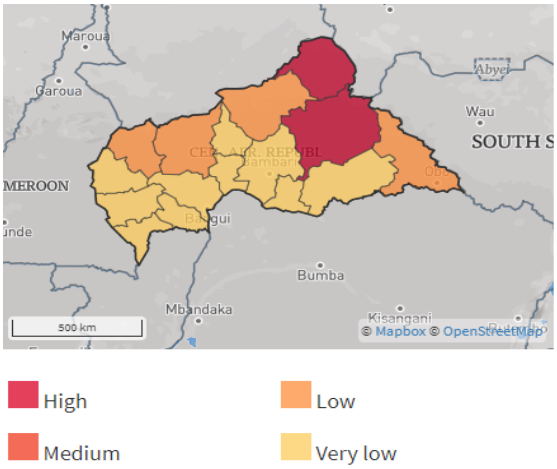


Figure 60: Water scarcity in CAR

Source: Think Hazard, 2020.

Infrastructure and Technologies barriers

Bakouma and Rafaï townships have a phone network, however, there are still some issues with the network from time to time, meaning it might not work for several weeks. A small local radio station exists in Raffia but struggles with energy issues, and currently only uses solar panels since the battery is damaged, therefore, the radio station only broadcasts during the day when people are at work and not in the evening when people would be at home and could listen to the radio. The towns of Bakouma and Rafaï are linked by a deteriorated dirt road. Few people in this region own a vehicle, therefore, traffic mainly consists of 4x4 vehicles that belong to international NGOs and heavy goods trucks. Motorcycles are a more common means of transport, but fuel costs are high. Most local inhabitants walk or use a bicycle to get to their fields or visit neighbouring villages. There are several airstrips in the Mbomou prefecture, including a landing strip at the Chinko Project's headquarters (Ondoua Ondoua, G., Beodo Moundjim, E., Mambo Marindo, J.C., Jiagho, R., Usongo, L. & Williamson, 2017). Eastern CAR is an undeveloped area where different unexpected burdens occur, that are difficult to foresee.

Land tenure barriers

While customary systems govern land tenure in rural areas, they have been affected by national policy as well as economic and environmental constraints. Whereas lineage chiefs or clan elders once managed the land in most communities, chiefs who are also government liaisons are increasingly becoming intermediaries between the land seekers and users and the lineage or clan elders who are the traditional land managers. In addition, traditional systems are being altered by the possibilities offered in the national policy such as permanent individual ownership. Traditional systems are constantly changing and adapting to differing political, economic, and environmental conditions. Individual communities may have highly divergent ways of adapting to similar situations (Bruce, 1998).

Although the state established elaborate institutional and administrative machinery to govern land tenure and land administration, it has not been effective. There is lack of networking, with conflicts occurring amongst some of the institutions. The National Land Policy identifies problems and constraints that have bedevilled land administration such as a weak land administration system; general indiscipline in the land market; indeterminate boundaries of stool/skin lands; compulsory acquisition by the government of lands without payment of compensation; inadequate land tenure security due to conflict of interest among and

within land-owning groups and the state; land racketeering; and the slow disposal of land cases by the courts (Gossmann, 2009).

Simultaneously, an overarching national policy needs to be constructed to define national land-tenure policy in land conflict, sale, rental, and loan situations, as well as between national and traditional systems. A policy of land registration and titling must be confined to modest areas, whereby the government will be able to provide the finances and staff necessary for effectively maintaining such a system. There are no formal arrangements for accessing this resource where it has not been improved, where there has been improvement, those taking part in the improvement in the village, or association levels controlling the land.

Outcome from sub-step 3a:

Identified barrier	**Key points**
Economic barriers	Access to credit
Climatic conditions barriers	Droughts and fires
Infrastructure and technologies barriers	Lack of management and institutional control.
Land tenure barriers	Main land tenure systems are not sufficient to cover the needs of population towards a sustainable development and correct use of the land.

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

The barrier analysis demonstrates that there are significant barriers that prevent the type of proposed project activities from being implemented without income from the sale of GHG credits. Similarly, none of the barriers identified in Sub-step 3a prevent the implementation of alternative land uses identified in Sub-step 1a, which are land uses currently being performed in the region. Rather, a lack of funding for project activities promotes continued deforestation and degradation in the project area. In addition, barriers have been identified that would perpetuate deforestation and degradation. For example, current land uses would continue without the livelihood improvements offered by the project. The most likely scenarios of land use in the absence of the proposed project correspond to those that give continuity to the productive activities that are predominant in the region of study (scenarios 1, 2, 3 and 4).

Step 4: Common practice analysis

In CAR, properly managed conservation areas are not a common practice, few efforts have been made to develop ecologically sustainable livelihood alternatives and no other forest conservation activities of a similar scale to those proposed by the project have been developed, implemented, or are currently underway in the region.

The CCA area is uninhabited and has limited road access and minor infrastructure development. It is surrounded by countryside choked by Central African militia, poachers from DRC and South Sudan, and transhumant pastoralists who mainly come from Chad and Sudan.

In 2014 African Parks signed a land management agreement with the government, which was later renewed, including an expansion of the area to a 25-years mandate in 2020. This reveals the scale of the

intended objectives, and gives a solid figure of conservation in the area, because there are needs in the region despite persistent challenges: today local people and wildlife are finding refuge in withing the protected area. Key threats have largely been kept out of the CCA, and wildlife is not only stabilizing in numbers but increasing.

The project proponent commits itself to managing the REDD+ project in a socially, environmentally, and economically responsible way according to the principles of African Parks agreements with the government; the project proponent aims to establish a healthy cooperation with the local communities living in the area.

Considering the barriers described in the barrier analysis, projects similar to the proposed project do not yet exist in the CAR and the VCS+CCB certification is essential in the pioneering protected areas model to ensure a viable stream to overcome these barriers and to substantially reduce the deforestation and degradation in the project area.

The project brings to eastern CAR a long-term conservation, restauration and maintenance of biodiversity, ecosystem functioning which delivers natural resources, ecosystem services for generations of the local population, and governmental economy in the long-term, without depletion, if used in a sustainable way and served as a safety lifeline for surrounding communities, providing a haven for internally displaced people. It is the largest employer in the region and finances the salaries of teachers, doctors, and nurses, creating markets and a conservation-driven economy.

In conclusion, the proposed project activity is not a common practice in the country, and, therefore, the proposed VCS AFOLU project activity is additional.

3.1.6 Methodology Deviations

Increase in the number of carbon plots in the project accounting areas and proxy areas

As per a monitoring requirement (MR 98), all plots should be measured for the first verification, and this project applies for a methodology deviation in this requirement. Considering that one of the main characteristics of a grouped project is the inclusion of new instances during the crediting period, at this moment there are areas within the geographical expansion not managed by African Parks. Therefore, the project proponent proposes a deviation that relates only to the criteria for monitoring or measurement and does not relate to any other part of the methodology.

The initial delimitation of the carbon plots will not take into consideration areas outside the current project area, however, once new project instances are included, new carbon plots are projected to be located in those areas to have a better coverage of the biomass characteristics. This deviation will not negatively impact the conservativeness of the quantification of GHG emission reductions or removals, on the opposite, adding new plots during the inclusion of new instances will be beneficial for the accuracy of the emission reduction calculations since there will be data available in those sectors.

Fire management and biomass emissions

Fires are a natural part of Central African savannas and forest-savanna ecotones and many native plant and animal species of environments with a continuous gras layer show clear adaptations to fires and their impacts (thick corky bark, coating with incombustible powder, retreats in caves under the soil, etc). Conditions in late dry season savannas and observations in the Eastern CAR wilderness suggest that fires can occur naturally without human interventions, mainly driven by lightning strikes. The current savanna vegetation of Eastern CAR can be described as highly pyrophilic, as vegetation structure and species composition do not change fundamentally after annual fires, including some high-energy fires in the middle of the dry season.

However, it must be assumed that the current fires in the east of the CAR are not naturally caused but are almost exclusively of human origin. Therefore, the timing and intensity of the fires are man-made. Fires are generally shifted by humans to the early dry season, and small-scale fires are constantly being started throughout the dry season, the majority of which are small-scale and deep-energy fires. Based on literature values and observations from large wilderness areas such as the eastern CAR, it can be assumed that natural fires tend to occur in the middle and end of the dry season and often burn over large areas and can often be locally very intense and hot.

In order to keep all ecological and evolutionary processes running in the long term and to allow nature to realise its full potential for the development of biodiversity and ecosystem functions, it is desirable to favour natural fires in certain parts of the strictly protected areas of Eastern CAR and to exclude man-made fires as far as possible. As fires are closely related to local vegetation, they are also influenced by herbivores and their interactions with predators. A natural fire regime can therefore only be achieved with the simultaneous restoration of natural wildlife densities and the return of lost faunal elements.

The east of the CAR is one of the few places in the world where conditions can be created that allow processes to run naturally without significant human intervention. Quasi-natural savannah fires do not exist anywhere in the world at present and creating the conditions to bring them about is very complex, notoriously difficult and costly. However, if there is one place that could do it in the next 10- 20 years, it is the east of the CAR.

To ensure effective management of the habitats of the project area, it is necessary to implement a fire management plan in accordance with the conservation objective of the protected area. Early fires are part of the management tools in protected areas and are a means of preventing late fires which can be dangerous. Indeed, they promote the production of grasses very appreciated by herbivores and participate in soil conservation.

Considering the explained above, as part of the fire management strategy the project has a methodology deviation in terms of the accountability of the project emissions due to burning. There is a project activity that leads to GHG emissions, however, as the activity is performed in order to avoid uncontrolled larger fires, the GHG emissions are actually lower than in a baseline scenario without the project, therefore, the deviation will not negatively impact the conservativeness of the quantification of GHG emission reductions or removals, on the opposite, the assumption is conservative since we are not claiming the net gain in biomass that will be obtained due to the fire management activities.

Activity-shifting leakage areas

PDR 109 in the methodology requires results of a spatial analysis to demonstrate the activity-shifting leakage area (ASLA) is no larger than the project accounting area, however, this is not the case for the ASLAs selected in the project. Given the characteristics of movements of the agents of deforestation, especially the transhumant pastoralists, the project proponent decided to delineate ASLAs bigger than the PAAs, the reasoning behind this delineation is to cover the areas most likely of displacement by the agents based on the monitoring of their movements. Section 3.2.3, subsection Delineating the Activity-Shifting Leakage Area, presents more details.

On the other hand, considering the accuracy review process carried out by Verra during the registration and verification approval request, the multiple updates that were required for the baseline and project emissions and the complexity and associated expense involved in performing on the ground sampling methods, it was not possible to perform the assessment of proportion of degradation set out in section B.2.8 of the methodology in all the sectors included as ASLAs. Therefore, the project proponent decided to perform a remote sensing monitoring process in which any deforestation occurring within the ASLAs during the first monitoring period will be included as part of the leakage emissions and deducted for the net GHG emission reductions. It is expected that once the project proponent secures funding from carbon credits the

monitoring process of the leakage areas will involve a combination of on the ground sampling and remote sensing techniques.

To conclude, as stated in VCS Standard documentation, projects may deviate from the procedures set out in methodologies in certain cases, where alternative methods may be more efficient for project-specific circumstances, and where the deviation will achieve the same level of accuracy or is more conservative than what is set out in the methodology. The deviations set for the activity-shifting delineation and its monitoring were included considering the context of the agents and the project. The deviations relate to criteria and procedures for monitoring and do not negatively impact the conservativeness of the quantification of GHG emission reductions. In fact, having a bigger area to monitor and using remote sensing processes for evaluating the deforestation occurring within the ASLAs is more conservative.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions

The change in baseline emissions for a monitoring period [m] ($E_{B\Delta}^{[m]}$) were calculated using the equation [F.15] of the methodology. This process was applied separately for each project accounting area.

$$E_{B\Delta}^{[m]} = E_{B}^{[m]} - E_{B}^{[m-1]} \quad \text{[F.15]}$$

This is a function of the cumulative emissions at the beginning ($E_{B}^{[m-1]}$) and end ($E_{B}^{[m]}$) of the monitoring period as given by equation [F.16]

$$E_{B}^{[m]} = E_{B\,BM}^{[m]} + E_{B\,SOC}^{[m]} - C_{B\,SOC}^{[m]} - C_{B\,BGB}^{[m]} - C_{B\,DW}^{[m]} - C_{B\,WP}^{[m]} \text{ [F.16]}$$

Where

$E_{B\,BM}^{[m]}$ = Cumulative baseline emissions from biomass at the end of the current monitoring period,

$E_{B\,SOC}^{[m]}$ = Cumulative baseline emissions from soil carbon at the end of the current monitoring period,

$C_{B\,SOC}^{[m]}$ = Carbon not decayed in SOC at the end of the current monitoring period,

$C_{B\,BGB}^{[m]}$ = Carbon not decayed in BGB at the end of the current monitoring period,

$C_{B\,DW}^{[m]}$ = Carbon not decayed in DW at the end of the current monitoring period,

$C_{B\,WP}^{[m]}$ = Carbon not decayed in WP at the end of the current monitoring period.

The following sections explain the process followed to obtain the values used in the equation. The project does not include SOC, wood products nor deadwood, therefore, these variables of the equation [F.16] were not calculated.

Calculating Baseline Emissions from Biomass

The baseline emissions from biomass were determined based on the baseline type applicable (F-U3) and the carbon pools selected.

The cumulative emissions from biomass ($E_{B\,BM}^{[m]}$) were calculated using equation [F.21]. However, considering that the baseline type is F-U3, the Spatial Algorithm for Biomass, expected in equation [F.24], was used. This algorithm is the most conservative spatial model for depleting carbon stocks.

$$E_{B\,BM}^{[m]} = BEM_{U2,3}(c_{p\,BM}^{[m=0]}, c_{B\,BM}^{[m]}, t^{[m]}, x^{[m]}) \text{ [F.21]}$$

$$E_{B\,BM}^{[m]} = BEM_{U2,3}(c_{p\,1\,BM}^{[m=0]}, c_{B\,BM}^{[m]}, t^{[m]}, x^{[m]}) \text{ [F.24]}$$

The BEM for baseline type F-U3 is presented in equation [F.4]

$$BEM_{U2,3}(c_P, c_B, t, x) = \frac{A_{PAA}(c_P - c_B) + \frac{HA_{U2,3}(c_P, c_B)t}{t_{PL}}}{1 + e^{\ln\left(\frac{1}{r_U}\right) - \beta(t+0.5q) - \theta(x)^T}} - HA_{U2,3}(c_P, c_B)$$

where

$$HA_{U2,3}(c_P, c_B) = \frac{A_{PAA}(c_P - c_B)}{1 + e^{\ln\left(\frac{1}{r_U}\right) - \beta(0.5q) - \theta(x_0)^T}}$$

[F.4]

Table 32 below presents the values for the parameters used in the calculation considering m=1 is from the starting date until 31/12/2020.

Table 32: Parameters used for baseline emissions from biomass calculation

Parameter	Description	PAA 1	PAA 2	PAA 3
A_{PAA}	Area of project accounting area (ha)	148,395.64	713,408.61	363,225.39
C_{p1}	Project carbon stocks in stratum 1[108]	652.70	179.98	179.98
$C_{p\,BM}$	Carbon stocks in biomass from PAA	652.70	179.98	179.98
C_B	Baseline carbon stocks in proxy[109]	195.55	42.83	42.83
r_U	Onset proportion of conversion (%)	3.1242	5.5914	1.8925
β	Effect of time on the cumulative proportion of conversion over time	2.488E-04	1.18E-04	1.18E-04
θ	Effect of certain covariates on the cumulative proportion of conversion over time	0	0	0
q	Lag between start of degradation and conversion	0	0	0
x_0	Covariate values as of the project start date	0	0	0
t	Time since project start date (days until 31/12/2020)	1,568	1,568	1,568

[108] PAA 1 stratum 1 is CCF, PAAs 2 and 3 stratum 1 is OWS

[109] Proxy for PAA 1: Agriculture, Proxy for PAAs 2 and 3: Overgrazing by transhumance pastoralists

Parameter	Description	PAA 1	PAA 2	PAA 3
t_{PAI}	Days after the project start date for the start of a project activity instance in a grouped project	0	0	1,308
t_{PL}	Length of project crediting period	10,438	10,438	10,438

Following the equations and the values from the table above, the results for the 2016 – 2020 period (m=1) are[110]:

PAA 1: $E_{B\ BM}^{[m]} =$ 951,021.5

PAA 2: $\mathrm{E}_{\mathrm{B\ BM}}^{[\mathrm{m}]}$ = 1,035,715.1

PAA 3: $\mathrm{E}_{\mathrm{B\ BM}}^{[\mathrm{m}]} =$ 186,962.1

Calculating Carbon Not Decayed in Below Ground Biomass (BGB)

The carbon non-decayed in BGB was calculated using equation [F.32]

$$C_{B\ BGB}^{[m]} = \sum_{i\ \epsilon\ M} DEM_{\ BGB}\left(E_{B\ \Delta\ BGB}^{[i]}, t, t^{[m]}, t^{[i-1]}\right) [F.32]$$

Following the equation above the results for the 2016 – 2020 period (m=1) are[111]:

PAA 1: $C_{B\ BGB}^{[m]} =$ 161,890.3

PAA 2: $C_{B\ BGB}^{[m]} =$ 176,387.4

PAA 3: $C_{B\ BGB}^{[m]} =$ 34,759.4

Once the different values for each parameter were found, is possible to go back to [F.16] to determine the cumulative baseline emissions in the period 2016 – 2020 (m=1) and the same value will be applied in [F.15] as the current baseline emissions in the first monitoring period.

PAA 1:

$E_B^{[m]} = E_{B\ BM}^{[m]} - C_{B\ BGB}^{[m]}$ = 789,131.2

$E_{B\Delta}^{[m]} = E_B^{[m]} - 0$ = 789,131.2

PAA 2:

$E_B^{[m]} = E_{B\ BM}^{[m]} - C_{B\ BGB}^{[m]}$ = 859,327.7

$E_{B\Delta}^{[m]} = E_B^{[m]} - 0$ = 859,327.7

PAA 3:

[110] For more details, please check the calculations spreadsheet in the supporting information folder

[111] For more details, please check the calculations spreadsheet in the supporting information folder

$E_B^{[m]} = E_{B\,BM}^{[m]} - C_{B\,BGB}^{[m]}$ = 152,202.7

$E_{B\Delta}^{[m]} = E_B^{[m]} - 0$ = 152,202.7

3.2.2 Project Emissions

Project emissions for a monitoring period [m] ($E_{P\,\Delta}^{[m]}$) were calculated using the equation [F.41], this process was applied separately for each project accounting area.

$$E_{P\,\Delta}^{[m]} = E_{P\,\Delta\,BRN}^{[m]} + E_{P\,\Delta\,LS}^{[m]} + E_{P\,\Delta\,SF}^{[m]} + A_{PAA}\left(c_p^{[m-1]} - c_p^{[m]}\right) - C_{'p\,\Delta\,WP}^{[m]} \text{ [F.41]}$$

Where

$E_{P\,\Delta\,BRN}^{[m]}$ = Cumulative project emissions due to burning at the end of the current monitoring period,

$E_{P\,\Delta\,LS}^{[m]}$ = Cumulative project emissions due to livestock grazing within the project area,

$E_{P\,\Delta\,SF}^{[m]}$ = Cumulative project emissions due to the use of synthetic fertilizers within the project area,

A_{PAA} = Area of project accounting area,

$c_p^{[m-1]}$ = Project carbon stocks at the beginning of the current monitoring period,

$c_p^{[m]}$ = Project carbon stocks at the end of the current monitoring period,

$C_{'p\,\Delta\,WP}^{[m]}$ = Project carbon stocks in wood products at the end of the current monitoring period.

The project does not consider emissions from the use of synthetic fertilizers, due to burning nor wood products, therefore, the parameters $E_{P\,\Delta\,SF}^{[m]}$, $E_{P\,\Delta\,BRN}^{[m]}$ and $C_{'p\,\Delta\,WP}^{[m]}$ are assumed as zero in the equation.

Calculating Emissions from Changes in Project Stocks

The carbon stocks in the project will be measured at least every five years to comply with the methodology requirements. Therefore, $A_{PAA}\left(c_p^{[m-1]} - c_p^{[m]}\right)$ = 0

Calculating GHG Emissions from Livestock Grazing

Considering that the baseline scenario in the PAAs 2 and 3 is the continuation of pastoralist activities, emissions from livestock grazing are considered when the pastoralist graze within the PAAs using equation [F.43]. However, considering the migratory characteristics of the pastoralists, the livestock, when illegally entering the project boundaries, is not roaming during the full year but only during the beginning of the dry season, therefore, when applying the equation [F.43] a minor adjustment is applied: the emission factor defined for the livestock population (f_{Lsi}) is multiplied by a factor of the number of months in the year in which the livestock grazed during the year (3 months, therefore a 0.25 factor).

$$E_{P\,\Delta\,LS}^{[m]} = \sum_{i\epsilon T}\left(\frac{f_{Lsi} * n_{LSi}}{10^3}\right) * 21 \text{ [F.43]}$$

Following the equation above and the values described in section 3.3, the results for the 2016 – 2020 are[112]:

PAA 1: $E_{P\,\Delta\,LS}^{[m]} = 0$

[112] For more details, please check the calculations spreadsheet in the supporting information folder

PAA 2: $E_{P\,\Delta\,LS}^{[m]} = 33{,}847.4$

PAA 3: $E_{P\,\Delta\,LS}^{[m]} = 3{,}590.1$

3.2.3 Leakage

Leakage emissions for a monitoring period [m] ($E_{L\Delta}^{[m]}$) were calculated using equation [F.44] and the cumulative emissions from leakage were calculated using [F.45], this process was applied separately for each project accounting area.

$E_{L\Delta}^{[m]} = E_{L}^{[m]} - E_{L}^{[m-1]}$ [F.44]

$E_{L}^{[m]} = E_{L\,\mathrm{ASF}}^{[m]} + E_{L\,\mathrm{ASG}}^{[m]} + E_{L\,\mathrm{ME}}^{[m]}$ [F.45]

Where

$E_{L\,\mathrm{ASF}}^{[m]}$ = Cumulative emissions from activity-shifting leakage in forested strata at the end of the current monitoring period,

$E_{L\,\mathrm{ASG}}^{[m]}$ = Cumulative emissions from activity-shifting leakage in native grassland strata at the end of the current monitoring period (not applicable),

$E_{L\,\mathrm{ME}}^{[m]}$ = Cumulative emissions from market leakage at the end of the current monitoring period.

The project does not consider emissions from activity-shifting leakage in native grassland nor from market leakage, therefore, the parameters $E_{L\,\mathrm{ASG}}^{[m]}$ and $E_{L\,\mathrm{ME}}^{[m]}$ are assumed as zero in the equation.

Leakage Mitigation Strategies

The activities implemented for the project are designated to reduce the conversion resulting from the drivers previously identified, for more details please see section 2.1.11 which includes the description of the activities and the Theory of Change.

Estimating Emissions from Activity-Shifting Leakage

According to the methodology, emissions from activity-shifting leakage are calculated using the Leakage Emissions Model (LEM) following the equation [F.46]. The methodology states that leakage is estimated by directly observing conversion and/or degradation in the activity leakage area.

$E_{L\ ASF}^{[m]} = LEM\left(c_{p}^{[m]}, c_{B}^{[m]}, p_{L\,DEG}^{[m]}, t^{[m]}, x^{[m]}\right)$ [F.46]

The LEM is parameterized using equations [F.48].

$$LEM_{F}(c_{P}, c_{B}, p_{L\,DEG}, t, x) = p_{L\,DEG}^{[m]} A_{AS}(c_{P} - c_{B}) - \frac{A_{AS}(c_{P} - c_{B})}{1 + e^{\ln\left(\frac{1}{p_{L\,DEG}^{[m=0]}} - 1\right) - \beta t - \theta(x_{0} - x)^{T}}}$$ [F.48]

For the ex-ante calculations of leakage, considering the availability of recent data, the project proponent included as leakage the information of deforestation during the 2016- 2020 period and then an average of those years.

Delineating the Activity-Shifting Leakage Area

As stated in section 8.3.2.1 of the methodology, the activity-shifting leakage area (ASLA) must be in the same general region as the project area. In the case of the project, considering the two different baseline scenarios and agents of deforestation there are two ASLAs, below is a description of the delineation of each.

Activity-Shifting Leakage Area 1: Local communities baseline scenario – PAA1

The stakeholder consultation process carried out as part of the land use plan was considered to select the ASLA 1. During that process the local communities that border the Western and Southern part of CCA identified the most relevant activities occurring in their area (e.g. hunting, transhumance, fishing, agriculture) and helped to delineate, in a participatory manner, the areas that will act as a buffer between the communities and CCA.[113] A monitoring process will be in place to determine whether they are being properly used or not, the deforestation caused beyond the selected ASLA should not be linked with the implementation of the project activities in CCA. Once the project proponent manages to include more project accounting areas, activity shifting areas will be updated following the conditions set in section 8.3.2.1 of the methodology.

Figure 61 presents the delineation of the ASLA 1 which consist of 8 community delineated buffer zones and 3 hunting zones. It is important to note that the areas inside the Project Area but not covered by any PAA were not included within the ASLA 1 as they were considered as areas constrained to conversion due to the distance between the area and communities and roads (see more details above in section Delineating Project Accounting Areas) nonetheless the Project Area (CCA) will be protected in its entirely by African Parks as part of the project activities.

[113] Details of the participatory cartography included in the supporting documentation

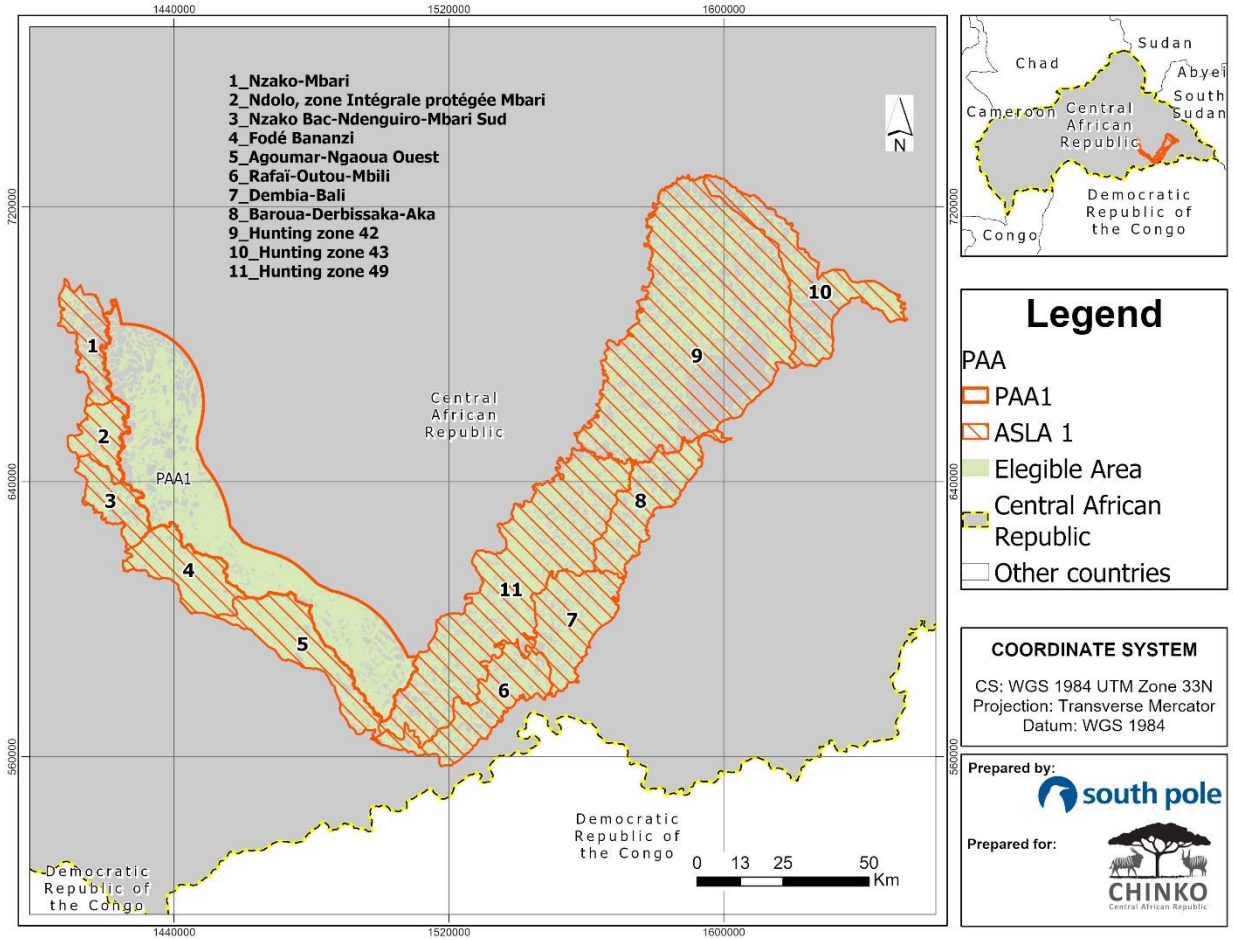


Figure 61: ASLA 1 delineation including an identification number for each of the subdivisions composing the area.

(Source: South Pole, 2023)

To assess the landscape configuration similarity between the selected ASLA 1 and PAA 1 four factors were analysed: elevation, slope, land cover and soil. It is important to highlight that the total area of PAA 1 used for the Biomass Emissions Model calculations is the eligible CCF cover). Similarly, the final value of ASLA 1 is the eligible CCF cover only (see Table 35 below for more details of the areas). However, for a more detailed comparison of the similarities between PAA 1 and ASLA 1, the polygons analysed cover the area inside the perimeter which also includes non-eligible area and OWS forest cover.

As a first variable the elevation was considered, since it is a fundamental variable to define vegetation zones and also influence how some climate conditions differ/behave in certain regions. In Table 33 is clear that both PAA 1 and ASLA 1 have similar elevation ranges (almost 100% of the elevation in both areas is below 800 m.a.s.l.)[114], see Figure 62 for graphic details of the elevation ranges in the region including the PAA 1 and ASLA 1.

[114] Although the 400-600 range is the predominant one in PAA1 and the 600-800 is the predominant in ASLA1, the overall elevation in both areas is below 800 which is an area similar enough not to constitute a relevant difference in terms of landscape configuration and vegetation present.

Table 33: Total area and percentage falling within elevation ranges of 200m in the area inside the perimeter PAA 1 and ASLA 1

Elevation range	**PAA 1**		**ASLA 1**	
	Hectares	**Percentage**	**Hectares**	**Percentage**
400 – 600	159,710.09	66.21%	362,282.48	38.86%
600 – 800	81,498.50	33.79%	569,655.63	61.11%
800 – 1000	0	0.00%	233.58	0.03%
Total	**241,208.59**	**100%**	**932,171.69**	**100.00%**

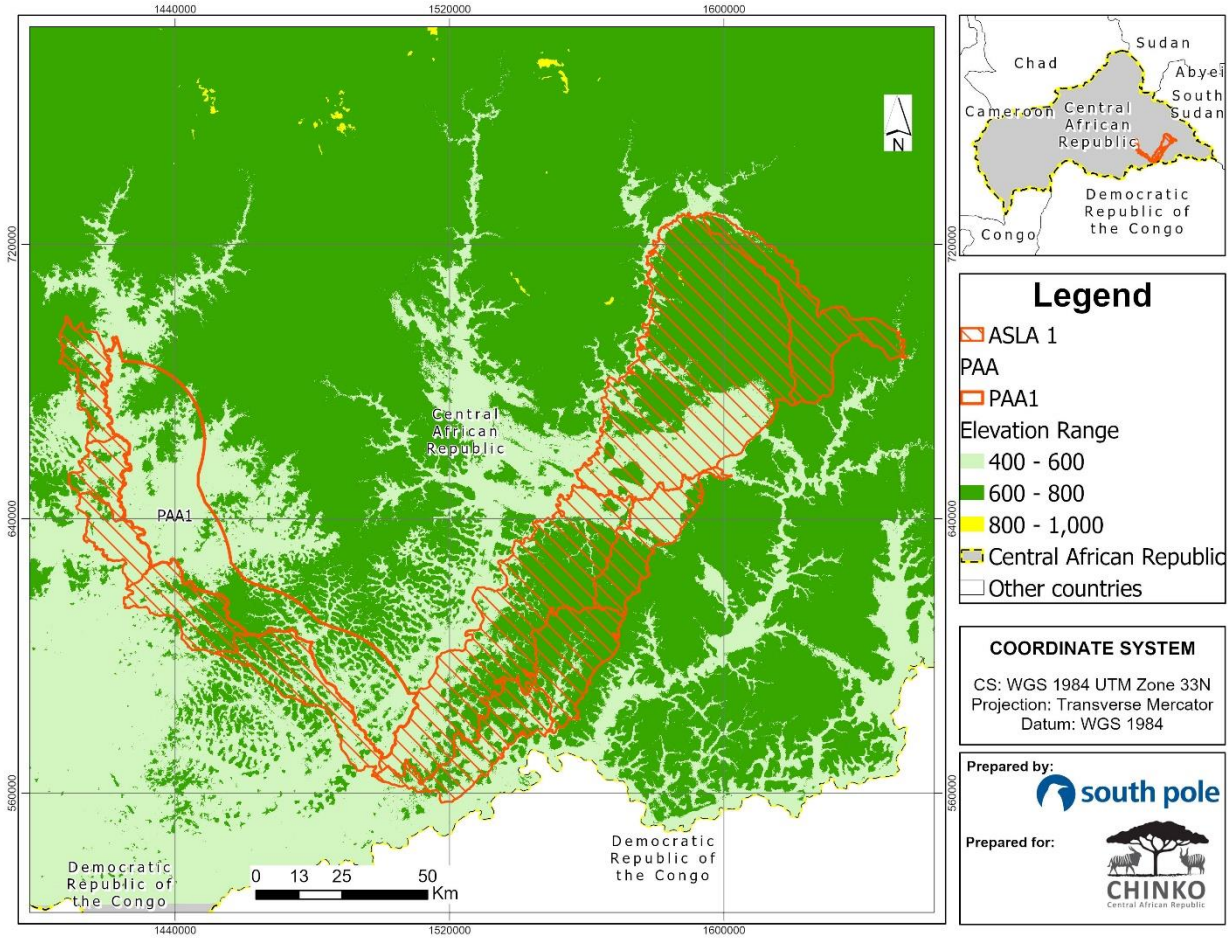


Figure 62: Elevation range within PAA 1 and ASLA 1. The figure displays the elevation in ranges of 200 m and shows the similarities of PAA 1 and ASLA 1 given the low elevation present in the region.

(Source: Elaborated by South Pole in 2023 using data from NASA SRTM Digital Elevation 30m GEE)

Later, the slope was also assessed. Table 34 presents the slope details confirming that both PAA 1 and ASLA 1 have a predominance of little to no slope (lower than 3%) followed by gentle slope (between 3 to 9%) and less than 2% of the area has slope higher than 9%, see Figure 63 for graphic details of the slope ranges in PAA 1 and ASLA 1.

Table 34: Total area and percentage falling within slope percentage ranges in the area inside the perimeter of PAA 1 and ASLA 1

Slope (%)	**PAA 1**		**ASLA 1**	
	Hectares	**Percentage**	**Hectares**	**Percentage**
[0 to 3)	141,427.59	58.63%	649,366.60	69.66%
[3 to 9)	96,808.60	40.13%	274,855.49	29.49%

Slope (%)	PAA 1		ASLA 1	
	Hectares	**Percentage**	**Hectares**	**Percentage**
[9 to 15)	2,940.06	1.22%	7,816.36	0.84%
>15	32.35	0.01%	133.24	0.01%
Total	**241,208.59**	**100.00%**	**932,171.69**	**100.00%**

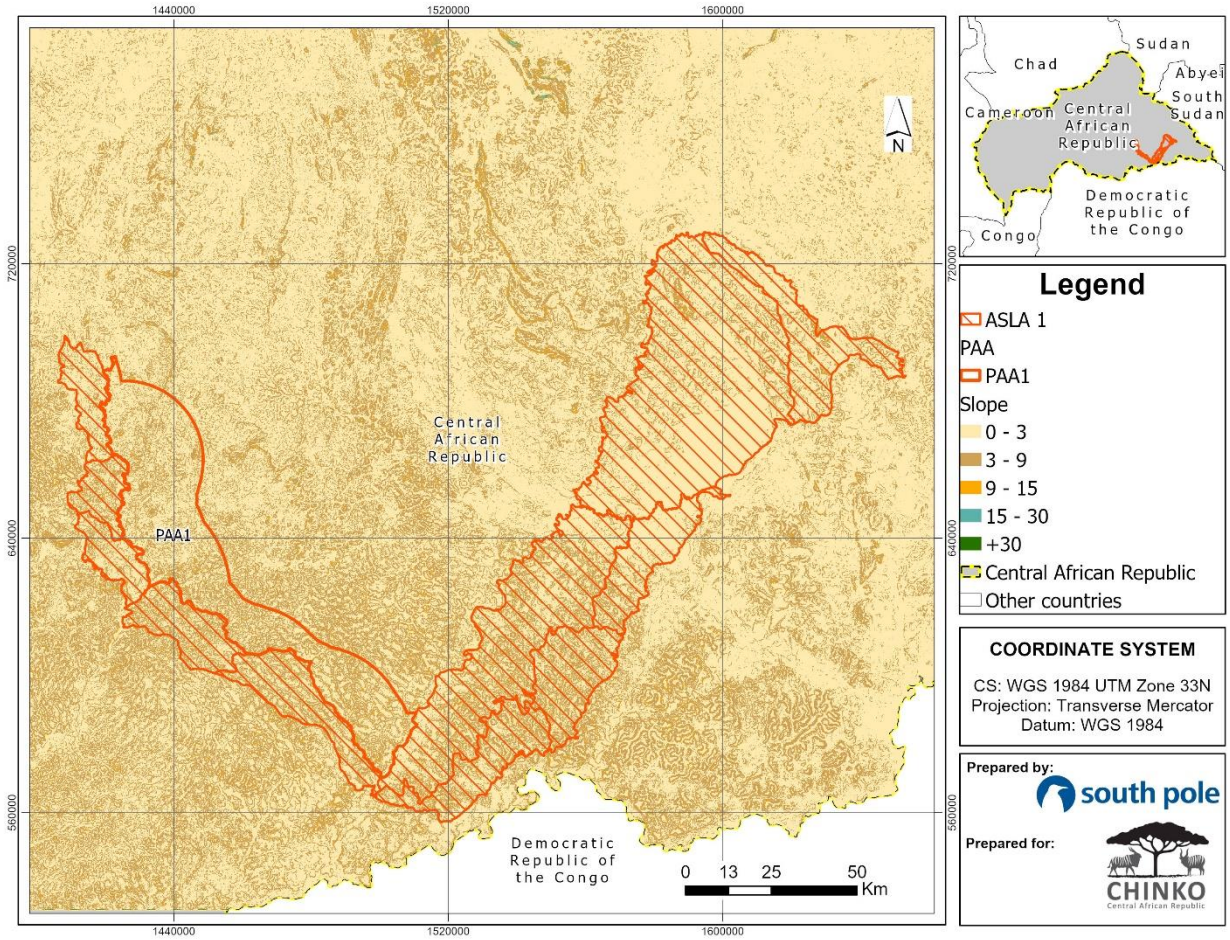


Figure 63: Slope ranges within PAA 1 and ASLA 1. The figure shows the similarities of PAA 1 and ASLA 1 given the low slope present in the region.

(Source: Elaborated by South Pole in 2023 using data from NASA SRTM Digital Elevation 30m GEE)

Subsequently, the land cover was considered. Table 35 shows that both PAA 1 and ASLA 1 have similar predominance of CCF cover (refer to Figure 64 for graphic details of the different land cover present in the region).

Table 35: Total area and percentage falling within specific forest cover types in the area inside the perimeter of PAA 1 and ASLA 1

Forest cover	PAA 1		ASLA 1	
	Hectares	**Percentage**	**Hectares**	**Percentage**
CCF	148,395.64	61.52%	646,913.75	69.40%
OWS	74,105.52	30.72%	104,291.97	11.19%
Non-forested area	18,707.44	7.76%	180,965.97	19.41%
Total	**241,208.59**	**100.00%**	**932,171.69**	**100.00%**

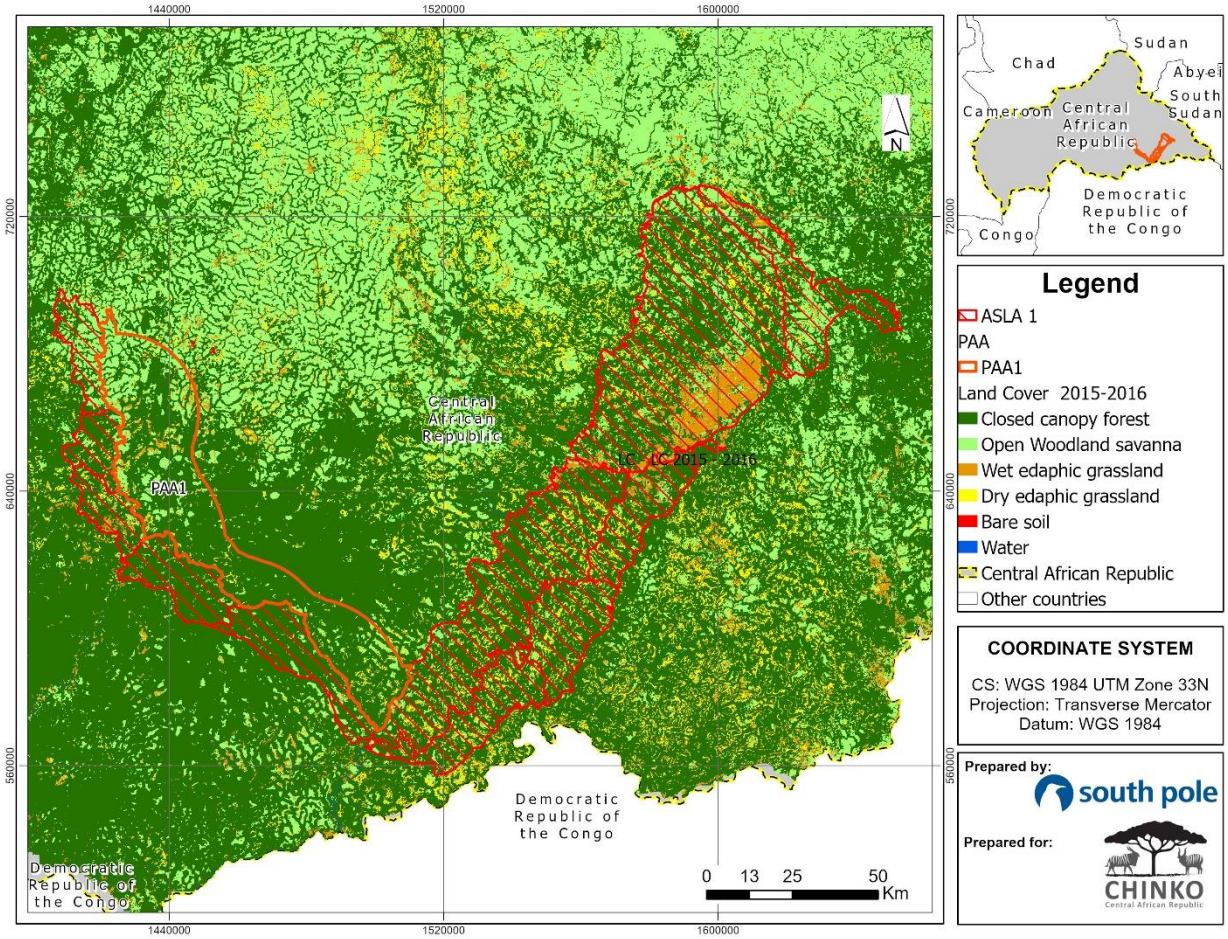


Figure 64: Land cover within PAA 1 and ASLA 1. The figure shows the similarities of PAA 1 and ASLA 1 given the predominance of CCF land cover.

(Source: South Pole, 2023)

Finally, the soil information was reviewed. Table 36 presents information of the soil types found in the region (graphic details available in Figure 65), but as mentioned earlier, because the soil data was drawn upon the use of the harmonised soil map at a continental scale the results should be considered more for information rather than for a detailed analysis.

Table 36: Total area and percentage falling within specific soil types in the area inside the perimeter of PAA 1 and ASLA 1

Soil type	**PAA 1**		**ASLA 1**	
	Hectares	**Percentage**	**Hectares**	**Percentage**
Ferralic Arenosols	0	0.00%	112,109.31	12.03%
Pisoplinthic Plinthosols	182,770.76	75.77%	467,488.89	50.15%
Plinthic Ferralsols	0	0.00%	30,038.47	3.22%
Rhodic Ferralsols	58,437.83	24.23%	322,535.03	34.60%
Total	**241,208.59**	**100.00%**	**932,171.69**	**100.00%**

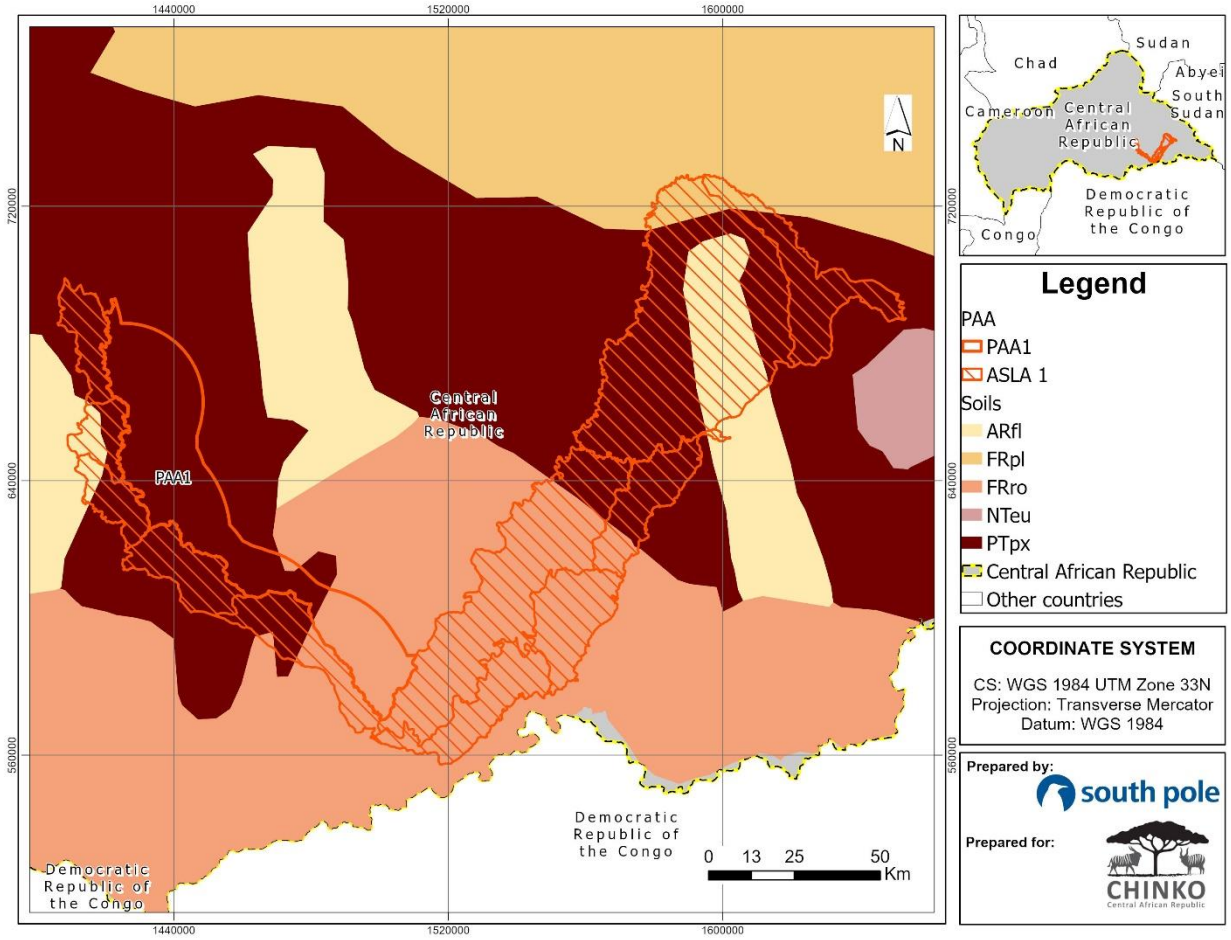


Figure 65: Soil categories present in the region, including the delineation of PAA 1 and ASLA 1, as showed in the table above there is a predominance of Pisoplinthic Plinthosols and Rhodic Ferralsols.

(Source: Elaborated by South Pole in 2023 using data from African Soil Atlas, 2013)

Following with the assessment of similarities between the selected ASLA 1 and PAA 1, we evaluated some anthropogenic characteristics. Firstly, the access points and location of important resources like waterways and roads, for that Figure 66 presents the road density within ASLA 1 and PAA 1. As previously described in Delineating Reference Areas, the region has a low population and therefore road density.

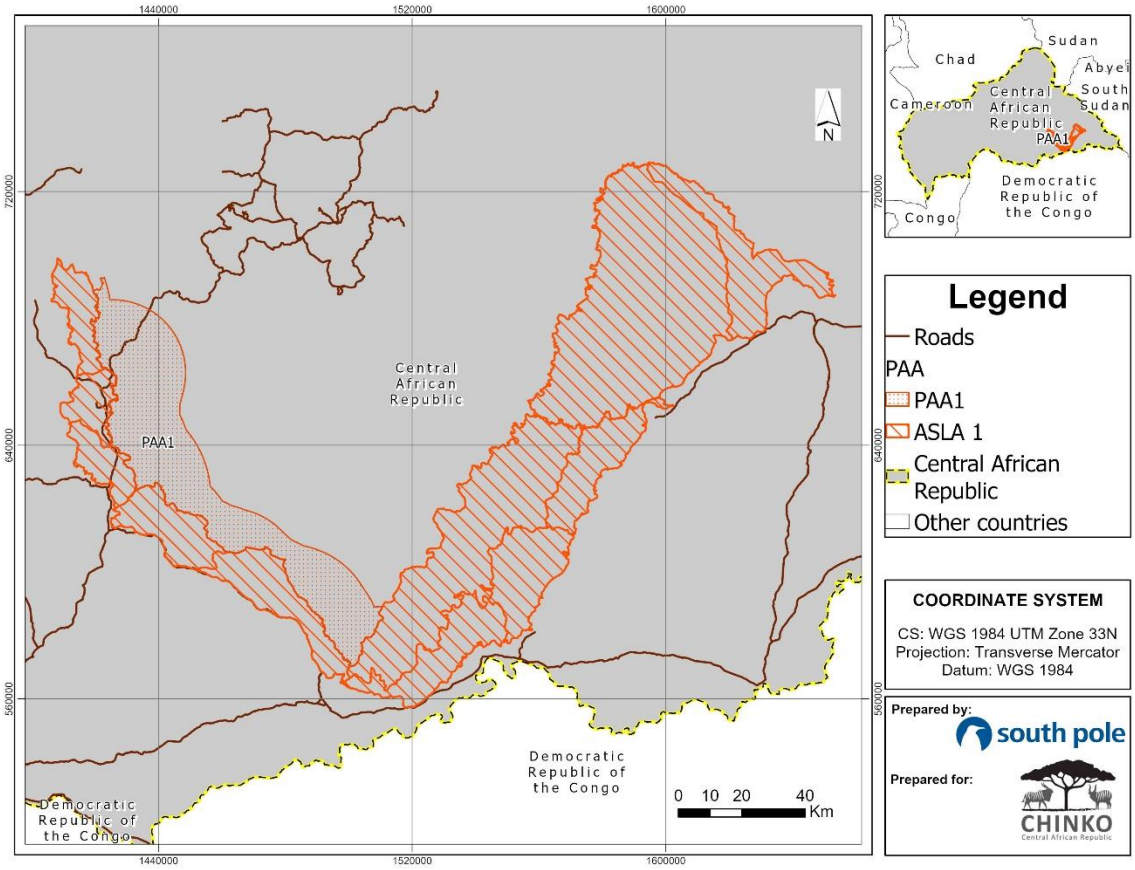


Figure 66: Main roads in the region including the delineation of PAA 1 and ASLA 1

(Source: South Pole, 2023)

Secondly, the waterways (rivers and basins) were included in the assessment, Figure 67 presents the major basins and rivers in its locations relative to ASLA 1 and PAA 1. As described in Table 10: PAA 1 delineation PAA 1 external perimeter is bordered by three major rivers (Chinko, Mbari and the Ngawa confluence in Chinko) and those rivers are shared with ASLA 1.

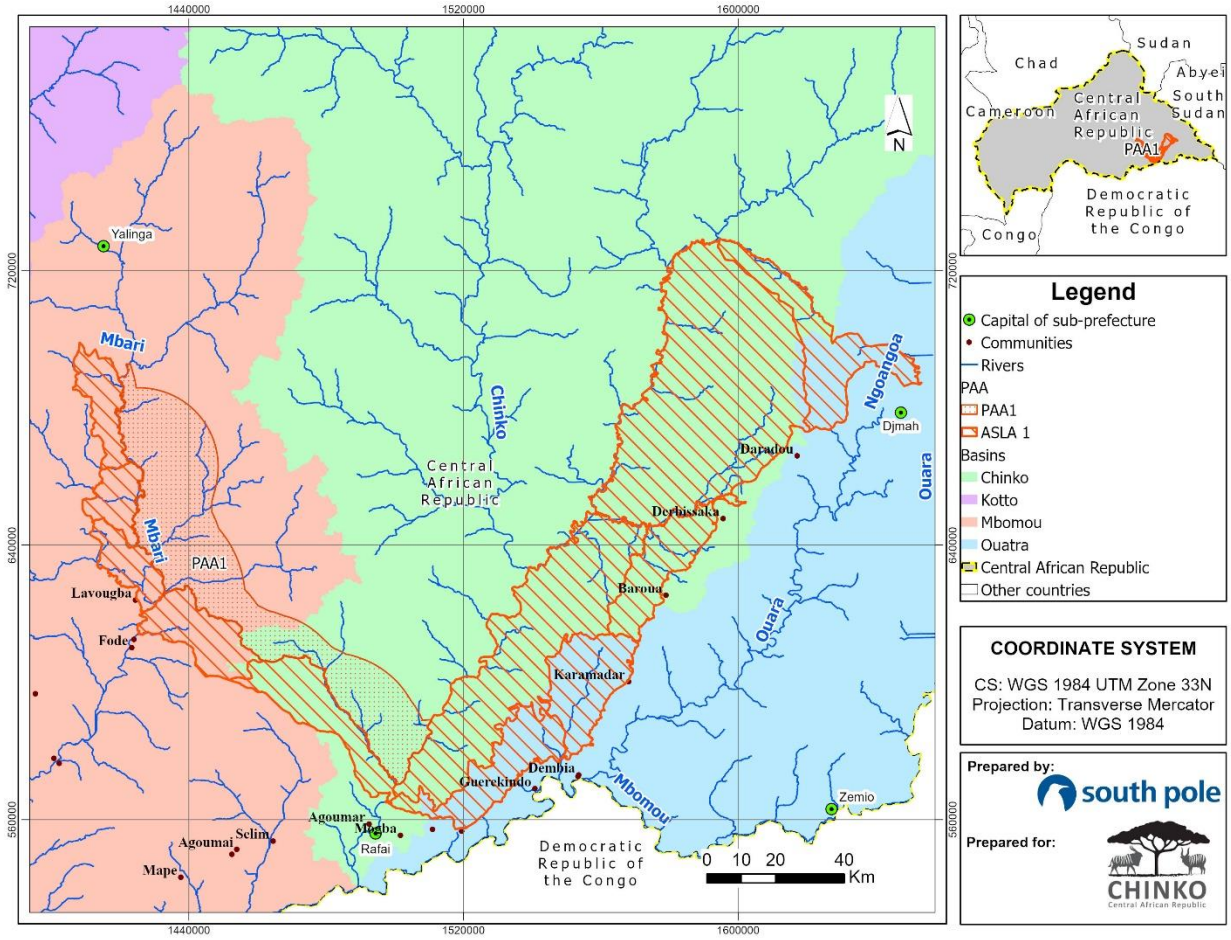


Figure 67: Rivers and basins present in ASLA 1 and PAA 1

(Source: South Pole, 2023)

Later, the distance to markets was assessed and each subprefecture capital can be used as a proxy for relevant markets. Neither ASLA 1 nor PAA 1 contain any market, Rafaï is in close proximity to both areas (see Figure 68 for details of the markets' location).

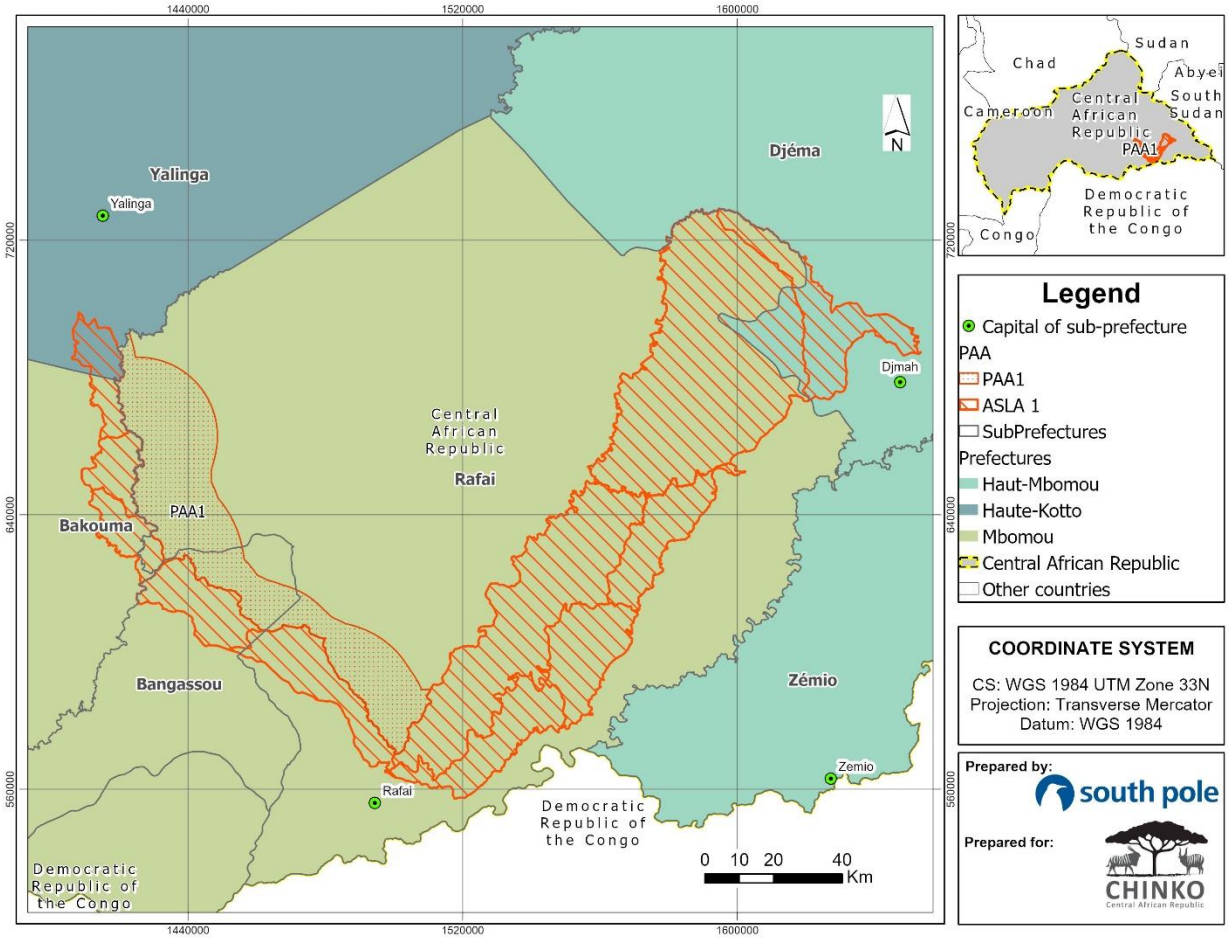


Figure 68: Prefecture and sub-prefecture capitals, where the main markets are located. As indicated, Rafaï is the only sub-prefecture capital near both PAA 1 and ASLA 1.

(Source: South Pole, 2023)

Lastly, the land tenure was considered. As previously explained, according to the constitution of the Central African Republic, all land belongs to the state and can be used by its people in a customary way. Currently, all land in the Eastern CAR has been demarcated as either hunting area, national park, wildlife reserve or "zone banale" (open land able to be claimed by communities). As shown in Figure 69 ASLA 1 is categorized as either hunting areas or "zone banale" and PAA 1 is categorized entirely as hunting area.

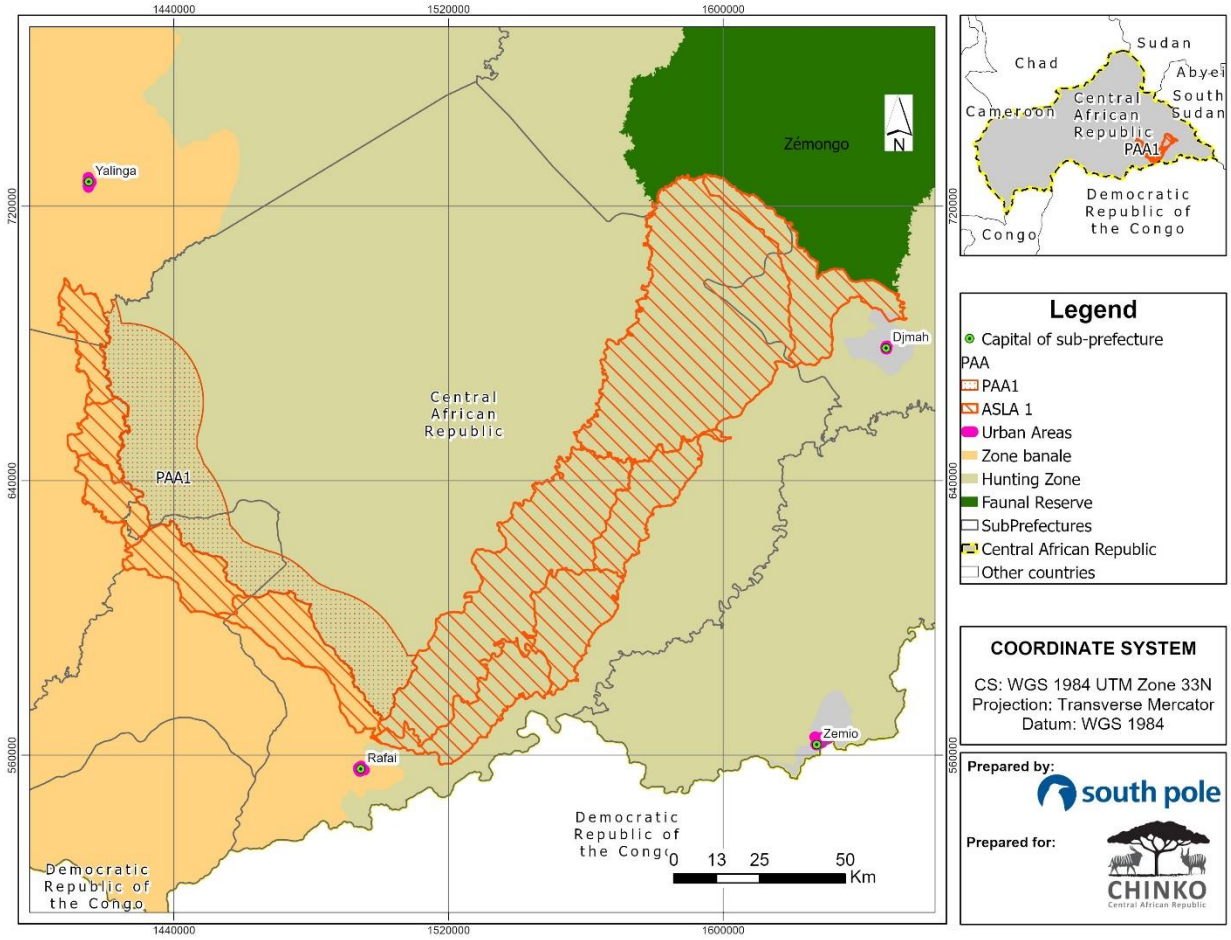


Figure 69: Different tenures present in the region including the delineation of PAA 1 and ASLA 1

(Source: South Pole, 2023)

As shows in the previous figures, in terms of locations of agents and their mobilities ASLA 1 areas are as accessible, if not more so, as PAA 1 and have similar conditions in terms of drivers of deforestation. The project activities are designed to avoid any displacement of the deforestation and/or conversion and instead will lead to a sustainable use of the natural resources in the long-term.

To conclude, the information presented demonstrates clear similarities in natural characteristics between PAA 1 and ASLA 1, as well as similarities in anthropogenic characteristics.

Activity-Shifting Leakage Area 2: Transhumance pastoralism baseline scenario – PAA2 and PAA3

The stakeholder consultation process carried out as part of the land use plan was also considered to select parts of the ASLA 2. [115] In addition, the project proponent, together with the different stakeholders of the land use plan development, created a proposal for transhumance corridors in the region including zones of

[115] Details of the participatory cartography included in the supporting documentation

the reference area as well as areas in the east of the region, outside the current project accounting areas. The delineation of the corridors will help to improve the monitoring and evaluation of the transhumance.

The above-mentioned corridor will not be included as part of the ASLA 2 for the first verification period considering it was not being enforced during the 2016 – 2020 period, instead, considering the movements done by the pastoralists in the early years of the project implementation, the project proponent proposes, for the validation of the project, ASLA 2 as a temporary leakage that will be later superseded by the properly defined corridor.

This proposal is aligned with the methodology. As described in section 8.3.2.1, the boundaries of the activity-shifting leakage area may be revised without requiring a baseline reevaluation if one of the following criteria is met:

- Conservation activity is established in the activity-shifting leakage area such that the agents of conversion no longer have access to the activity-shifting leakage area or a portion thereof.
- In the case of a grouped project where a new project activity instance(s) is added such that a new activity-shifting leakage area must be created for its associated project accounting area.

The first condition is expected to be met prior to the inclusion of the corridor as new ASLA.

ASLA 2 is encompassed by the nearby areas most likely to be used by the pastoralists in the absence of a CCA. Figure 70 presents the delineation of the ASLA 2 which consist of 5 community delineated buffer zones and parts of 5 hunting zones and Zemongo Faunal Reserve. The project proponent will continue to manage the entire CCA and monitor the entire ASLA 2, regardless of forest class.

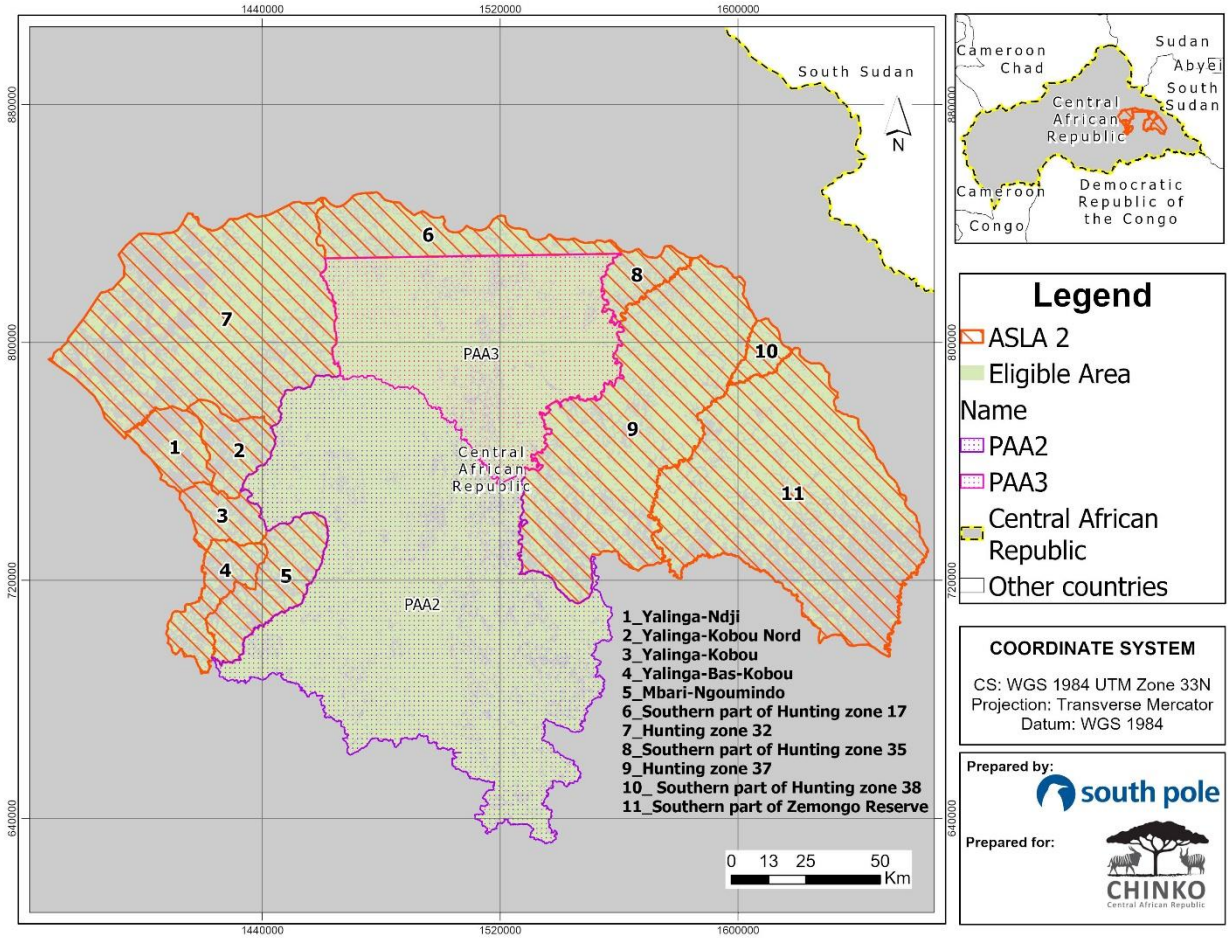


Figure 70: ASLA 2 delineation including an identification number for each of the subdivisions composing the area.

(Source: South Pole, 2023)

To assess the landscape configuration similarity between the selected ASLA 2 and the PAAs 2 and 3, four factors were analysed: elevation, slope, land cover and soil. It is important to highlight that the total area of PAAs 2 and 3 used for the Biomass Emissions Model calculations is the eligible OWS cover. On the other hand, the final value of ASLA 2 is not only the eligible OWS cover but also the CCF cover within the perimeter to take into consideration any deforestation. For a more detailed comparison of the similarities between PAAs 2 and 3 and ASLA 2, the polygons analysed cover the area inside the perimeter which also includes non-forested areas.

As a first variable the elevation was considered. In Table 37 we can see that PAA 2 and 3, and ASLA 2 have most of their area in an elevation below 800 masl. (see Figure 71 for graphic details of the elevation ranges in the region including the PAAs 2 and 3 and RA 2).

Table 37: Total area and percentage falling within elevation ranges of 200m in the area inside the perimeter of PAAs 2 and 3 and ASLA 2

Elevation range	**PAA 2**		**PAA 3**		**ASLA 2**	
	Hectares	Percentage	Hectares	Percentage	Hectares	Percentage
400 – 600	134,750.64	12.20%	1,082.39	0.21%	60,055.23	3.07%
600 – 800	965,921.37	87.46%	501,494.29	99.19%	1,872,181.10	95.74%
800 – 1000	3,786.96	0.34%	3,009.72	0.60%	23,243.28	1.19%
Total	**1,104,458.97**	**100.00%**	**505,586.39**	**100.00%**	**1,955,479.61**	**100.00%**

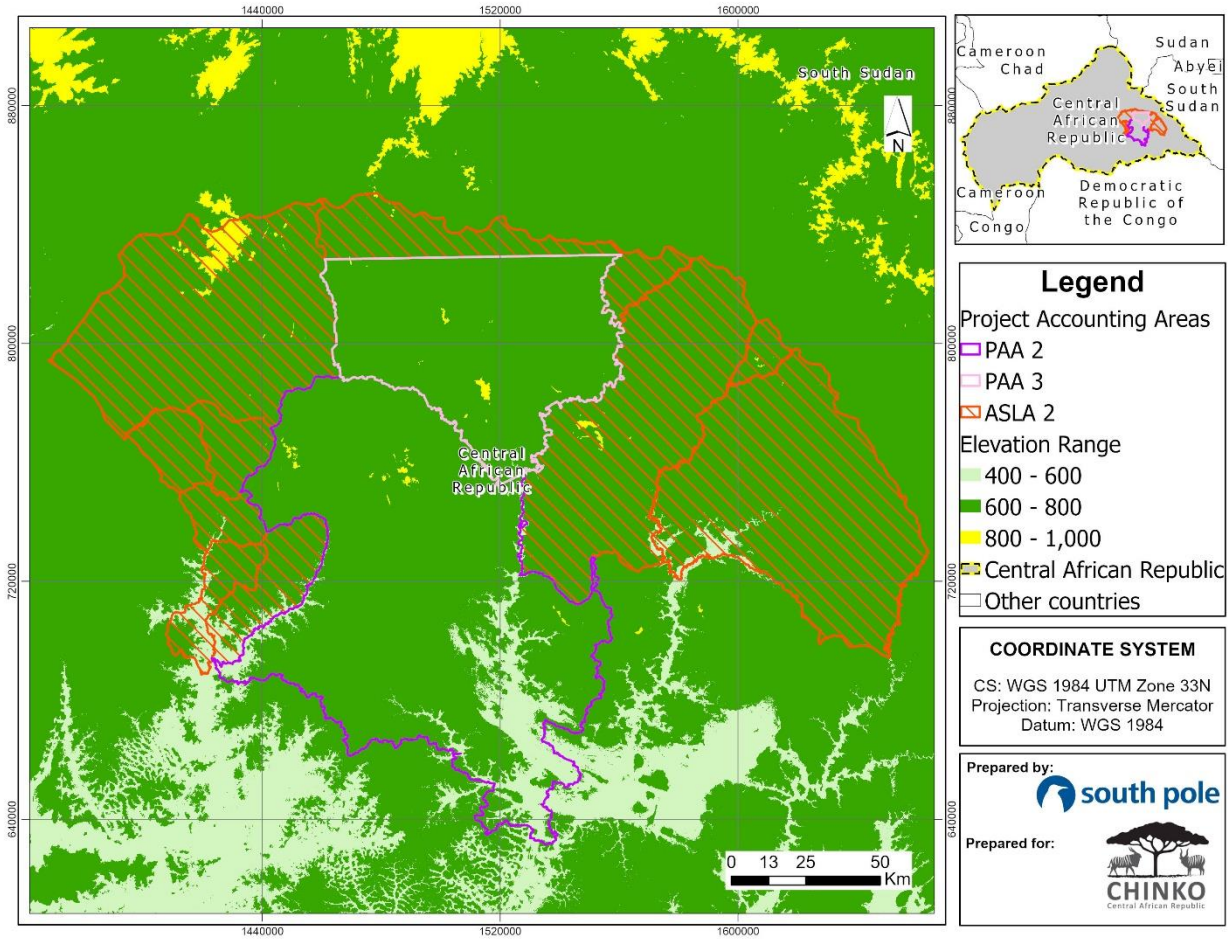


Figure 71: Elevation range within PAAs 2 and 3 and ASLA 2. The figure displays the elevation in ranges of 200 m and shows the similarities of PAAs 2 and 3 and ASLA 2 given the low elevation present in the region.

(Source: Elaborated by South Pole in 2023 using data from NASA SRTM Digital Elevation 30m GEE)

Later, the slope was also assessed. Table 38 presents the slope details confirming that PAAs 2 and 3 and ASLA 2 have a predominance of little to no slope (lower than 3%) followed by gentle slope (between 3 to

9%) and less than 2% of the area has slope higher than 9% (See Figure 72 for graphic details of the slope ranges).

Table 38: Total area and percentage falling within slope percentage ranges in the area inside the perimeter of PAAs 2 and 3 and ASLA 2

Slope (%)	**PAA 2**		**PAA 3**		**ASLA 2**	
	Hectares	**Percentage**	**Hectares**	**Percentage**	**Hectares**	**Percentage**
[0 to 3)	813,473.19	73.65%	407,804.06	80.66%	1,694,533.90	86.66%
[3 to 9)	284,786.58	25.79%	92,559.96	18.31%	252,314.49	12.90%
[9 to 15)	5,820.86	0.53%	4,467.11	0.88%	7,098.86	0.36%
>15	378.33	0.03%	755.27	0.15%	1,532.37	0.08%
Total	**1,104,458.97**	**100.00%**	**505,586.39**	**100.00%**	**1,955,479.61**	**100.00%**

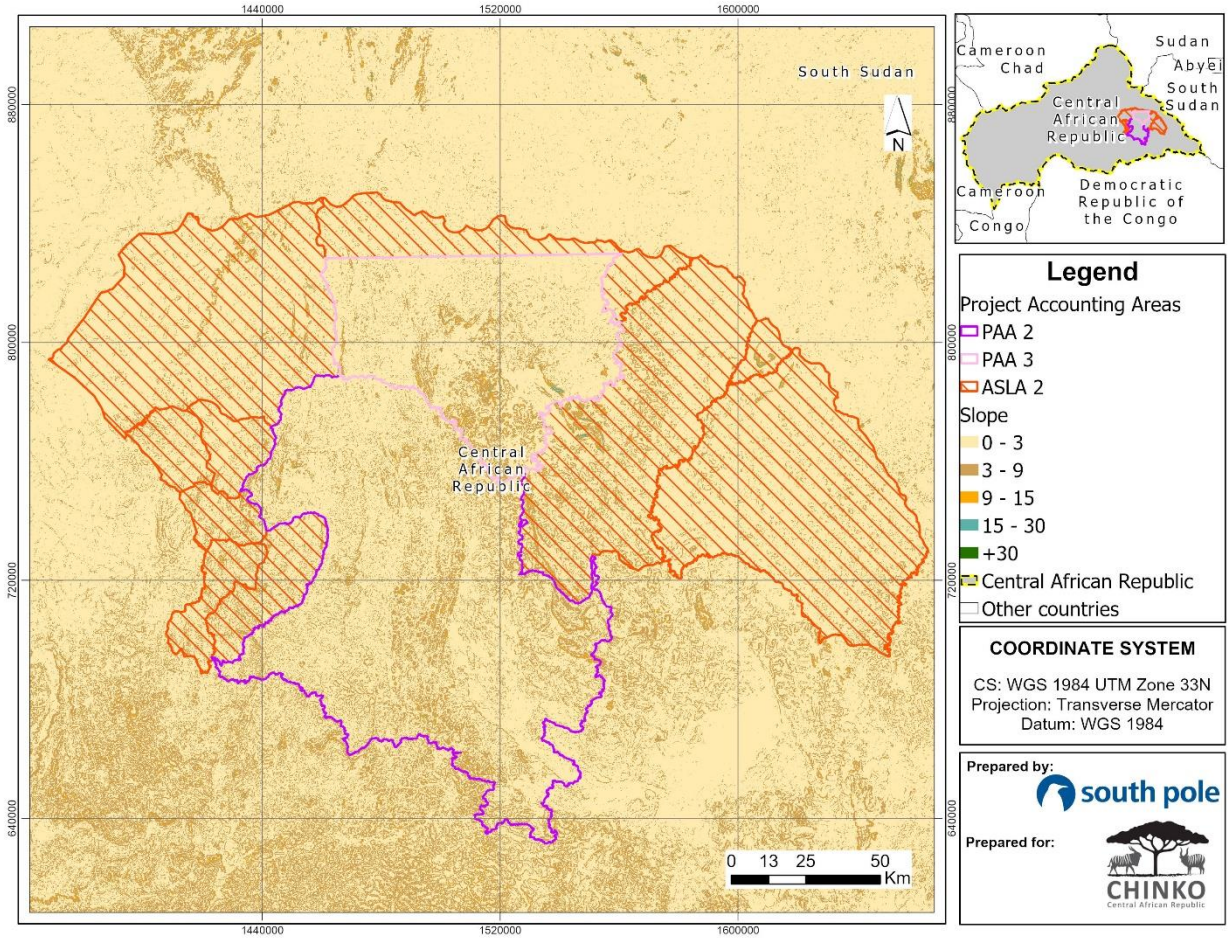


Figure 72: Slope ranges within PAAs 2 and 3 and ASLA 2. The figure shows the similarities of PAA 2 and 3 and ASLA 2 given the low slope present in the region.

(Source: Elaborated by South Pole in 2023 using data from NASA SRTM Digital Elevation 30m GEE)

Subsequently, the land cover was considered. Table 39 confirms the predominance of OWS in PAA 2 and 3 and ASLA 2 (see Figure 73).

Table 39: Total area and percentage falling within specific forest cover types in the area inside the perimeter of PAA 2 and 3 and ASLA 2

Forest cover	PAA 2		PAA 3		ASLA 2	
	Hectares	Percentage	Hectares	Percentage	Hectares	Percentage
CCF	248,452.15	22.50%	81,678.95	16.16%	627,787.26	32.10%
OWS	713,408.61	64.59%	363,225.39	71.84%	1,146,771.46	58.64%
Non-forested area	142,597.22	12.91%	60,682.05	12.00%	180,920.89	9.25%

Forest cover	PAA 2		PAA 3		ASLA 2	
	Hectares	Percentage	Hectares	Percentage	Hectares	Percentage
Total	1,104,458.15	100.00%	505,586.39	100.00%	1,955,479.61	100.00%

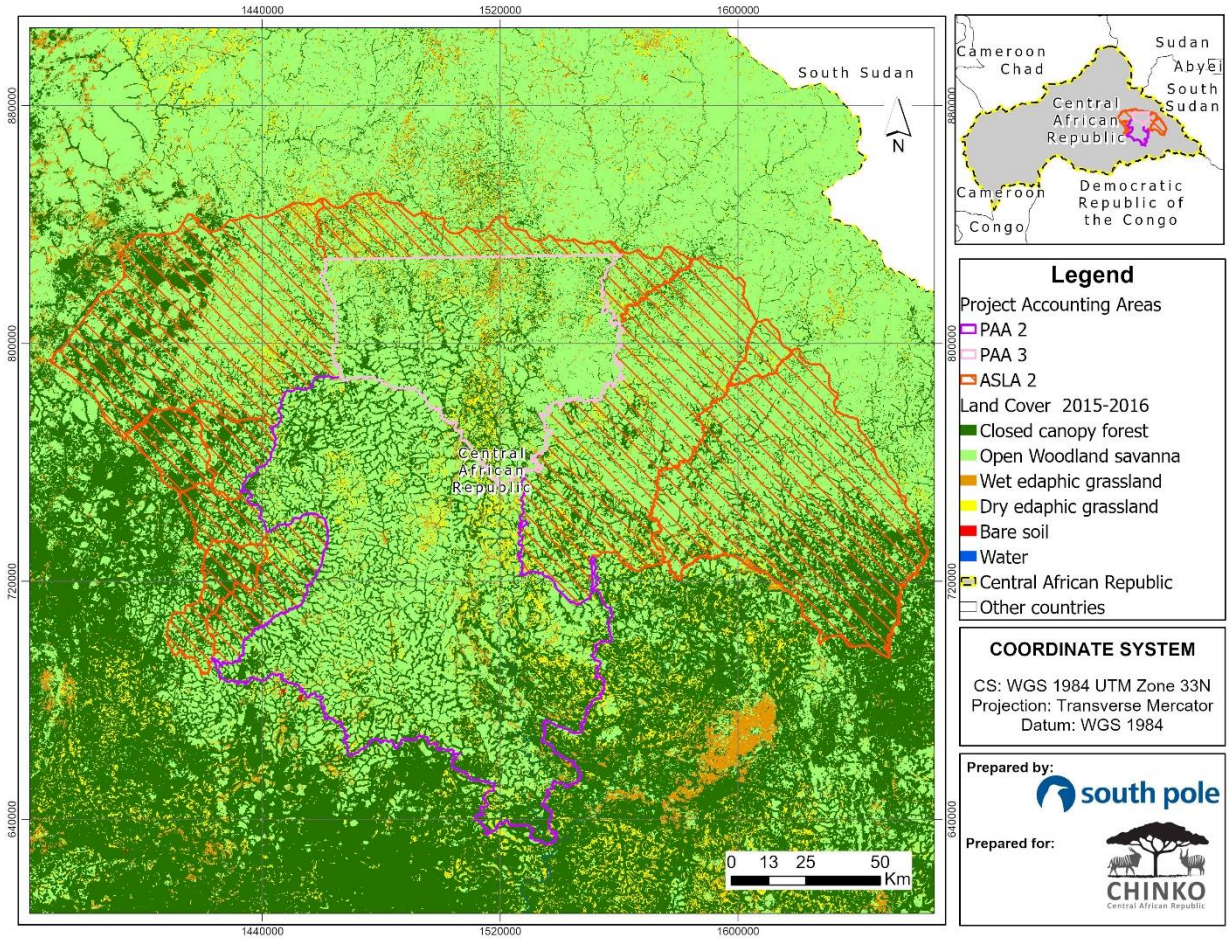


Figure 73: Land cover within PAAs 2 and 3 and ASLA 2. The figure shows the similarities of PAA 2 and 3 and ASLA 2 given the predominance of OWS land cover.

(Source: South Pole, 2023)

Finally, the soil information was reviewed. Table 40 presents information of the soil types found in the region (graphic details in Figure 74), but as mentioned earlier the soil analysis was drawn upon the use of the harmonized soil map at a continental scale and was not a deciding factor for the delineation of the ASLA.

Table 40: Total area and percentage falling within specific soil types in the area inside the perimeter of PAA 2 and 3 and ASLA 2

Soil type	PAA 2		PAA 3		ASLA 2	
	Hectares	**Percentage**	**Hectares**	**Percentage**	**Hectares**	**Percentage**
Ferralic Arenosols	182,636.07	16.54%	0	0.00%	42,283.46	2.16%
Pisoplinthic Plinthosols	587,312.49	53.18%	0	0.00%	472,757.23	24.18%
Plinthic Ferralsols	291,826.42	26.42%	505,586.39	100.00%	1,440,438.92	73.66%
Rhodic Ferralsols	42,683.99	3.86%	0	0.00%	0	0.00%
Total	**1,104,458.97**	**100.00%**	**505,586.39**	**100.00%**	**1,955,479.61**	**100.00%**

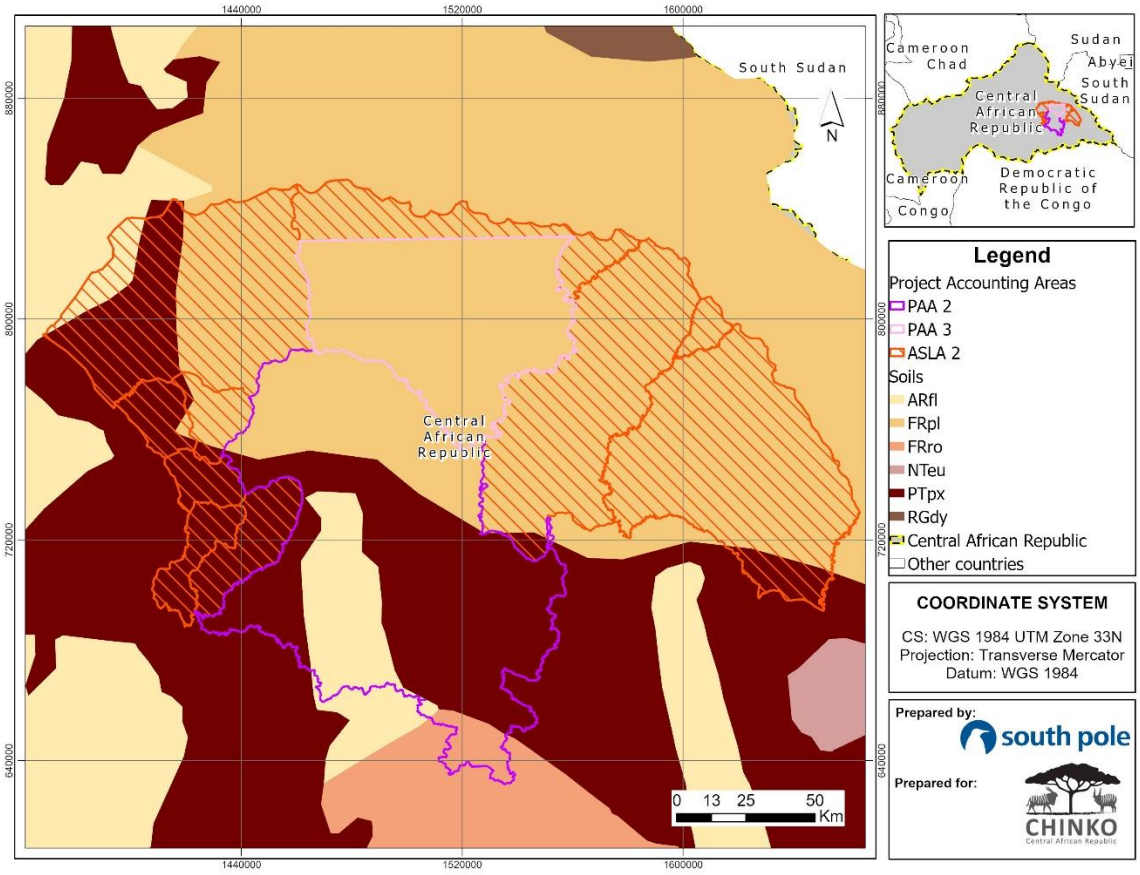


Figure 74: Soil categories present in the region, including the delineation of PAAs 2 and 3 and ASLA 2

(Source: Elaborated by South Pole in 2023 using data from African Soil Atlas, 2013)

Following with the assessment of similarities between the selected ASLA 2 and PAAs 2 and 3, we evaluated some anthropogenic characteristics.

Firstly, access points. The areas covered by ASLA 2 and PAAs 2 and 3 are part of the Darfur cluster of transhumant pastoralism (see Figure 46) and share similarities with regards to remoteness and uninhabited zones (permanent habitation). In addition, Figure 48 presents more details of the movements followed by the pastoralists of the Darfur cluster, it can be seen that areas around the northern part of CCA, where the ASLA 2 is located, are part of this dynamic and the Fulani transhumance is the cluster with the biggest influence.

Later, the distance to markets was assessed and each subprefecture capital can be used as a proxy for relevant markets. Neither ASLA 2 nor PAAs 2 and 3 contain any market but Yalinga is in close proximity to both areas (see Figure 75 for details of the markets' location).

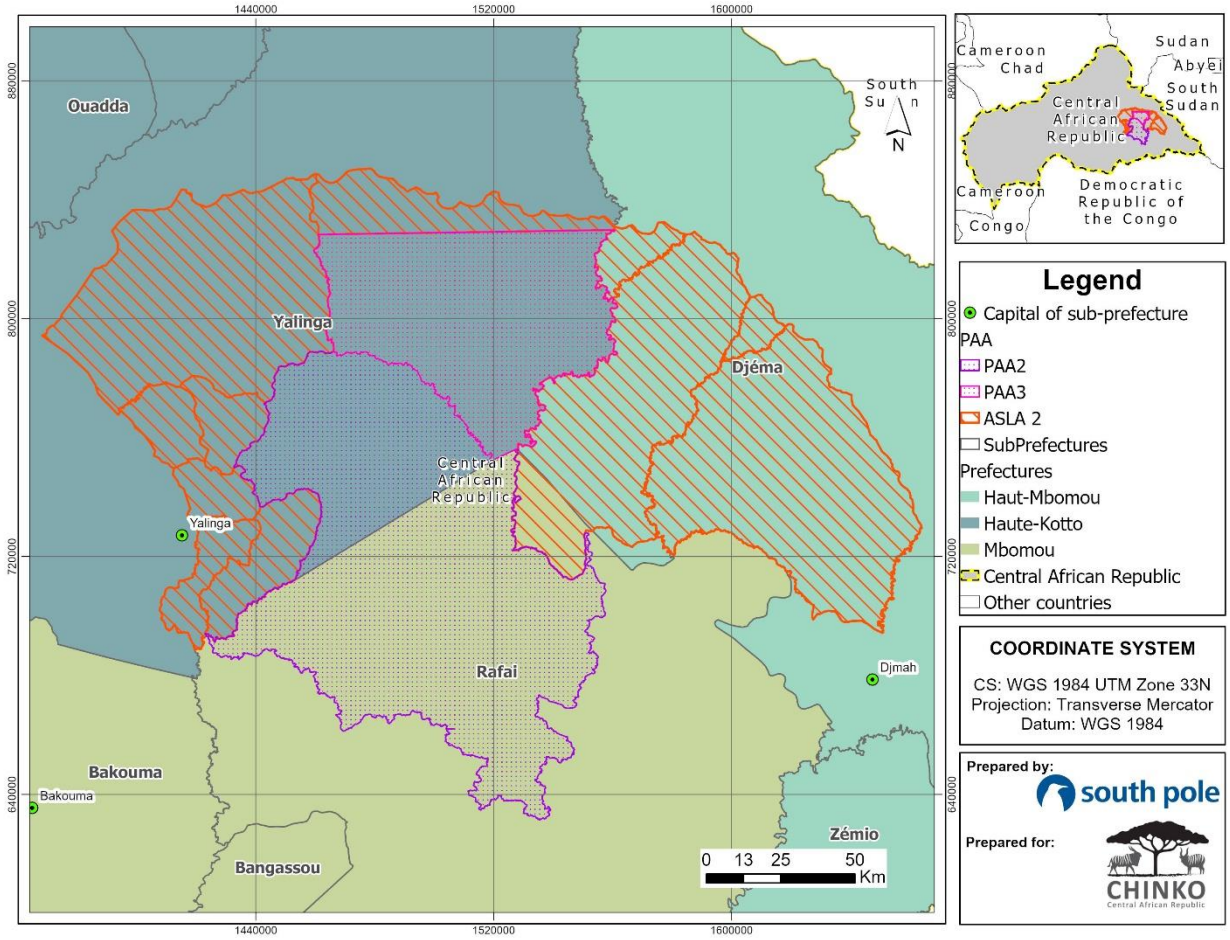


Figure 75: Prefecture and sub-prefecture capitals, where the main markets are located. As indicated, Yalinga is the only sub-prefecture capital near PAAs 2 and 3 and ASLA 2.

(Source: South Pole, 2023)

Later, the location of important resources like waterways and roads was assessed. Figure 76 presents the road density within ASLA 2 and PAAs 2 and 3. [116] In general, the region has a limited road network with a higher road density in PAA 2 and no roads in PAA 3 and ASLA 2.

[116] Figure included as part of the assessment. However, the existence of roads is not an important factor for Pastoralists to decide where to move.

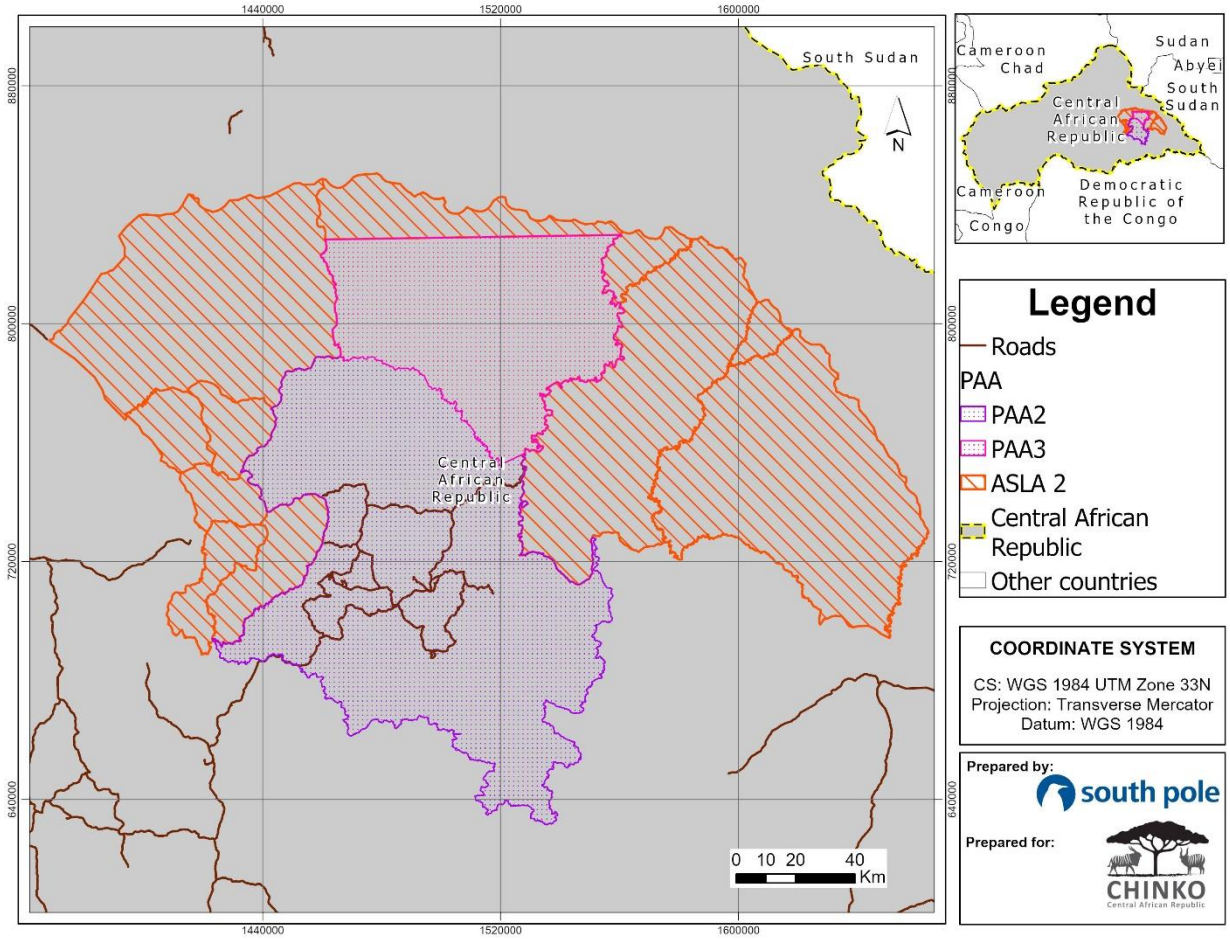


Figure 76: Main roads in the region including the delineation of PAAs 2 and 3 and ASLA 2

(Source: South Pole, 2023)

Later, the waterways (rivers and basins) were included in the assessment, Figure 77 presents the major basins and rivers in its locations relative to ASLA 2 and PAA 2 and 3. All the areas are part of the major basins of Mbari and Chinko rivers.

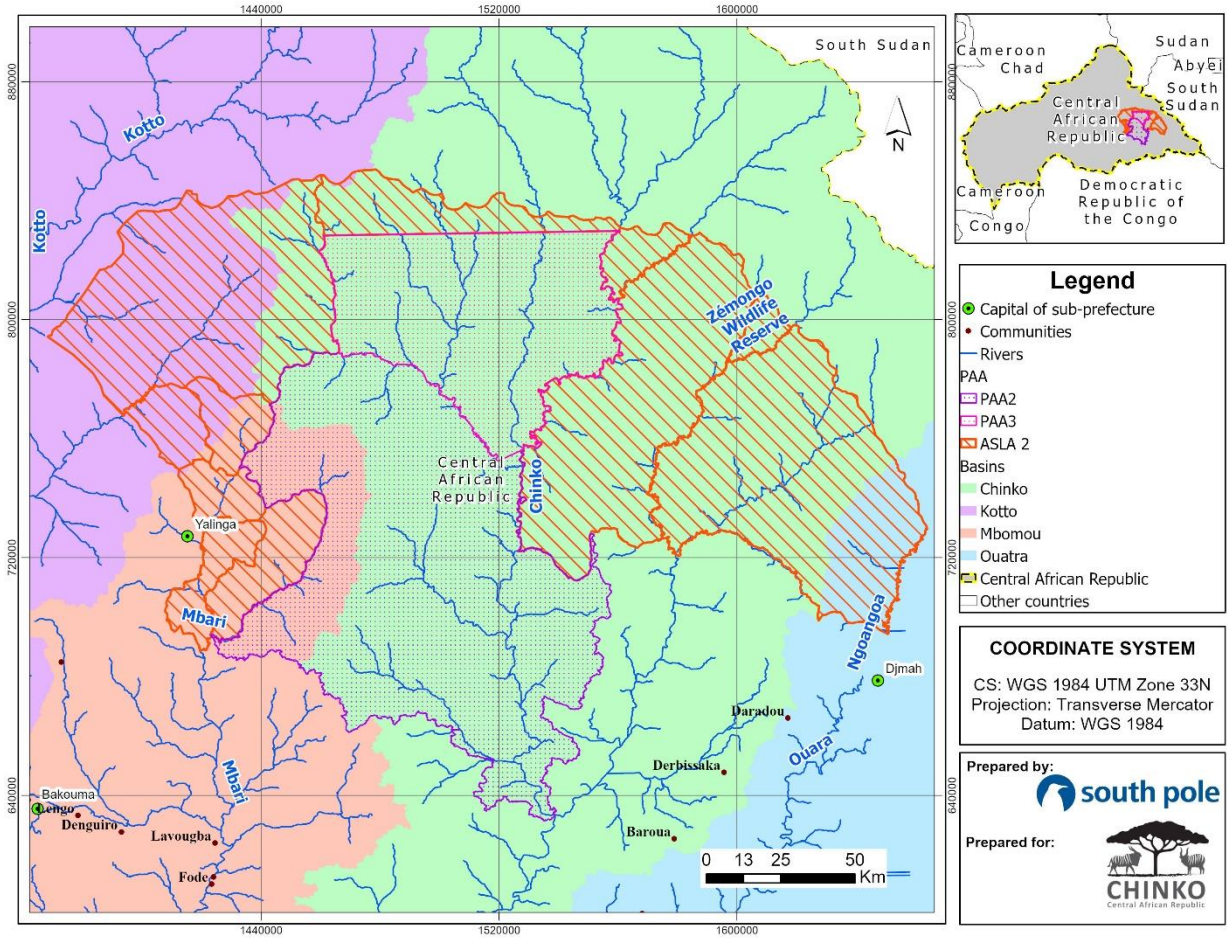


Figure 77: Rivers and basins present in ASLA 2 and PAAs 2 and 3

(Source: South Pole, 2023)

Lastly, the land tenure was considered. As previously explained, according to the constitution of the Central African Republic, all land belongs to the state and can be used by its people in a customary way. Currently, all land in the Eastern CAR has been demarcated as either hunting area, national park, wildlife reserve or "zone banale" (open land able to be claimed by communities). As shown in Figure 78 ASLA 2 is categorized as a mixt of hunting areas, wildlife reserve and "zone banale" and PAAs 2 and 3 are categorized entirely as hunting areas.

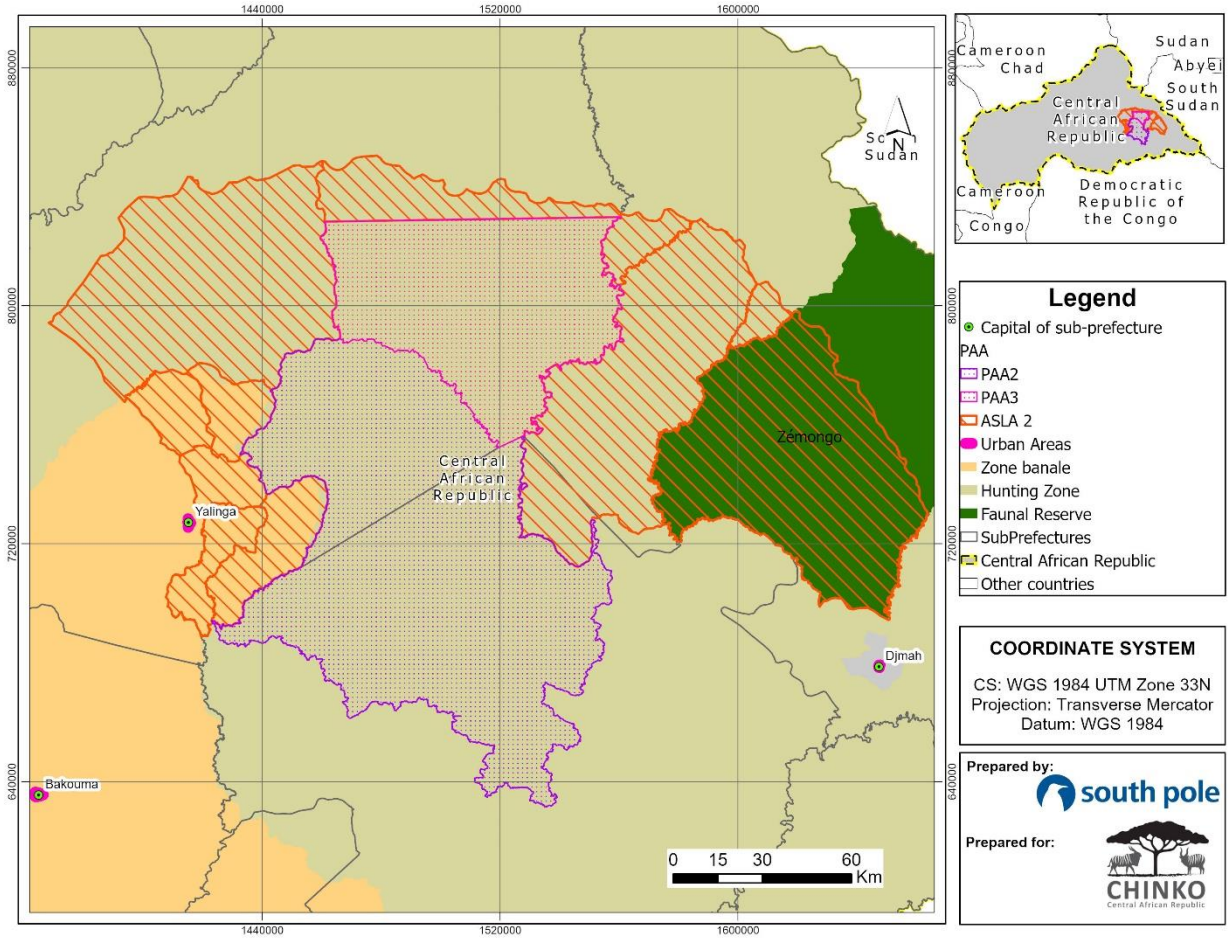


Figure 78: Different tenures present in the region including the delineation of PAAs 2 and 3 and ASLA 2

(Source: South Pole, 2023)

As shows in the previous figures, in terms of locations of agents and their mobilities these areas are as accessible as the PAAs and have similar conditions in terms of drivers of deforestation. To conclude, the information presented demonstrates clear similarities in natural characteristics between PAAs 2 and 3 and ASLA 2, as well as similarities in anthropogenic characteristics.

The Leakage Emissions Model

The LEM is presented in equation [F.48].

Estimating Proportion of Degradation

According to the guideline of the methodology, to calculate the proportion of degradation requires in-situ observation by walking through each plot and counting the number of stumps and trees in the plot. However, considering the remoteness of the region and the logistics required to do an in-situ observation within ASLA 2, the project proponent proposes to use remote sensing techniques to determine the conversion in those areas, if there is any conversion above the historical average then it will be considered as leakage emissions from the project.

On the other hand, in the ASLA 1 (areas in the Western and Southern border of PAA 1), once the project proponent secures funding from carbon credits the monitoring process of the leakage areas will involve a

combination of on the ground sampling and remote sensing techniques. For more details of the on the ground sampling process see Annex 3.

Determining Emissions from Market Leakage

According to the methodology, market leakage occurs when production of commodities – most likely timber or agricultural products – shifts elsewhere to make up for the lost supply resulting from project activities. However, when the agents and drivers of conversion only use land converted in the baseline for subsistence, no market leakage will occur as a result of the project, and potential leakage, if any, is restricted to the activity-shifting type.

Considering the deforestation/conversion agents present in the area, emissions from market leakage will not be accounted for, and the cumulative emissions from market leakage for every monitoring period will be zero.

3.2.4 Net GHG Emission Reductions and Removals

Quantifying Gross Emissions Reductions

The Gross Emissions Reductions (GERs) for a monitoring period [m] ($E^{[m]}_{\Delta\, GER}$) and project accounting area were quantified using the equation [F.53]

$$E^{[m]}_{\Delta\, GER} = E^{[m]}_{B\,\Delta} - E^{[m]}_{P\,\Delta} - E^{[m]}_{L\,\Delta} - E^{[m]}_{U} \quad \text{[F.53]}$$

Where

$E^{[m]}_{B\,\Delta}$ = Change in baseline emissions,

$E^{[m]}_{P\,\Delta}$ = Change in project emissions,

$E^{[m]}_{L\,\Delta}$ = Change in emissions due to leakage,

$E^{[m]}_{U}$ = Cumulative confidence deduction at the end of the current monitoring period.

Determining Deductions for Uncertainty

The confidence deduction $E^{[m]}_{U}$ was determined following the equation [F.57], which is a linear combination of weighted standard errors of estimates from baseline emissions models and carbon stock measurements.

$$E^{[m]}_{U} = E^{[m]}_{B\,\Delta}\left[\frac{1.64}{E^{[m]}_{B\,\Delta}+A_{PAA}c^{[m]}_{p}+A_{PX}c^{[m]}_{B}}\sqrt{(U^{[M]}_{EM})^2+(U^{[m]}_{p})^2(U^{[m]}_{B})^2}-0.15\right] \text{[F.57]}$$

After using equation [F.57] the Cumulative confidence deduction at the end of the current monitoring period value obtained was 0. The equation has a strong dependence of the total project area, which is used to divide the 1.64 factor (from the Z value of 90% confidence), considering that the project has a big project accounting area the value obtained is really low, later that value has a 0.15 deduction which turn it into a negative value.

Determining Reversals

In the event of reversals, the project will follow the VCS procedures for loss events.

Quantifying Net Emissions Reductions for a PAA

The total Net Emissions Reductions (NERs) for a monitoring period [m] were calculated using equation [F.55], which are GERs minus buffer account allocation.

$E_{\Delta\, NER}^{[m]} = E_{\Delta\, \mathrm{GER}}^{[m]} - E_{\mathrm{BA}}^{[m]}$ [F.55]

Determining Buffer Account Allocation

The allocation of GERs to the buffer account was determined following the AFOLU Non-Permanence Risk Tool, version 4.0.

After applying the tool, the total value obtained was 6.5% (2% in the internal risks, 0% in the external risks and 4.5% in the natural risks), however, according to the requirements of the tool, the minimum risk rating shall be 10, regardless of the risk rating calculated. Therefore, a 10% was used to determine the buffer account allocation.

As a result of the process the percentage of GERs allocated in the buffer account is 10%.

Quantifying Net Emissions Reductions across PAAs

The NERs were calculated separately for each PAA and then summed to determine the total NERs in a monitoring period.

Ex-Ante Estimation of NERs

Following the steps presented above the ex-ante estimation of NERs was calculated, the results are presented in the Table 41.

Table 41: Ex-ante Estimation of NERs[117]

Year	Estimated baseline emissions or removals (tCO_2e)	Estimated project emissions or removals (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated net GHG emission reductions or removals (tCO2e)[118]	Buffer (tCO_2e)	VCUs[119]
2016 [120]	97,680	7,387	8,933	81,359	8,136	73,222
2017	352,384	17,640	144,923	189,820	18,982	170,837
2018	374,724	5,040	8,017	361,667	36,168	325,498
2019	398,538	2,520	24,224	371,793	37,180	334,613
2020	452,672	4,850	13,989	433,833	43,384	390,448
2021	491,332	6,300	46,142	438,890	43,890	394,999
2022	521,795	6,300	47,185	468,309	46,832	421,476

[117] Values are rounded, so direct subtraction may result in minor differences

[118] Under VCS terms the net emission reductions are the equivalent to gross emission reductions under VM0009 methodology. Values are rounded down

[119] Under VCS terms the VCUs are the equivalent to net emission reductions under VM0009 methodology. Values are rounded down

[120] 2016 values are from September to December. For a better alignment of future instances, the project calculates the emission reduction in a calendar year basis.

Year	Estimated baseline emissions or removals (tCO_2e)	Estimated project emissions or removals (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated net GHG emission reductions or removals ($tCO2e$)[118]	Buffer (tCO_2e)	VCUs[119]
2023	554,138	6,300	48,236	499,602	49,962	449,639
2024	590,141	6,300	49,306	534,535	53,454	481,080
2025	624,894	6,300	50,358	568,235	56,824	511,410
2026	663,362	6,300	46,900	610,162	61,018	549,144
Total	**5,121,660**	**75,238**	**488,214**	**4,558,205**	**455,830**	**4,102,366**

3.3 Monitoring

3.3.1 Data and Parameters Available at Validation

Data / Parameter	α	
Data unit	Unitless	
Description	Combined effects of β and θ at the start of the historic reference period	
Equations	[F.3], [F.5], [F.6], [F.8]	
Source of data	Reference area and historic reference period	
Value applied	RA 1	-4.436
	RA 2	-4.841
Justification of choice of data or description of measurement methods and procedures applied	Time and place in which the logistic model is fit	
Purpose of Data	Not applicable	
Comments	Parameter not used in the baseline types identified	

Data / Parameter	β
Data unit	Unitless
Description	Effect of time on the cumulative proportion of conversion over time
Equations	[F.2], [F.3], [F.4], [F.5], [F.6], [F.7], [F.8]
Source of data	Reference area and historic reference period

Value applied	RA 1: 2.48800E-04 RA 2: 1.18000E-04
Justification of choice of data or description of measurement methods and procedures applied	Time and place in which the logistic model is fit
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	γ
Data unit	Days
Description	Time shift from beginning of historic reference period to project start date
Equations	[F.3], [F.6]
Source of data	Historic reference period
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Time in which the logistic model is fit
Purpose of Data	Not applicable
Comments	Parameter not used

Data / Parameter	θ
Data unit	Unitless
Description	Effect of certain covariates on the cumulative proportion of conversion over time
Equations	[F.2], [F.3], [F.4], [F.5], [F.6], [F.7], [F.8]
Source of data	Reference area and historic reference period
Value applied	Not applicable
Justification of choice of data or description of measurement methods	Time and place in which the logistic model is fit

and procedures applied	
Purpose of Data	Calculation of baseline emissions
Comments	Parameter not used

Data / Parameter	λ_{SOC}
Data unit	Proportion (unitless)
Description	Exponential soil carbon decay parameter
Equations	[F.9], [F.33]
Source of data	Default values from VCS methodology VM0009, derived from E. Davidson & Ackerman (1993)
Value applied	Not applied
Justification of choice of data or description of measurement methods and procedures applied	Default values from VCS methodology VM0009, derived from E. Davidson & Ackerman (1993)
Purpose of Data	Calculation of baseline emissions
Comments	Parameter not used

Data / Parameter	$\hat{\sigma}_{EM}$
Data unit	Standard deviation (unitless)
Description	The estimated standard deviation of the state observations used to fit the logistic function for the BEM
Equations	[F.12], [F.14], [B.31]
Source of data	Remote sensing image interpretation
Value applied	RA 1: 0.09938 RA 2: 0.08182
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Calculation of confidence deduction
Comments	

Data / Parameter	$\mathcal{B}$
Data unit	Set
Description	The set of all selected carbon pools in biomass. Is a subset of $\mathcal{C}$
Equations	[F.17], [F.18], [F.23], [F.50]
Source of data	PDD
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	See section 3.1.3 Gases and carbon pools
Purpose of Data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Comments	

Data / Parameter	$\mathcal{C}$
Data unit	Set
Description	The set of all selected carbon pools
Equations	Not applicable
Source of data	Monitoring records
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	See section 3.1.3 Gases and carbon pools
Purpose of Data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Comments	

Data / Parameter	$\mathcal{I}$
Data unit	Set
Description	The set of all observations of conversion. When superscripted with

	a monitoring period, the conversion observations are taken for leakage analysis
Equations	[F.13]
Source of data	Remote sensing image interpretation or field observations in the leakage area
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Calculation of confidence deduction
Comments	

Data / Parameter	$\mathcal{M}$
Data unit	Set
Description	The set of all monitoring periods
Equations	[F.32], [F.33], [F.36], [F.54], [F.56]
Source of data	Monitoring records
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Not applicable
Comments	

Data / Parameter	$\mathcal{T}$
Data unit	Set
Description	The set of all species/categories of livestock
Equations	[F.43]
Source of data	Monitoring records
Value applied	Not applicable

Justification of choice of data or description of measurement methods and procedures applied	Type of livestock herded in the area
Purpose of Data	Calculation of project emissions
Comments	

Data / Parameter	A_{PAA}
Data unit	ha
Description	Area of Project Accounting Areas
Equations	[F.2], [F.3], [F.4], [F.5], [F.6], [F.7], [F.8], [F.41], [F.52], [F.57]
Source of data	GIS analysis prior to sampling
Value applied	PAA: 1 — 148,395.64; 2 — 713,408.61; 3 — 363,225.39; **Total — 1,225,029.64**
Justification of choice of data or description of measurement methods and procedures applied	Areas managed by African Parks with eligible cover
Purpose of Data	• Calculation of baseline emissions • Calculation of project emissions
Comments	

Data / Parameter	A_{PX}
Data unit	ha
Description	Area of proxy area for the Project Accounting Areas
Equations	[F.57]
Source of data	GIS analysis prior to sampling
Value applied	Proxy 1 — 79.2; Proxy 2 — 404.4

Justification of choice of data or description of measurement methods and procedures applied	See section 3.1.4 Delineating Proxy Areas
Purpose of Data	• Calculation of baseline emissions • Calculation of project emissions
Comments	Area 1: Agriculture, Area 2: Overgrazed

Data / Parameter	$C_{L\,p}$
Data unit	t CO2e / ha
Description	Carbon stocks in project leakage area
Equations	[F.50]
Source of data	Leakage area sampling
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Considering the deforestation/conversion agents present in the area, emissions from market leakage will not be accounted for and the cumulative emissions from market leakage for every monitoring period will be zero.
Purpose of Data	Not applicable
Comments	Parameter not used

Data / Parameter	$f_{LS}i$
Data unit	kg CH4 head^{-1} yr^{-1}
Description	Emission factor for the defined livestock population, i
Equations	[F.43]
Source of data	IPCC default values
Value applied	48
Justification of choice of data or description of measurement methods and procedures applied	Obtained directly from IPCC default values, Volume 4 Agriculture, Forestry and Other Land Use, Chapter 10 Emissions from livestock and manure management, Table 10.11 – African cattle low productivity systems
Purpose of Data	Calculation of project emissions

Comments	Considering the migratory characteristics of the pastoralists, the livestock, when illegally entering the project boundaries, is not roaming during the full year but only during the beginning of the dry season, therefore, when applying the equation [F.43] a minor adjustment is applied: the emission factor defined for the livestock population (f_{Lsi}) is multiplied by a factor of the number of months in the year in which the livestock grazed during the year (3 months, therefore a 0.25 factor).

Data / Parameter	m
Data unit	t CO2e / yr
Description	Average carbon in merchantable trees cut each year as a result of legally sanctioned commercial logging
Equations	[F.2]
Source of data	Timber harvest plans or measurement of carbon stocks in merchantable trees in the project accounting area
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Not applicable
Comments	Parameter not used

Data / Parameter	n_d	
Data unit	Not applicable	
Description	Number of spatial points in the reference area	
Equations	[F.14]	
Source of data	Remote sensing image interpretation	
Value applied	RA 1	1,654
	RA 2	2,566
Justification of choice of data or description of measurement methods and procedures applied	Not applicable	

Purpose of Data	Calculation of confidence deduction
Comments	Each point assessed in seven periods

Data / Parameter	o_i
Data unit	Binary
Description	State observation for the i^{th} sample point in the reference area
Equations	[F.13]
Source of data	Remote sensing image interpretation
Value applied	Various
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Calculation of confidence deduction
Comments	

Data / Parameter	$P_{L\,ME}$
Data unit	Unitless
Description	Portion of leakage related to market
Equations	[F.51]
Source of data	8.3.3
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Considering the deforestation/conversion agents present in the area, emissions from market leakage will not be accounted for and the cumulative emissions from market leakage for every monitoring period will be zero.
Purpose of Data	Not applicable
Comments	Parameter not used

Data / Parameter	q
Data unit	Days
Description	Lag between start of degradation and conversion

Equations	[F.3], [F.4], [F.5]
Source of data	Default value
Value applied	0
Justification of choice of data or description of measurement methods and procedures applied	It is always conservative to set this parameter equal to zero and any other value must be justified
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	$r_{CF\,b}$
Data unit	Unitless
Description	Carbon fraction of biomass for burned wood or herbaceous material *b*
Equations	[F.42]
Source of data	Literature estimates or direct measurement
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Not applicable
Comments	

Data / Parameter	r_{RS}
Data unit	Unitless
Description	Expansion factor for above-ground biomass to below-ground biomass (root/shoot ratio)
Equations	[F.30]
Source of data	Reviewed literature, allometry, or IPCC default values
Value applied	0.232
Justification of choice of	IPCC 2019 Refinement, Chapter 4, Table 4.4

data or description of measurement methods and procedures applied	
Purpose of Data	Calculation of project emissions
Comments	

Data / Parameter	r_U
Data unit	Unitless
Description	Onset proportion of conversion immediately adjacent to project area
Equations	[F.4]
Source of data	GIS analysis and image interpretation
Value applied	PAA 1: 3.1242 PAA 2: 5.5914 PAA 3: 1.8925
Justification of choice of data or description of measurement methods and procedures applied	Positions the baseline emissions models relative to the instantaneous rate of conversion
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	t
Data unit	Days
Description	Time since project start date
Equations	[F.2], [F.3], [F.4], [F.5], [F.6], [F.7], [F.8], [F.10]
Source of data	Monitoring records
Value applied	Various
Justification of choice of data or description of measurement methods and procedures applied	Not applicable

Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	t_i
Data unit	Days
Description	The point in time of the observation made at point *i*
Equations	[F.11], [A.6]
Source of data	Remote sensing image interpretation
Value applied	Various
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Calculation of confidence deduction
Comments	

Data / Parameter	t_{PA}
Data unit	Days
Description	Time prior to the project start date when the primary agent began commercial logging in the project accounting area
Equations	[F.1], [F.2], [F.3], [F.6]
Source of data	Harvest plans prepared for the project accounting area, or by public record
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Not applicable
Comments	Parameter not used

Data / Parameter	t_m
Data unit	Days

Description	Length of project or logging in baseline scenario
Equations	[F.1]
Source of data	PD
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Not applicable
Comments	Parameter not used

Data / Parameter	t_{PL}
Data unit	Days
Description	Length of project crediting period
Equations	[F.5]
Source of data	See section 3.1.3 Temporal boundaries
Value applied	10,438
Justification of choice of data or description of measurement methods and procedures applied	See section 2.1.14
Purpose of Data	• Calculation of baseline emissions • Calculation of project emissions
Comments	

Data / Parameter	t_{PAI}
Data unit	Days
Description	Number of days after the project start date for the start of a project activity instance in a grouped project
Equations	[F.2], [F.3], [F.4], [F.5], [F.6], [F.7], [F.8]
Source of data	See section 3.1.3 Temporal boundaries
Value applied	PAA | Value

		1	0
		2	0
		3	1,308
Justification of choice of data or description of measurement methods and procedures applied	See section 2.1.13		
Purpose of Data	Calculation of baseline emissions		
Comments			

Data / Parameter	t_{SA}
Data unit	Days
Description	Arrival time of secondary agents after start of commercial logging
Equations	[F.2]
Source of data	Participatory rural appraisal, or expert knowledge
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Not applicable
Comments	Parameter not used

Data / Parameter	w_i
Data unit	Unitless
Description	Weight applied to the i^{th} sample point in the Project Accounting Areas reference area
Equations	[A.6], [F.13]
Source of data	Remote sensing image interpretation
Value applied	Various

Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Calculation of confidence deduction
Comments	

Data / Parameter	x
Data unit	Unitless
Description	Covariate values
Equations	[F.2], [F.3], [F.4], [F.5], [F.6], [F.7], [F.8]
Source of data	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Not applicable
Comments	Parameter not used

Data / Parameter	x_i
Data unit	Geographic coordinates
Description	Latitude of the ith sample point in the Project Accounting Areas reference area
Equations	[F.11], [A.6]
Source of data	Remote sensing image interpretation
Value applied	Various
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Calculation of confidence deduction

Comments	

Data / Parameter	x_0
Data unit	Unitless
Description	Covariate values as of the project start date
Equations	[F.4], [F.5], [F.6], [F.7], [F.8]
Source of data	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Not applicable
Comments	Parameter not used

Data / Parameter	x_{SA}
Data unit	Unitless
Description	Covariate values as of the arrival of the secondary agents
Equations	[F.2]
Source of data	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery
Value applied	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Not applicable
Comments	Parameter not used

Data / Parameter	y_i
Data unit	Geographic coordinates
Description	Longitude of the ith sample point in the Project Accounting Areas

	reference area
Equations	[F.11], [A.6]
Source of data	Remote sensing image interpretation
Value applied	Various
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	Calculation of confidence deduction
Comments	

3.3.2 Data and Parameters Monitored

Data / Parameter	$\mathcal{W}^{[m]}$
Data unit	Set
Description	The set of all burned wood or herbaceous material
Equations	[F.42]
Source of data	Monitoring records
Description of measurement methods and procedures to be applied	Not applicable
Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of project emissions
Calculation method	Not applicable
Comments	

Data / Parameter	$A_{B\_\Delta PAA}^{[m]}$

Data unit	ha
Description	Area of avoided conversion
Equations	[F.52]
Source of data	Generated from equation
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Section 8.3.3.4
Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$A_{P\,1}^{[m=0]}$
Data unit	ha
Description	Area of Project Accounting Areas stratum 1 prior to first verification event
Equations	[F.24]
Source of data	GIS analysis prior to sampling
Description of measurement methods and procedures to be applied	GIS analysis of best available data
Frequency of monitoring/recording	First monitoring period
Value applied	PAA: 1 — Value: 148,395.64 PAA: 2 — Value: 713,408.61

	3 | 363,225.39
Monitoring equipment	Remote Sensing data GIS Software
QA/QC procedures to be applied	Annex 4 – QA/QC procedure
Purpose of data	Calculation of baseline emissions
Calculation method	Eligible area, see Appendix 5 – Land cover assessment
Comments	Stratum 1 in PAA 1 is CCF, Stratum 1 in PAAs 2 and 3 is OWS

Data / Parameter	$A_{P\,2}^{[m=0]}$
Data unit	ha
Description	Area of Project Accounting Areas stratum 2 prior to first verification event
Equations	[F.24]
Source of data	GIS analysis prior to sampling
Description of measurement methods and procedures to be applied	GIS analysis of best available data
Frequency of monitoring/recording	First monitoring period
Value applied	N/A
Monitoring equipment	Remote Sensing data GIS Software
QA/QC procedures to be applied	Annex 4 – QA/QC procedure
Purpose of data	Calculation of baseline emissions
Calculation method	Eligible area, see Appendix 5 – Land cover assessment
Comments	There is no second stratum in PAAs

Data / Parameter	$B_b^{[m]}$
Data unit	Tonnes

Description	Biomass in burned wood or herbaceous material *b*
Equations	[F.42]
Source of data	Measurements of biomass
Description of measurement methods and procedures to be applied	Not applicable
Frequency of monitoring/recording	Not applicable
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Not applicable
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	

Data / Parameter	$c_B^{[m]}$
Data unit	tCO2e / ha
Description	Baseline carbon stocks at the end of the current monitoring period
Equations	[F.2], [F.3], [F.4], [F.5], [F.6], [F.7], [F.57]
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	Carbon plots sampling
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	

PAA	Value
1	195.55
2	42.83
3	42.83

Monitoring equipment	See Annex 3
QA/QC procedures to be applied	See Annex 3
Purpose of data	• Calculation of baseline emissions • Calculation of confidence deduction
Calculation method	Equation [B.33]
Comments	The value for PAA 1 is based on the stock found in the sites converted to agriculture, the value for PAAs 2 and 3 is based on the stock of areas converted by the impact of transhumance pastoralism.

Data / Parameter	$C_{B\ BGB}^{[m]}$
Data unit	tCO2e
Description	Carbon not decayed in BGB at the end of the current monitoring period for the Project Accounting Areas
Equations	[F.16]
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Section 8.1.4
Frequency of monitoring/recording	Every monitoring period
Value applied	PAA: 1 — Value: 161,890.3 PAA: 2 — Value: 176,387.4 PAA: 3 — Value: 34,759.4
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of emissions reductions calculations
Purpose of data	Calculation of baseline emissions

Calculation method	Equations [F.10] and [F.32]
Comments	Per PAA, value for 31/12/2020

Data / Parameter	$C_{B\ DW}^{[m]}$
Data unit	tCO2e
Description	Carbon not decayed in DW at the end of the current monitoring period
Equations	[F.16]
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Section 8.1.3
Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$C_{B\ SOC}^{[m]}$
Data unit	tCO2e
Description	Carbon not decayed in SOC at the end of the current monitoring period for the Project Accounting Areas
Equations	[F.16]
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Section 8.1.5

Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of emissions reductions calculations
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$C_{B\ WP}^{[m]}$
Data unit	tCO2e
Description	Carbon not decayed in WP at the end of the current monitoring period
Equations	[F.16]
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix C
Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$C_{B\ AGMT}^{[m]}$
Data unit	tCO2e / ha

Description	Baseline carbon stocks in above-ground merchantable trees at the end of the current monitoring period
Equations	[F.37], [F.38], [F.39], [F.40]
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2.1
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$C_{B\ BGMT}^{[m]}$
Data unit	tCO2e / ha
Description	Baseline carbon stocks in below-ground merchantable trees at the end of the current monitoring period
Equations	[F.37], [F.38], [F.39], [F.40]
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2.1
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	Not applicable
Monitoring equipment	Not applicable

QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$C_{p\ AGMT}^{[m=0]}$
Data unit	tCO2e
Description	Project carbon stocks in above-ground merchantable trees at project start
Equations	[F.1]
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2.1
Frequency of monitoring/recording	First monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$C_{p\ BGMT}^{[m=0]}$
Data unit	tCO2e
Description	Project carbon stocks in below-ground merchantable trees at project start
Equations	[F.1]
Source of data	Project accounting area sampling

Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2.3
Frequency of monitoring/recording	First monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$c_{B\ b}^{[m]}$
Data unit	tCO2e / ha
Description	Baseline scenario average carbon stock in selected carbon pools
Equations	[F.18] [F.24]
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	PAA / Value: 1 / 195.55; 2 / 42.83; 3 / 42.83
Monitoring equipment	See Annex 3
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions

Calculation method	Equation [B.33]
Comments	The value for PAA 1 is based on the stock found in the sites converted to agriculture, the value for PAAs 2 and 3 is based on the stock of areas converted by the impact of transhumance pastoralism

Data / Parameter	$c_{B\ BM}^{[m]}$
Data unit	tCO2e / ha
Description	Baseline carbon stocks in biomass at the end of the current monitoring period for the Project Accounting Areas
Equations	[F.19], [F.20], [F.21], [F.24], [F.52]
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	PAA / Value: 1 / 195.55; 2 / 42.83; 3 / 42.83
Monitoring equipment	See Annex 3
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [F.18]
Comments	The value for PAA 1 is based on the stock found in the sites converted to agriculture, the value for PAAs 2 and 3 is based on the stock of areas converted by the impact of transhumance pastoralism.

Data / Parameter	$c_{B\ SOC}^{[m]}$
Data unit	tCO2e / ha

Description	Baseline soil carbon stocks at the end of the current monitoring period for the Project Accounting Areas
Equations	[F.25], [F.27], [F.28]
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2.6
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$c_p^{[m]}$
Data unit	tCO2e / ha
Description	Project carbon stocks at the end of the current monitoring period for the Project Accounting Areas
Equations	[F.41], [F.57]
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.1.5
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	

PAA	Value
1	652.70
2	179.98

	3	179.98	
Monitoring equipment	See Annex 3		
QA/QC procedures to be applied	Review of monitoring records		
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions		
Calculation method	Equation [B.33]		
Comments	The value for PAA 1 is based on the stock of CCF cover, the value for PAAs 2 and 3 is based on the stock of OWS cover		

Data / Parameter	$c_p^{[m-1]}$
Data unit	tCO2e / ha
Description	Project carbon stocks at the beginning of the current monitoring period for the Project Accounting Areas
Equations	[F.41]
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.1.5
Frequency of monitoring/recording	Prior monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Already reviewed
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions
Calculation method	Equation [B.33]
Comments	

Data / Parameter	$c_p^{[m=0]}$
Data unit	tCO2e / ha
Description	Project carbon stocks prior to first verification event for the Project Accounting Areas
Equations	[F.7]
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.1.5
Frequency of monitoring/recording	First monitoring period
Value applied	PAA / Value: 1 / 652.7; 2 / 179.98; 3 / 179.98
Monitoring equipment	See Annex 3
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions
Calculation method	Equation [B.33]
Comments	The value for PAA 1 is based on the stock of CCF cover, the value for PAAs 2 and 3 is based on the stock of OWS cover

Data / Parameter	$c_{p\ 1\ BM}^{[m=0]}$
Data unit	tCO2e / ha
Description	Project carbon stocks in biomass in stratum 1 prior to first verification event for the Project Accounting Areas
Equations	[F.24]
Source of data	Project accounting area sampling

Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2
Frequency of monitoring/recording	First monitoring period
Value applied	PAA / Value: 1 / 652.7; 2 / 179.98; 3 / 179.98
Monitoring equipment	See Annex 3
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Average of plot measurements
Comments	Stratum 1 in PAA 1 is CCF, Stratum 1 in PAAs 2 and 3 is OWS

Data / Parameter	$c_{p\ 2\ BM}^{[m=0]}$
Data unit	tCO2e / ha
Description	Project carbon stocks in biomass in stratum 2 prior to first verification event for the Project Accounting Areas
Equations	[F.24]
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2
Frequency of monitoring/recording	First monitoring period
Value applied	N/A
Monitoring equipment	See Annex 3
QA/QC procedures to be applied	Review of monitoring records

Purpose of data	Calculation of baseline emissions
Calculation method	Average of plot measurements
Comments	There is no second stratum in the PAAs

Data / Parameter	$c_{p\ AGMT}^{[m=0]}$
Data unit	tCO2e / ha
Description	Project carbon stocks in above-ground merchantable trees prior to first verification event
Equations	[F.37], [F.38], [F.39], [F.40]
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2.1
Frequency of monitoring/recording	First monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$c_{p\ BM}^{[m=0]}$
Data unit	tCO2e
Description	Project carbon stocks in biomass prior to first verification event for the Project Accounting Areas
Equations	[F.19], [F.20], [F.21], [F.52]
Source of data	Project accounting area sampling

Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2
Frequency of monitoring/recording	First monitoring period
Value applied	PAA / Value: 1 / 96,858,220; 2 / 128,399,813; 3 / 65,373,577
Monitoring equipment	See Annex 3
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [F.17]
Comments	

Data / Parameter	$c_{p\ b}^{[m]}$
Data unit	tCO2e / ha
Description	Average carbon in biomass in the Project Accounting Areas
Equations	[F.17]
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	PAA / Value: 1 / 652.7; 2 / 179.98; 3 / 179.98
Monitoring equipment	See Annex 3

QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [B.33]
Comments	The value for PAA 1 is based on the stock of CCF cover, the value for PAAs 2 and 3 is based on the stock of OWS cover

Data / Parameter	$c_{p\ 1\ b}^{[m]}$
Data unit	tCO2e / ha
Description	Average carbon in biomass for Project Accounting Areas, stratum 1
Equations	[F.23]
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	PAA: 1 — Value: 652.7 PAA: 2 — Value: 179.98 PAA: 3 — Value: 179.98
Monitoring equipment	See Annex 3
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Average carbon in the plots
Comments	Stratum 1 in PAA 1 is CCF, Stratum 1 in PAAs 2 and 3 is OWS

Data / Parameter	$c_{p\ 2\ b}^{[m]}$

Data unit	tCO2e / ha
Description	Average carbon in biomass for Project Accounting Areas, stratum 2
Equations	[F.23]
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	N/A
Monitoring equipment	See Annex 3
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Average carbon in the plots
Comments	There is no second stratum in the PAAs

Data / Parameter	$c_{p\ SOC}^{[m=0]}$
Data unit	tCO2e / ha
Description	Project soil carbon stocks prior to first verification event in the Project Accounting Areas
Equations	[F.25], [F.27], [F.28]
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2.6
Frequency of monitoring/recording	First monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable

QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$c_{p\ \Delta SWP}^{[m]}$
Data unit	tCO2e
Description	Project carbon stocks in wood products at the end of the current monitoring period
Equations	[F.41]
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix C
Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$E_{\Delta\ GER}^{[m]}$
Data unit	tCO2e
Description	GERs for the current monitoring period
Equations	[F.55], [F.57]
Source of data	Area measurements

Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.4.1
Frequency of monitoring/recording	Every monitoring period
Value applied	PAA: 1 — 608,902; 2 — 805,618; 3 — 23,948; **Total — 1,438,468**
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of GER calculations
Purpose of data	Quantification of Gross Emissions Reduction
Calculation method	Equation [F.53]
Comments	Per Project Accounting Area, value for 31/12/2020

Data / Parameter	$E^{[i]}_{\Delta GER}$
Data unit	tCO2e
Description	GERs for monitoring period i
Equations	[F.54]
Source of data	Area measurements
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.4.1
Frequency of monitoring/recording	Prior monitoring period
Value applied	PAA: 1 — 608,902; 2 — 805,618; 3 — 23,948

	Total | **1,438,468**
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of GER calculations
Purpose of data	Quantification of Gross Emissions Reduction
Calculation method	Equation [F.53]
Comments	Per Project Accounting Area, value for 31/12/2020

Data / Parameter	$E_{\Delta NER}^{[i]}$
Data unit	tCO2e
Description	NERs for monitoring period i
Equations	[F.56]
Source of data	Area measurements
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.4.3
Frequency of monitoring/recording	Prior monitoring period
Value applied	PAA 1 | 548,010 2 | 725,055 3 | 21,553 **Total** | **1,294,618**
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of NER calculations
Purpose of data	Quantification of Net Emissions Reduction
Calculation method	Equation [F.55]
Comments	Per Project Accounting Area, summed to determine the total NERs, value for 31/12/2020

Data / Parameter	$E_B^{[m]}$
Data unit	tCO2e
Description	Cumulative baseline emissions at the end of the current monitoring period
Equations	[F.15]
Source of data	Proxy area measurements
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.1
Frequency of monitoring/recording	Every monitoring period
Value applied	PAA: 1 — 789,131.2; 2 — 859,327.7; 3 — 152,202.7
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [F.16]
Comments	Per Project Accounting Area, value for 31/12/2020

Data / Parameter	$E_B^{[m-1]}$
Data unit	tCO2e
Description	Cumulative baseline emissions at the beginning of the current monitoring period
Equations	[F.15]
Source of data	Proxy area measurements
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.1

Frequency of monitoring/recording	Prior monitoring period
Value applied	0
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [F.16]
Comments	Per Project Accounting Area

Data / Parameter	$E_{B\,\Delta}^{[m]}$
Data unit	tCO2e
Description	Change in baseline emissions
Equations	[F.9], [F.10], [F.14], [F.53], [F.57]
Source of data	Proxy area measurements
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.1
Frequency of monitoring/recording	Every monitoring period
Value applied	PAA: 1 — 789,131.2; 2 — 859,327.7; 3 — 152,202.7
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [F.15]
Comments	Per Project Accounting Area, value for 31/12/2020

Data / Parameter	$E^{[i]}_{B\,\Delta\,BGB}$
Data unit	tCO2e
Description	Change in baseline emissions from below-ground biomass during monitoring period i
Equations	[F.32]
Source of data	Monitoring the proxy area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2.3
Frequency of monitoring/recording	Prior monitoring period
Value applied	PAA 1: 47,829.7 2: 48,558.9 3: 6,285.2
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [F.31]
Comments	Per Project Accounting Area, value for 31/12/2020

Data / Parameter	$E^{[i]}_{B\,\Delta\,DW}$
Data unit	tCO2e
Description	Baseline emissions from dead wood in monitoring period i
Equations	[F.36]
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, Appendix B.2.4 and B.2.5

Frequency of monitoring/recording	Prior monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$E_{B\,\Delta\,SOC}^{[m]}$
Data unit	tCO2e
Description	Baseline change in emissions from soil carbon
Equations	[F.15], [F.33]
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, sections 8.1.2.1, 8.1.2.2, 8.1.2.3, Appendix B.2.6
Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [F.26]
Comments	Parameter not used

Data / Parameter	$E_{B\,\Delta\,SOC}^{[i]}$
Data unit	tCO2e

Description	Baseline emissions from soil carbon in monitoring period i
Equations	[F.33]
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, sections 8.1.2.1, 8.1.2.2, 8.1.2.3 and Appendix B.2.6
Frequency of monitoring/recording	Prior monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [F.26]
Comments	Parameter not used

Data / Parameter	$E_{B\ AGMT}^{[m]}$
Data unit	tCO2e
Description	Cumulative baseline emissions from above-ground commercial trees at the end of the current monitoring period
Equations	[F.34], [F.51]
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, sections 8.1.6.1, 8.1.6.2 and 8.1.6.3
Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable

QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$E_{B\,BGB}^{[m]}$
Data unit	tCO2e
Description	Cumulative baseline emissions from below-ground biomass at the end of the current monitoring period
Equations	[F.31]
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.1.4
Frequency of monitoring/recording	Every monitoring period
Value applied	PAA: 1 — 179,088.5; 2 — 195,037.3; 3 — 35,207.1
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [F.30]
Comments	Per Project Accounting Area, value for 31/12/2020

Data / Parameter	$E_{B\,BGB}^{[m-1]}$
Data unit	tCO2e

Description	Cumulative baseline emissions from below-ground biomass at the beginning of the current monitoring period
Equations	[F.31]
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.1.4
Frequency of monitoring/recording	Prior monitoring period
Value applied	0
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Not applicable
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [F.30]
Comments	Per Project Accounting Area, value for 31/12/2020

Data / Parameter	$E_{B\,BM}^{[m]}$
Data unit	tCO2e
Description	Cumulative baseline emissions from biomass at the end of the current monitoring period
Equations	[F.16], [F.30], [F.52]
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, sections 8.1.1 and 8.1.1.5.1
Frequency of monitoring/recording	Every monitoring period
Value applied	PAA

		1	951,021.5	
		2	1,035,715.1	
		3	186,962.1	
Monitoring equipment	Not applicable			
QA/QC procedures to be applied	Review of monitoring records			
Purpose of data	Calculation of baseline emissions			
Calculation method	Equation [F.21]			
Comments	Per Project Accounting Area, value for 31/12/2020			

Data / Parameter	$E_{B\ DW}^{[m]}$
Data unit	tCO2e
Description	Cumulative baseline emissions from dead wood at the end of the current monitoring period
Equations	[F.35]
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.1.3
Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$E_{B\ DW}^{[m-1]}$
Data unit	tCO2e

Description	Cumulative baseline emissions from dead wood at the beginning of the current monitoring period
Equations	[F.35]
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.1.3
Frequency of monitoring/recording	Prior monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Not applicable
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$E_{B\ SOC}^{[m]}$
Data unit	tCO2e
Description	Cumulative baseline emissions from soil carbon at the end of the current monitoring period
Equations	[F.16], [F.26]
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, sections 8.1.2.1, 8.1.2.2 and 8.1.2.3
Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable

QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [F.28]
Comments	Parameter not used

Data / Parameter	$E_{B\ SOC}^{[m-1]}$
Data unit	tCO2e
Description	Cumulative baseline emissions from soil carbon at the beginning of the current monitoring period
Equations	[F.26]
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, sections 8.1.2.1, 8.1.2.2 and 8.1.2.3
Frequency of monitoring/recording	Prior monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Not applicable
Purpose of data	Calculation of baseline emissions
Calculation method	Equation [F.28]
Comments	Parameter not used

Data / Parameter	$E_{BA}^{[m]}$
Data unit	tCO2e
Description	Cumulative emissions allocated to the buffer account at the end of the current monitoring period
Equations	[F.55]
Source of data	Not applicable

Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.4.4
Frequency of monitoring/recording	Every monitoring period
Value applied	<table><tr><th colspan="2">PAA</th></tr><tr><td>1</td><td>60,892</td></tr><tr><td>2</td><td>82,551</td></tr><tr><td>3</td><td>2,395</td></tr><tr><td>**Total**</td><td>**145,838**</td></tr></table>
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Quantification of Gross Emissions Reductions
Calculation method	Multiplication
Comments	Per Project Accounting Area, value for 31/12/2020

Data / Parameter	$E_L^{[m]}$
Data unit	tCO2e
Description	Cumulative emissions from leakage at the end of the current monitoring period
Equations	[F.44]
Source of data	Measurements in the leakage area(s)
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.3
Frequency of monitoring/recording	Every monitoring period
Value applied	

		PAA	
		1	180,226.6
		2	19,859.7
		3	0
Monitoring equipment	Not applicable		
QA/QC procedures to be applied	Review of monitoring records		
Purpose of data	Calculation of leakage		
Calculation method	Equation [F.45]		
Comments	Per Project Accounting Area, value for 31/12/2020		

Data / Parameter	$E_L^{[m-1]}$
Data unit	tCO2e
Description	Cumulative emissions from leakage at the beginning of the current monitoring period
Equations	[F.44]
Source of data	Measurements in the leakage area(s)
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.3
Frequency of monitoring/recording	Prior monitoring period
Value applied	0
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Not applicable
Purpose of data	Calculation of leakage
Calculation method	Equation [F.45]
Comments	Per Project Accounting Area, for 31/12/2020

Data / Parameter	$E_{L\ \Delta}^{[m]}$

Data unit	tCO2e
Description	Change in emissions due to leakage
Equations	[F.53]
Source of data	Not applicable
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.3
Frequency of monitoring/recording	Every monitoring period
Value applied	PAA 1: 180,226.6 2: 19,859.7 3: 0
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of leakage
Calculation method	Equation [F.44]
Comments	Per Project Accounting Area, value for 31/12/2020

Data / Parameter	$E_{L\ ASF}^{[m]}$
Data unit	tCO2e
Description	Cumulative emissions from activity-shifting leakage in forested strata at the end of the current monitoring period
Equations	[F.45]
Source of data	Measurements in the activity-shifting leakage area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.3
Frequency of	Every monitoring period

monitoring/recording	
Value applied	PAA: 1 — 180,226.6; 2 — 19,859.7; 3 — 0
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of leakage
Calculation method	Equation [F.46]
Comments	Per Project Accounting Area, value for 31/12/2020

Data / Parameter	$E_{L\ ASG}^{[m]}$
Data unit	tCO2e
Description	Cumulative emissions from activity-shifting leakage in native grassland strata at the end of the current monitoring period
Equations	[F.44], [F.45]
Source of data	Measurements in the activity-shifting leakage area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.3.3.4
Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of leakage
Calculation method	Equation [F.47]
Comments	Parameter not used

Data / Parameter	$E_{L\ ME}^{[m]}$
Data unit	tCO2e
Description	Cumulative emissions from market leakage at the end of the current monitoring period
Equations	[F.45]
Source of data	Measurements in the market leakage area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.3
Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$E_{p\ \Delta}^{[m]}$
Data unit	tCO2e
Description	Change in project emissions
Equations	[F.53]
Source of data	Monitoring records for Forest Fire, Burning, logging, wood products, and natural disturbance events
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.2
Frequency of monitoring/recording	Every monitoring period

Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Equation [F.41]
Comments	

Data / Parameter	$E_{p\ \Delta BRN}^{[m]}$
Data unit	tCO2e
Description	Cumulative project emissions due to burning at the end of the current monitoring period
Equations	[F.41]
Source of data	Monitoring plots in the project
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.2.2
Frequency of monitoring/recording	Every monitoring period
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Equation [F.42]
Comments	

Data / Parameter	$E_{p\ \Delta LS}^{[m]}$
Data unit	tCO2e
Description	Cumulative project emissions due to livestock grazing within the project area.

Equations	[F.43]
Source of data	Monitoring in the project area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.2.4
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	<table><tr><th colspan="2">PAA</th></tr><tr><td>1</td><td>0</td></tr><tr><td>2</td><td>33,847.4</td></tr><tr><td>3</td><td>3,590.1</td></tr><tr><td>Total</td><td>37,437.5</td></tr></table>
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of project emissions
Calculation method	Equation [F.43]
Comments	Assumed value for 31/12/2020

Data / Parameter	$E_{p\ \Delta SF}^{[m]}$
Data unit	tCO2e
Description	Cumulative project emissions due to the use of synthetic fertilizers within the project area.
Equations	[F.53]
Source of data	Monitoring in the project area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.2.5
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)

Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$E_U^{[m]}$
Data unit	tCO2e
Description	Cumulative confidence deduction at the end of the current monitoring period
Equations	[F.55]
Source of data	Not applicable
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.4.1.1
Frequency of monitoring/recording	Every monitoring period
Value applied	0
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of confidence deduction
Calculation method	Equation [F.57]
Comments	Per Project Accounting Area

Data / Parameter	$n_{LS}i$
Data unit	Count
Description	The number of head of livestock species / category i in the project area

Equations	[F.43]
Source of data	Monitoring in the project area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.2.4
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	

Year	PAA 1	PAA 2	PAA 3
2016	0	100,000	N/A
2017	0	70,000	N/A
2018	0	20,000	N/A
2019	0	10,000	N/A
2020	0	5,000	20,000

Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of project emissions
Calculation method	Aerial estimation
Comments	Assumed value

Data / Parameter	$P_{L\,DEG}^{[m]}$
Data unit	Proportion (unitless)
Description	Portion of leakage due to degradation in forest at the end of the current monitoring period
Equations	[F.46], [F.47], [F.48], [F.49]
Source of data	Monitoring in the leakage area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.3.2.3

Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	0.18
Monitoring equipment	See annex 3
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of project emissions
Calculation method	Field measurements
Comments	

Data / Parameter	$P_{L\,DEG}^{[m=0]}$
Data unit	Proportion (unitless)
Description	Portion of leakage due to degradation prior to first verification event
Equations	[F.48]
Source of data	Monitoring in the leakage area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.3.2.3
Frequency of monitoring/recording	First monitoring period
Value applied	0.18
Monitoring equipment	See annex 3
QA/QC procedures to be applied	Project verification
Purpose of data	Calculation of project emissions
Calculation method	Field measurements
Comments	

Data / Parameter	$P_{L\,CON\,G}^{[m=0]}$
Data unit	Proportion (unitless)

Description	Portion of leakage due to native grasslands prior to the first verification event
Equations	[F.47], [F.49]
Source of data	Monitoring in the leakage area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.3.2.4
Frequency of monitoring/recording	First monitoring period
Value applied	Not applicable
Monitoring equipment	Nor applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of project emissions
Calculation method	Field measurements
Comments	

Data / Parameter	$P_{L\,CON\,G}^{[m]}$
Data unit	Proportion (unitless)
Description	Portion of leakage due to native grasslands conversion at the beginning of the current monitoring period
Equations	[F.47], [F.49]
Source of data	Monitoring in the leakage area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.3.2.4
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records

Purpose of data	Calculation of project emissions
Calculation method	Field measurements
Comments	

Data / Parameter	$P_{L\,CON\,G}^{[m-1]}$
Data unit	Proportion (unitless)
Description	Portion of leakage due to native grasslands conversion at the end of the current monitoring period
Equations	[F.47], [F.49]
Source of data	Monitoring in the leakage area
Description of measurement methods and procedures to be applied	VCS Methodology VM0009, section 8.3.2.4
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of project emissions
Calculation method	Field measurements
Comments	

Data / Parameter	$P_{SL}^{[m]}$
Data unit	Proportion (unitless)
Description	Proportion of AGMT that is not merchantable and goes into slash estimated from inventory
Equations	[F.34]
Source of data	Estimated from inventory
Description of measurement methods and procedures to be	8.1.6.3

applied	
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

Data / Parameter	$t^{[i-1]}$
Data unit	Days
Description	Time from project start date to beginning of monitoring period i
Equations	[F.32], [F.33]
Source of data	Monitoring records
Description of measurement methods and procedures to be applied	Not applicable
Frequency of monitoring/recording	Prior monitoring period
Value applied	Various
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Not applicable
Purpose of data	Calculation of baseline emissions
Calculation method	Substraction
Comments	

Data / Parameter	$t^{[m]}$
Data unit	Days

Description	Time from project start date to end of current monitoring period
Equations	[F.19], [F.20], [F.24], [F.21], [F.25], [F.27], [F.28], [F.32], [F.33], [F.36], [F.37], [F.38], [F.39], [F.40]
Source of data	Monitoring records
Description of measurement methods and procedures to be applied	Not applicable
Frequency of monitoring/recording	Every monitoring period
Value applied	Various
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of baseline emissions
Calculation method	Substraction
Comments	

Data / Parameter	$t^{[m-1]}$
Data unit	Days
Description	Time from project start date to beginning of current monitoring period
Equations	[F.10], [F.36]
Source of data	Monitoring records
Description of measurement methods and procedures to be applied	Not applicable
Frequency of monitoring/recording	Prior monitoring period
Value applied	Various
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Not applicable

Purpose of data	Calculation of baseline emissions
Calculation method	Substraction
Comments	

Data / Parameter	$U_B^{[m]}$
Data unit	tCO2e
Description	Total uncertainty in proxy area carbon stock estimate
Equations	[F.57]
Source of data	Not applicable
Description of measurement methods and procedures to be applied	Not applicable
Frequency of monitoring/recording	Every monitoring period
Value applied	32.45
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of confidence deduction
Calculation method	Equation [B.34]
Comments	Per Project Accounting Area

Data / Parameter	$U_{EM}^{[m]}$
Data unit	tCO2e
Description	Total uncertainty in Baseline Emissions Models for the Project Accounting Areas
Equations	[F.57]
Source of data	Not applicable
Description of measurement methods and procedures to be applied	Not applicable

Frequency of monitoring/recording	Every monitoring period
Value applied	PAA 1 — 0.09938 2 — 0.08182 3 — 0.08182
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of confidence deduction
Calculation method	Equation [F.14]
Comments	

Data / Parameter	$U_P^{[m]}$
Data unit	tCO2e
Description	Total uncertainty in Project Accounting Areas carbon stock estimate
Equations	[F.57]
Source of data	Not applicable
Description of measurement methods and procedures to be applied	Not applicable
Frequency of monitoring/recording	Every monitoring period
Value applied	33.81
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of confidence deduction
Calculation method	Equation [B.34]
Comments	

Data / Parameter	$wc_{Pi}^{[m=0]}$
Data unit	tCO2e
Description	Weighted average carbon stocks for biomass or SOC in the project for the set of selected strata for the Project Accounting Areas
Equations	[F.29] [F.24]
Source of data	Inventory
Description of measurement methods and procedures to be applied	Inventory, GIS
Frequency of monitoring/recording	Every monitoring period
Value applied	PAA: 1 → 652.7; 2 → 179.98; 3 → 179.98
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Calculation of project emissions
Calculation method	Equation [B.35]
Comments	

Data / Parameter	$x^{[m]}$
Data unit	Varies
Description	Covariate values
Equations	[F.19], [F.20], [F.21], [F.24], [F.25], [F.27], [F.28], [F.37], [F.38], [F.39], [F.40]
Source of data	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery

Description of measurement methods and procedures to be applied	Not applicable
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value applied	Not applicable
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Review of monitoring records
Purpose of data	Not applicable
Calculation method	Not applicable
Comments	Parameter not used

3.3.3 Monitoring Plan

The monitoring plan consists of an inventory for carbon stocks through sampling, following the guidelines described in Appendix B of the methodology VM0009. The complete monitoring plan is described in Annex 3.

The organizational structure was the following:



Figure 79:Organizational structure for the Climate monitoring plan

The responsibilities are divided as follows:

South Pole AFOLU team develops the monitoring plan as a first step; then oversees and provide technical support for the sampling process. Once the sampling process is carried out, South Pole AFOLU team of will review and use the results to calculate the emissions reductions.

African Parks conservation manager reviews the monitoring plan submitted by South Pole, providing feedback prior to the field sampling, if needed, and adjusting the documentation for the local context, if required. Later, African Parks conservation manager is also in charge of contracting a third party with the relevant expertise to carry out the first sampling procedure and to train African Parks field personnel for supporting the process and, in case is needed, to perform resampling processes.

African Parks conservation manager also acts as interface between South Pole and the third party of experts if needed. The contracted third party follows the monitoring plan and implements procedures that ensure independent verification and are in charge of providing the information to the conservation manager in African Parks for analyzing and processing the information.

The responsibilities of the different team members have been defined as follows:

The crew leader (from the third party of experts) is responsible for preparing, managing, and overviewing the fieldwork and data collection. The crew leader is also responsible for finding the location of plots, for logistics, and ensuring that forms are properly filled in and collected data are reliable. They must organize meetings after fieldwork to sum up daily activities and implement field worker safety measures. The remaining crew team is responsible for fieldwork.

African Parks conservation manager ensures the team have the resources and logistics to collect relevant data. He is also in charge of overseeing the security of the team on the ground, and the monitoring of the work during and after data collection period.

Training of the African Parks field employees on the survey methodology was undertaken at the beginning of the fieldwork through theoretical and practical sessions, during which techniques of different forest and tree measurements, tally of data, and techniques were reviewed.

South Pole is responsible for reviewing, analyzing and using the field results to calculate the emissions reductions.

In regard to the methods for measuring and recording, Section 2 of Annex 3 provides all the details. The sample size was calculated using the area per stratum following the proportional allocation equation. The location of the plots for the PAAs was determined as follows:

- the selection of priority categories was initially defined taking into account the differences in the project area and the accessibility conditions; these categories are projected to be monitored during the period 2020–2024
- according to the prioritised category, areas within 4 km radius were drawn
- within each of these areas, the carbon plots were located with the criteria of being at least 250 m within the radius of with the same stratum in the case of forest areas, and a radius of 100 m for grassland areas
- a minimum distance of 3 km between plots of the same stratum and 1 km between plots of different stratum was determined

The location of the proxy area plots follows the same approach as that of the PAAs. Priority categories were initially defined, taking into account the differences in the project area and the accessibility conditions, these categories will be monitored during the period 2020–2024. As per the sampling procedures on the leakage, cluster areas subject to potential leakage were chosen in three priority categories, and several leakage plots will be assessed in each cluster. These variables will be monitored at least every five years, taking into account the required monitored frequency established in the methodology. The complete monitoring plan described is in Annex 3.

After the monitoring process is done and the field team brings back the measured data, the original form with the field information is stored in the conservation manager's office, after that it is digitised for aggregating and collating it and stored on the cloud. Once the information is digitised the QA/QC procedures of biomass data and carbon stocks changes is managed by the conservation manager and South Pole AFOLU team.

The procedure for the calculation of biomass carbon stock changes will include:

- cross-checking the information from the original form and the database;

- confirming there are no non-realistic values measured;
- reviewing with the monitoring crew leader in case there are non-realistic values;
- cross-checking descriptions of validation and verification parameters;
- confirming that bibliographical data references are properly cited in internal documentation;
- checking that units are correctly carried through from the beginning to end of the calculations;
- checking that the conversion factors are correct;
- checking that temporal and spatial adjustment factors are used correctly;
- checking that there is detailed internal documentation to support the estimates and to enable reproduction of the emission reduction estimates;
- confirming that estimates are reported for all years;
- checking that known data gaps that may result in incomplete emissions estimates are documented and treated conservatively; and
- comparing current estimates to previous ones, if available. If there are significant changes or departures from expected trends, the estimates should be re-checked, and the differences explained.

In the case of non-conformances with the validated monitoring plan the following procedure shall be followed:

- The monitoring crew informs to the relevant African Parks manager of the situation detailing the non-conformance with the validated plan;
- African Parks manager and South Pole expert review together the situation and evaluate the necessary changes to apply for conformance or a deviation of the validated plan;
- If the non-conformance requires a deviation of the plan such deviation will be informed in the following monitoring report and its justification will be added;
- Once there is an assessment of the situation and a justification is reasonable, the monitoring crews can continue with the monitoring process.

3.3.4 Dissemination of Monitoring Plan and Results (CL4.2)

Every monitoring period the relevant documentation related to the results of the monitoring and verification of this project will be published on the VERRA platform. Summaries of these monitoring reports will be translated into local languages and disseminated amongst communities and staff were relevant and/or appropriate. Project activities and their results will also be discussed at regular community consultation meetings. This will ensure that even with the high levels of illiteracy in the region, monitoring information will be made available to the local communities living on the periphery of the park.

3.4 Optional Criterion: Climate Change Adaptation Benefits

3.4.1 Regional Climate Change Scenarios (GL1.1)

Africa in general is highly vulnerable to the impacts of climate change. The situations that are particularly important, according to the Intergovernmental Panel on Climate Change (IPCC), are:[121]

- water resources
- food security at risk from declines in agricultural production and an uncertain climate
- natural resources productivity at risk and biodiversity that might be irreversibly lost

[121] https://www.ipcc.ch/site/assets/uploads/2018/03/wg2TARchap10.pdf

- vector- and water-borne diseases, especially in areas with inadequate health infrastructure
- exacerbation of desertification by changes in rainfall and intensified land-use

Concerning CAR, the World Bank Group reports the following climate projections for the variables of precipitation and temperature (Table 42).

Table 42: Climate change projections in CAR[122]

Climatic variable	Projection
Temperature	• Temperature projections for the Central African Republic show an increase between 0.7-3°C by 2080 for low, medium, and high emissions scenarios. • Mean annual temperature projections indicate increases over CAR, with RCP8.5 projections indicating over a 2°C increase by mid-21st century and an increase greater than 4°C by late 21st century.
Precipitation	• Ensemble mean projections for total annual precipitation indicate increases in rainfall by 2046-2065 and 2081-2100 for low, medium, and high emissions scenarios. The largest projected change in rainfall is in the southern part of the country along its border with Southeast Cameroon, the Congo, and the Democratic Republic of the Congo. • RCP8.5 annual average precipitation projections point toward increases in precipitation for middle and late 21st century over CAR, whereas RCP2.6 projections indicate little or no change for these timescales. • Rainfall is projected to become more erratic, in terms of duration, intensity, and frequency.

- Climate scenarios

The projected changes for the CAR for both monthly temperature (2020–2099) and annual mean drought index (2020–2099)[123] were obtained for two contrast scenarios. The first one is a low-emission scenario (RCP 2.6) where is required that CO_2 emissions start declining by 2020 and go to zero by 2100, and the second one is a high-emission scenario (RCP 8.5) where emissions continue to rise throughout the current century.

The results for a low scenario in the CAR (Figure 80 and Figure 81) shows less variable conditions compared to the historic levels. On the other hand, the RCP 8.5 scenario leads to a more drought conditions in the country (Figure 82 and Figure 83) bringing negative consequences on socioeconomic and biodiversity aspects.

[122] https://climateknowledgeportal.worldbank.org/country/central-african-republic/climate-data-historical

[123] It incorporates both precipitation input variations as well as changes in the loss of water through evapotranspiration. It is widely used today as a global measure for drought monitoring over various cumulative time intervals. Positive values indicate positive water balance (or wet) conditions and negative values indicate negative water balance (or dry) conditions.

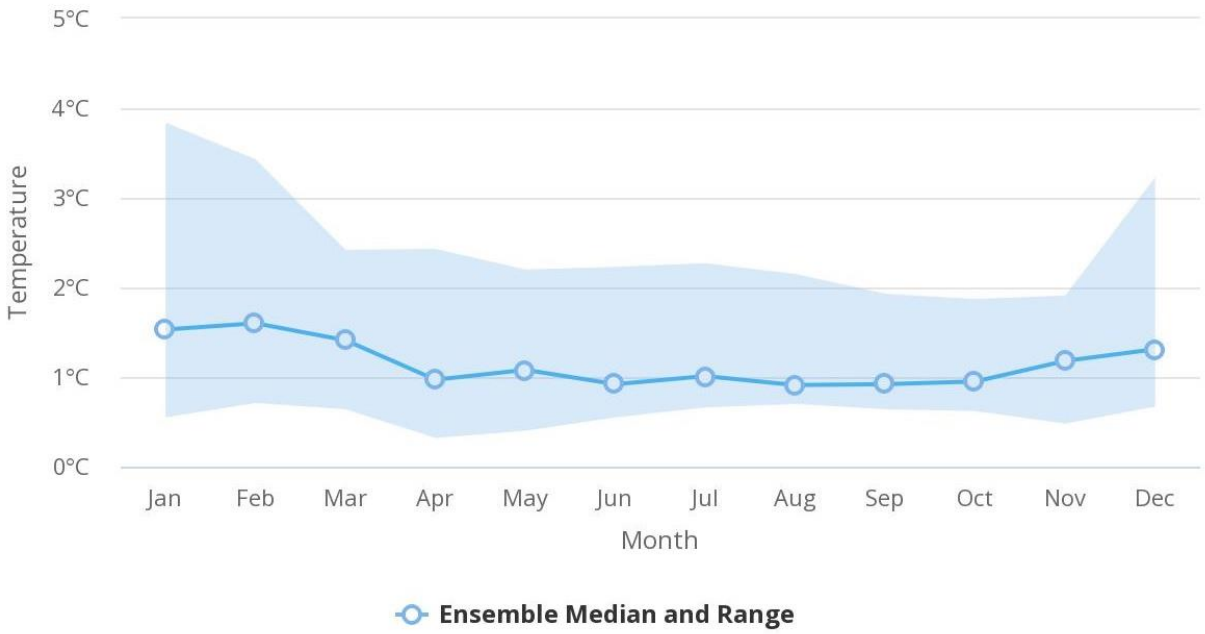


Figure 80: Projected change in monthly temperature for the CAR for 2020-2099 (low emission scenario)

Source: World Bank Group - Climate Change Knowledge Portal (or CCKP)

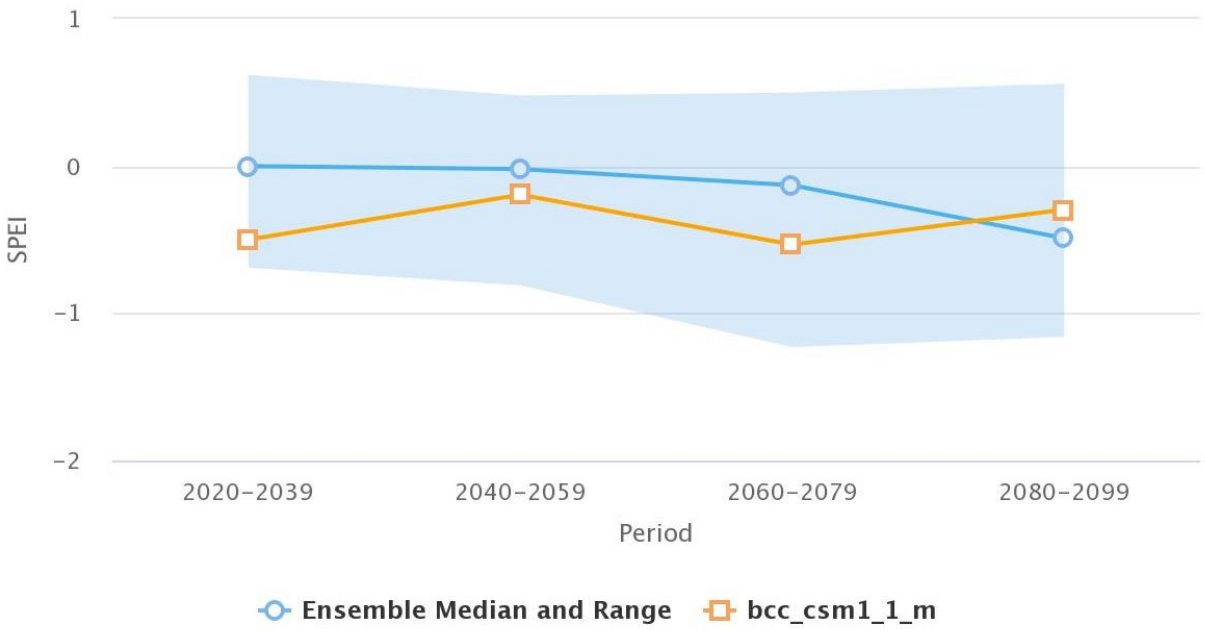


Figure 81: Projected change in annual mean drought index for the CAR for 2020-2099 (low emission scenario)

Source: World Bank Group - Climate Change Knowledge Portal (or CCKP)

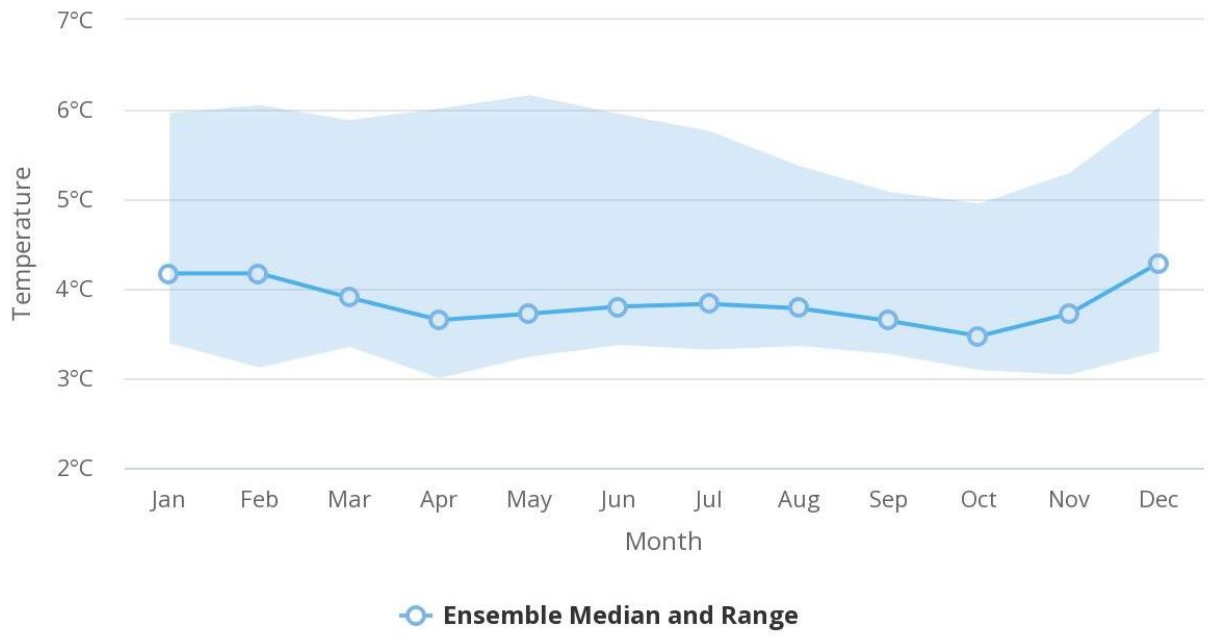


Figure 82: Projected change in monthly temperature for the CAR for 2020-2099 (high emission scenario)

Source: World Bank Group - Climate Change Knowledge Portal (or CCKP)

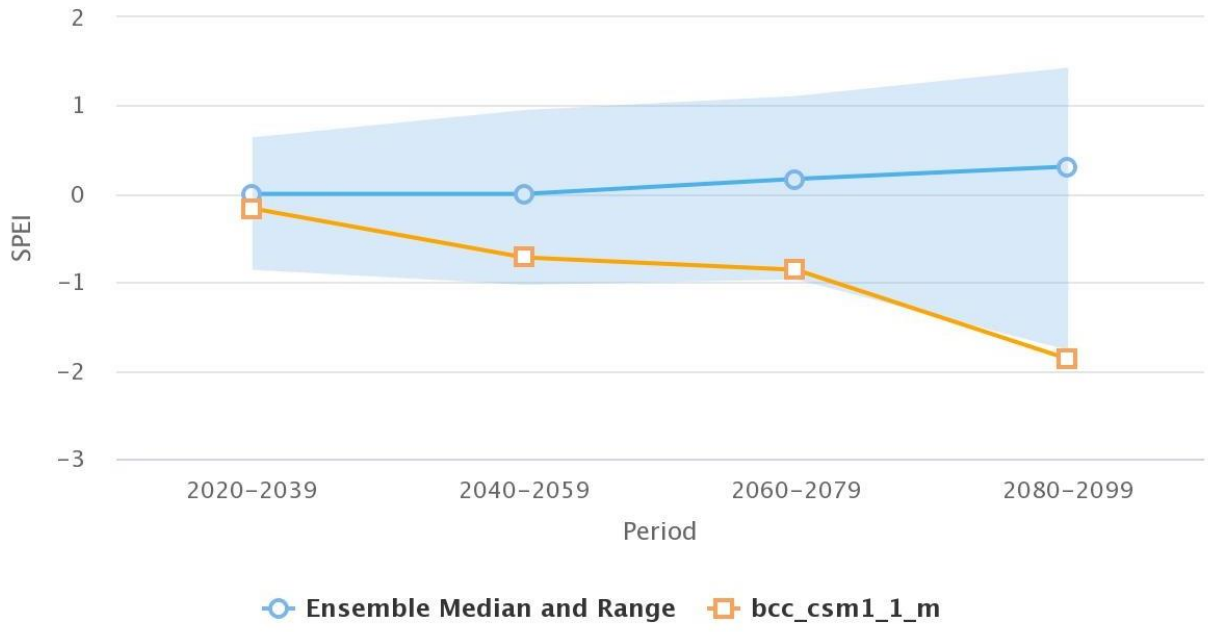


Figure 83: Projected change in annual mean drought index for the CAR for 2020-2099 (high emission scenario)

Source: World Bank Group - Climate Change Knowledge Portal (or CCKP)

3.4.2 Climate Change Impacts (GL1.2)

In the CAR the vulnerability to changes in the climate and a lack of ability to adapt to their adverse impacts represent serious threats to the management of ecosystems and other agricultural and renewable natural resources, social cohesion, stability and sustainable development.[124] The main impacts in the project zone regarding social and biodiversity aspects are listed below:

Community wellbeing

According to Sonwa et al. (2014), at a local scale in Central Africa, forest communities suffer from the effects of climate change in the absence of well-planned policy and institutional frameworks, and communities appear unprepared to cope with climate change as shown by the vulnerability studies undertaken under CoFCCA (Congo Basin Forests and Climate Change Adaptation). By using Participatory Action Research (PAR), the CoFCCA project initiated pilot adaptation responses in the DRC, the CAR, and Cameroon.

Climate change will further exacerbate development challenges in CAR, impacting agricultural production, water availability and food security significantly due to the changes in precipitation regime and alteration in temperature, and will weaken the ability of the environment to provide vital resources and services.

Many pastoral communities include transnational migrants in search of new seasonal grazing. In drought situations, such pastoralists may come into conflict with settled agrarian systems. Moreover, climate change further North will drive pastoralists increasingly towards the Project Area

Biodiversity

Climate change in Central Africa is expected to lead to a higher dominance of pioneers in forest structure. Although pioneers are mostly deciduous and therefore well adapted to seasonal drought, the increase in their dominance may have a negative effect on ecosystem resistance to water stress because pioneers that allocate their resources to fast growth are less resistant to water stress (Claeys et al., 2019).

In addition to plant biodiversity, in conserved areas like the CCA which are home to megafauna, climate change could result in additional pressure by both altering ecosystem dynamics and encouraging human encroachment into these areas. The climate impacts in the region could reduce the physical extent of habitats that are currently suitable, or shift the ideal distribution of specific species to areas outside of the CCA.[125]

3.4.3 Measures Needed and Designed for Adaptation (GL1.3)

The implementation of the REDD project will create positive net climate change impacts. The sequestration of carbon in living biomass and the avoided deforestation of natural covers which act as sinks of CO2 will contribute to the reduction of GHG emissions in the project zone.

The measures to assist communities and biodiversity to mitigate and adapt to the probable impacts of climate change are designed to avoid the loss of forest cover by fighting the main drivers according to their contribution (%) to deforestation caused.

The main measures needed in the project area are listed below:

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124 https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Central%20African%20Republic%20First/INDC_R%C3%A9publique%20Centrafricaine_EN.pdf

125 https://reliefweb.int/sites/reliefweb.int/files/resources/20180604_USAID-ATLAS_ClimateRiskProfile_CARPE.pdf

- Establish transhumant pastoralism corridors (TPCs).
- Expand the core protection area to create a robust self-regulating ecosystem.
- Sensitise pastoralists to promote sustainable use of natural resources in line with the land-use plan.
- Sensitise communities to promote the sustainable use of natural resources in line with the land-use plan.
- Develop an information network with an associated incentive scheme to act as an early warning system and information sharing platform.
- Identify key income generating opportunities away from natural resource depletion.
- Establish a good relationship with the communities to enhance local skills training, welfare development, self-sustaining business development.
- Support regional education, healthcare facilities and sports competitions.
- Monitor wildlife and human activities to optimise project activities and strategies.
- Review and amend the zoning in relation to key species and habitats for effective management and appropriate protection.
- Recruit and train a sufficient number of rangers, eco-monitors, eco-transhumance officers and control room operators that can implement the project activities.
- Adequately equip and train law enforcement teams.
- Develop a fit-for-purpose vehicle and aircraft fleet for operations, with adequate maintenance facilities and maintenance plans.
- Provide sufficient air support to ensure law enforcement, fire management and control and community activities.
- Strengthen coordination with local and national government and civilian agencies/committees and organise regular visits to the CCA for relevant ministers and senior officials from Bangui, as well as local authorities, stakeholders and communities.
- Directly engage with two key ministries in Chinko operations.
- Ensure that a positive, shareable, messaging reaches the national audience to promote awareness and constituency for conservation.

4 COMMUNITY

4.1 Without-Project Community Scenario

4.1.1 Descriptions of Communities at Project Start (CM1.1)

At present, the CCA is uninhabited and only has limited road access and minor infrastructure development. There are, however, local communities and other stakeholders living in the surrounding landscape that need to be considered within the larger context of the project.

The region in which the project is located is characterised by high levels of poverty, a lack of employment opportunities and skills amongst the local communities, and a lack of access to education and healthcare. According to the United Nations Population Fund, in the year 2022 the average life expectancy in the CAR for men is 68 years, and for women, 72 years.[126] The literacy rate in the country is 37.4% (with men having a literacy rate of 49.5% and women 25.8%). Moreover, 63% percent of the population live on or under US$ 1.25 per day.

[126] https://www.unfpa.org/data/CF

The local communities living on the periphery of the CCA are mainly found to the south and west of the CCA. These communities dependent on subsistence agriculture activities as well as hunting and the use of other forest resources for consumption or as a source of income. The local communities are predominantly composed of Bantu populations, although some Fulani pastoralists do live in the same villages and have become sedentary. The Bantu population typically live in traditional houses made of clay or fired brick, with mud floors and roofs of straw or palm leaves. Some houses have corrugated iron sheeting roofs. The Fulani typically live in small mud-floored huts made of straw (Ondoua Ondoua, G. et al 2017).

The many years of conflict in the country (and in the eastern parts of CAR in particular) have left the majority of the population illiterate and lacking in skills, education and employment opportunities. There are very few schools in the communities around the project area. The Bakouma Township, for example, has two schools. There is one school in Zemio and another in Lengo. The Rafaï Township has 11 schools with five permanent teachers (Ondoua Ondoua, G. et al 2017). The middle schools in Rafaï and Bakouma are managed by the Catholic Church and are not free of charge. Schools in the area are confronted with a persistent lack of educational materials and some teachers have over 150 pupils to supervise. The closest secondary school in the area is in Bangassou, which is several days travel for some of the more inaccessible villages. Most Fulani children do not attend formal schools because of their semi-nomadic lifestyle and their education is usually limited to the Koranic school. Similarly, there is a lack of access to healthcare in the communities on the periphery of the project. Most people requiring healthcare must travel to clinics in Bakouma, Bangassou or Rafaï.

As stated, poverty is prevalent in the communities around the CCA and there are few economic opportunities in the area. As a result, the local communities are greatly dependent on extraction of natural resources. These communities make their living through small-scale subsistence agriculture, livestock rearing, hunting (both legal and illegal), fishing, harvesting of NTFPs, artisanal mining, small trade and temporary employment. Hunting/poaching is by far the most important source of income for households (59.5%), four times the income generated by agriculture (15.1%) and six times the income earned from fishing (9.7%). See Table 43 below for more detail on the average annual income per household derived from different livelihood activities.

Table 43: Activities and percentage of average annual income

Activity	Percentage of average annual income
Hunting	59.5
Agriculture	15.1
Fishing	9.7
Livestock	9.1
Temporary work	5.8
Small trade	0.4
NTFPs	0.3

Handicrafts	0.1
Mining	0

Source: (Ondoua Ondoua, G. et al 2017).

There is another group of stakeholders in the region in which the project is located. These are transhumant pastoralists known locally as Mbororo that come mainly from the Darfur region of Sudan. The Mbororo have only recently, in the last two decades, begun driving their cattle deeper into the CAR and the CCA. This has mainly been as a result of factors related to desertification, violence in neighbouring countries such as South Sudan and improvements in and accessibility to veterinary medicine that allows the cattle to survive in more humid climate.

The Mbororo walk long distances from the Sahel regions of Chad and Sudan in the north, with their cattle, camping under tarps between wood poles and trading with villages along the way before returning at the end of the grazing season. Some travel with their families while others are employed by wealthy cattle owners to look after their cattle. In many cases these pastoralists are heavily armed. Groups selling supplies such as veterinary drugs also often accompany the pastoralists during their seasonal migration using donkeys to carry their supplies. The Mbororo's main economic activity is cattle rearing but they also practice poaching for bushmeat and ivory and harvest NTFPs from the landscape. For more information on the potential impacts of the project on this stakeholder group see Section 4.3.

4.1.2 Interactions between Communities and Community Groups (CM1.1)

A number of armed groups have been identified as operating in the larger geographic landscape surrounding the CCA. These groups include the Lord's Resistance Army, the Séléka and ex-Séléka, amongst others. Armed groups engage in fighting in the areas surrounding the CCA and this affects the local communities as well as project staff and their families. For example, in 2017, 380 Internally Displaced People (IDP), mainly women and children, fled into the CCA for safety. After months of being provided with safety, food, water, shelter, healthcare and even employment, in June 2018 they voluntarily relocated back to their village.

There is also persistent and widespread conflict between transhumance herders and the local communities in the region. The enrolment of vulnerable young men into armed groups, the lack of traditional agro-pastoralist mediation structures and the annual migration of pastoralists into the CAR contributes to this conflict. This conflict often leads to resentment and violence amongst the groups. Local communities also suspect the Mbororo of having links to armed groups, and of supporting poachers and illegal wildlife traffickers. Some pastoralists are also exploited by armed groups to procure supplies from local communities.

4.1.3 High Conservation Values (CM1.2)

The communities living on the periphery of the CCA have a strong dependence on hunting and other forest resources for consumption and income. These activities are illegal in the project area and so the buffer areas adjacent to the project area have a high conservation value. This buffer zone provides critical ecosystem services and is fundamental to the livelihoods of the local communities.

High Conservation Value	Buffer/Transition zone

Qualifying Attribute	Hunting (small-scale, both legal and illegal) is an important activity for local communities around the project area. Local people hunt in the savannas and forests throughout the year, but most intensively during the rainy season. Bushmeat from hunting is either consumed within the household or sold at village markets and then often sold on at bigger regional markets. Wildlife by-products, such as horns and skins, are also sold or used for ceremonial purposes. Other NTFPs also provide resources for consumption, medicine or as a source of income.
Focal Area	Area of influence adjacent to the core protected area

High Conservation Value	Chinko and Mbari Rivers
Qualifying Attribute	All adjacent communities (approximately 250,000 people) benefit from ecosystem services provided by the CCA. A constant supply of freshwater (even during the dry season) is supplied by major rivers like Mbari, Chinko and Mbomou which are in a pristine condition. The ecosystem services provided by the CCA also ensures high water quality with low level of pollutants, parasites or germs due to the species rich aquatic community. A high number of small freshwater reservoirs (resulting from the natural vegetation that protects the soil from heavy rainfalls during the rainy season as well as wind and sun in the dry season) allow water to enter the soil and remain locally available even in the absence of rainfalls. Fishing is essential to local communities around Chinko, providing an alternative to meat as a source of protein. Many local people fish in the riverheads during the long dry season, when fish are most abundant, and much of the catch is consumed by the family. A significant proportion of annual income comes from the sale of fish. Moreover, it is likely that the CCA contributes to fishstock downstream by creating a refuge for fish to breed.
Focal Area	Western and eastern boundaries of CCA

4.1.4 Without-Project Scenario: Community (CM1.3)

As previously stated, the CCA is uninhabited. There are, however, a number of factors that impact the well-being of communities and community groups living on the periphery of the CCA. These include insecurity in the region, persistent conflict between transhumant pastoralists and local agricultural communities, lack of education and employment opportunities, and poor health care. Without the project these factors will continue to have negative impacts on the well-being of communities and community groups in the region and are likely to start occurring within the project area.

The insecurity and the persistent threat of armed groups on the project boundaries and surrounding villages and towns are likely to continue and without the project's law enforcement activities the negative impacts of these activities will continue to be felt by the local communities. Without the project it is also likely that these armed groups will expand their area of operation into the CCA.

Without the project the persistent conflict between transhumance herders and local agricultural communities is also likely to continue. In fact, it is likely that conflict over land and other resources between farmers and cattle herders in the CAR will increase in the future as a result of the increased cross-border migration from Chad and Sudan to find new pastureland as a result of the desertification in the areas north of the CCA. The increased availability of veterinary drugs will further allow these humid regions to become viable migration routes for transhumant pastoralists crossing into the CAR from Chad and Sudan.

The lack of education and exposure to violence in the region has resulted in a challenging human resource context with illiteracy and negative social pressures a common feature in local communities. Without the project it is likely that number of in armed groups, poachers, illegal wildlife traders and cross border pastoralists will increase resulting in instability and conflict in the region, further reducing the access to and quality of education, as well as reducing the opportunity of employment in the region. This is likely to further reduce literacy rates and increase negative social pressures amongst local communities.

Without the project, local communities will continue to rely on unsustainable agricultural and hunting practices and the transhumant pastoralists will continue degrading the landscape through unsustainable grazing practices and fire management. Deforestation will continue, with subsequent loss of biodiversity, further eroding the ability of the ecosystem to provide benefits to communities.

4.2 Net Positive Community Impacts

4.2.1 Expected Community Impacts (CM2.1)

By improving the lives and livelihoods of local communities the project will ensure that the project area is protected in the long term and that these critical ecosystem services are maintained.

It is expected that all adjacent communities will benefit from the CCA. This means approximately 250,000 people will indirectly benefit from the project activities.[127] Improved livelihoods for these communities are expected in at least three levels. 1) Improved security (fewer armed groups and uncontrolled movements), 2) Preservation of wildlife (mammals, birds, fish, molluscs) that serve as an important source of nutrition for local populations. 3) Diverse ecosystem services such as constant supply of freshwater, protection from erosion, high air quality, amongst others. Additionally, improvements in infrastructure (e.g., public roads and along the corridors) will impact market access for communities positively

The existing agreement with the government is expected to protect 52,100 km^2 of 52,817 km^2 of the Chinko drainage system (98,6%). Furthermore, the source and the eastern headwaters of the Mbari River as well as three important tributaries of the Kotto River are within the project zone. The rivers in Eastern CAR have their source at low elevation (<1'400 m.a.s.l) within marginal topographic features. Therefore, the permanent water flow of major rivers significantly depends on natural vegetation and functional ecosystems that maximize influx, stocking capacity and resilience of ground water. Any alteration of the natural

[127] This is the estimated population of the prefectures of Mbomou and Haute Koto according to socio-economical profiles elaborated in 2008 and 2009 respectively. It is likely that all adjacent communities will be indirectly impacted by the project activities. See Supporting information: [1.Summary/Census]

vegetation by human activities will most likely reduce the influx, stocking capacity and resilience of ground water and therefore significantly negatively affect the balance of water discharge of main rivers in Eastern CAR.

The rivers Chinko, Mbari and Kotto are highly seasonal with average peak discharge during the rainy season up to 20x bigger than minimum average discharge in dry season. It is very likely that alteration of the natural vegetation will cause destructive flooding events downstream during the rainy season and will lead to minimal discharge and likely complete dry up of rivers during peak dry season in February, March and April. Violent flooding events and the lack of freshwater during several months in a year would negatively affect the (drink-) water supply of remote local communities fully dependent on natural resources as well as population centres like Rafaï, Bangassou and Bria.

Important economic activities like fishery and agriculture would be affected by devastating floods and dry riverbeds what would affect most people and the backbone of the regional economy with long lasting negative impacts on local communities. The active conservation of species rich communities and resilient functional ecosystems in the project zone allow the maintenance of fish stocks and large freshwater oyster banks that seem to significantly increase water quality during the dry season and most likely reduces the load of pathogens and microbes in surface water used by local communities.[128] [129] Uncontrolled harvest of oysters, the use of destructive fishing methods and the pollution of waters with sediments and toxins for artisanal mining and fishing all negatively affects healthy oyster banks and fish stocks and leads to deterioration of water quality especially during the dry season when river water and nearby ground water becomes the main water resource of the local communities.[130]

The project also expects to directly impact approximately 2,000 local community members (around 500 women) from 35 different communities in a positive way.[131] African Parks has consulted extensively with the local communities and through a participatory approach have identified several activities that will have a positive impact on the lives and livelihoods of local communities. The project activities will not restrict any legal productive activities that local communities rely on within the project area, thus ensuring that the project does not negatively impact these communities.

The main impact areas of the project activities are:

- social development through skills training;
- environmental integrity through sustainable natural resource management; and
- economic resilience through secure livelihoods.

[128] Burge, Colleen A., et al. "The use of filter-feeders to manage disease in a changing world." Integrative and Comparative Biology 56.4 (2016): 573-587.

[129] Gopko, M., et al. "Freshwater mussels (Anodonta anatina) reduce transmission of a common fish trematode (eye fluke, Diplostomum pseudospathaceum)." Parasitology 144.14 (2017): 1971-1979.

[130] Grabowski, Jonathan H., and Charles H. Peterson. "Restoring oyster reefs to recover ecosystem services." Ecosystem engineers: plants to protists 4 (2007): 281-298.

[131] This is the estimated number of people living in the communities surrounding the borders according to local experts working in African Parks, there are no current published data to validate this number yet.

The assessment of impacts resulting from the project activities is based on the Sustainable Livelihoods Framework recommended by the Social and Biodiversity Impact Assessment Manual for REDD+. The tables below describe the anticipated impacts on local communities and workers.

Community Group	Local communities
Impact(s)	Increased income generating opportunities
Type of Benefit/Cost/Risk	Positive and direct benefit
Change in Well-being	New employment opportunities Improved livelihoods Improved infrastructure

Community Group	Local communities
Impact(s)	Improved agriculture practices
Type of Benefit/Cost/Risk	Positive and direct benefit
Change in Well-being	Improved household food security and diet Increased quantity, diversification, and value of crops Improved nutritional value of crops Improved quality of life and cash from food surplus sales Improved health Reduced environmental degradation in and around the community

Community Group	Local communities
Impact(s)	Increased perception/recognition of the value of forest resources
Type of Benefit/Cost/Risk	Positive and direct benefit
Change in Well-being	Improved livelihoods Sustainable NTFP management

Community Group	Workers (including armed, rangers, unarmed echo-monitors and transhumant officers, amongst others).
Impact(s)	Improved skills through training
Type of Benefit/Cost/Risk	Positive and direct impact
Change in Well-being	Increased local capacities Improved livelihoods

Community Group	Workers (including armed, rangers, unarmed echo-monitors and transhumant officers, amongst others).
Impact(s)	Increased employment opportunities for locals
Type of Benefit/Cost/Risk	Positive and direct impact
Change in Well-being	New employment opportunities Improved livelihoods

4.2.2 Negative Community Impact Mitigation (CM2.2)

Community members who depend on illegal activities to support their livelihoods (i.e. poaching, illegal wildlife trade, illegal mining) may experience short-term negative impacts from project activities that seek to curb these activities. At the same time, however, the project will provide alternatives to these activities that are capable of replacing this income with sustainable business development opportunities.

In this regard, African Parks aims to assist local communities on the periphery of the CCA through different activities aimed at increasing income-generating opportunities, improving agricultural practices, skills training and supporting local education and healthcare wherever possible. Moreover, to mitigate loss of access to illegal bushmeat, areas of HCV have been identified a part of the land-use planning where sustainable hunting, agriculture and harvesting of NTFPs can be practiced by local communities sustainably. The project activities will provide education and skills training to local communities to ensure that the integrity of the HCV areas can be monitored directly by community members and that it is maintained and can continue to provide critical ecosystem services to the local communities.

As described above, there are no local communities that are anticipated to be negatively impacted by the project (apart from groups engaged in illegal activities). In the event of negative impacts, these should be reported and resolved in accordance with the grievance mechanism procedures that have been established.

Activities that have been undertaken to avoid/mitigate negative impacts on stakeholders include:

- Careful assessment of existing local conditions and stakeholder dynamics, prior to project implementation; and
- Significant stakeholder consultation prior to project implementation

The project has and will continue to train and recruit a number of eco-monitors that will maintain regular community presence and undertake regular assessments of programme activities and impacts to ensure that any potential negative impacts would be identified, reported, documented, and addressed/resolved within in a timely manner.

The project will also continuously review and amend the zoning in relation to key species and habitats for effective management and appropriate protection.

4.2.3 Net Positive Community Well-Being (CM2.3, GL1.4)

All the activities are expected to positively impact the local communities by improving employment opportunities and infrastructure, by increasing regional stability and security and by offering attractive alternatives to the unsustainable use of the natural resources.

The key objective of the project is to protect and enhance the conditions of the CCA sustainably. These positive impacts on the ecosystems translate directly into community benefits. Because local communities are heavily reliant on natural resources in the region, both for their subsistence and as a source of income, it is important that these ecosystem services are maintained and enhanced in the long term. Other positive impacts on community well-being that are expected from the project activities include: improved regional security, a reduction in conflict between local communities and transhumant pastoralist groups, and an increase in skills and employment opportunities amongst local communities. The project will also improve and assist local education, wherever possible.

See Table 44 below for more details on the anticipated net well-being impacts of the project compared with the without-project scenario.

Table 44: Positive net expected impacts of the project

Without project	With project	Net impact
The regional insecurity and the persistent threat of armed groups on local communities is likely to continue or worsen.	The project activities, particularly those focused on law enforcement will improve security in the region. In fact, this can already be observed and is well accepted amongst local communities as being directly attributable to the project.	Positive
Persistent conflict between local communities and transhumant pastoralists continues.	African Parks engages with pastoralist groups to identify suitable corridors that have a minimum impact on the biodiversity and carbon stocks within the project area, while also minimising potential conflict with local communities. This results in a reduction of conflict between local communities and the pastoralists.	Positive
Reduction in quantity and quality of natural resources near villages, particularly in terms of wildlife, fish stocks and NTFPs.	The active management of the CCA, its watersheds and the buffer zones, together with local communities, will allow community members to find more and higher quality NTFPs and hunting game in close proximity of the village for an efficient harvest that allows for sustainable practices.	Positive

The lack of recognition of the value of forest resources and their associated ecosystem services will continue amongst local communities. This will ultimately lead to deforestation, degradation and a loss of biodiversity in the region.	Through community engagement and education, the project will develop a constituency for conservation amongst local communities, ensuring the sustainable management of forest resources in the long-term. Forest ecosystems will continue to provide benefits to communities.	Positive
Lack of income-generating opportunities, employment opportunities and skills will continue to negatively impact local communities.	The project provides employment and skills training to local community members, thereby improving living conditions. The project will also identify and implement a number of infrastructure project and income-generating opportunities such as eco-tourism, which will further improve the lives and livelihoods of local communities.	Positive

4.2.4 High Conservation Values Protected (CM2.4)

The project will not have negative impacts on HCVs important to community well-being.

The project proponent is working with the government of CAR developing a comprehensive land-use plan for Eastern CAR with the participation of local communities that will propose the new zonation of the region. The participative land use plan will include transhumance corridors, regulated hunting areas, grazing areas and dedicated areas for agricultural activities, this will be done with full participation of the different stakeholders, the process includes continuous communication with community leaders as well as with the regions representatives to ensure that all interests are aligned.

Considering that stakeholders are an active part of the process, it is expected that areas HCVs will be managed properly avoiding negative impacts; one of the outcomes of the land use plan is to improve communities' access to natural resources. The buffer/transition zones and Chinko and Mbari rivers will have continuous monitoring processes to ensure the continuity of the high conservation values for the community.

4.3 Other Stakeholder Impacts

4.3.1 Impacts on Other Stakeholders (CM3.1)

The project activities are unlikely to have any long-term impacts on the well-being of other stakeholders. The transhumant pastoralists that enter the CAR from the Darfur region of Sudan may be impacted by the project activities because grazing is illegal in the project area and the project aims to enforce the national laws in this regard. This impact will be short term as the project will establish corridors (in which the pastoralists will be able to graze their cattle) as well as provide infrastructure, access to services and knowledge for these stakeholders to ensure that the project area is protected, and pastures are managed in a sustainable way over the long term, avoiding desertification.

4.3.2 Mitigation of Negative Impacts on Other Stakeholders (CM3.2)

As stated in Section 4.3.1, the project will establish transhumant pastoralist corridors in which the herders are able to practice sustainable grazing. African Parks will also train a sufficient number of eco-transhumance officers who will carry out sensitisation activities with the transhumant pastoralists. These eco-transhumance officers will maintain a regular presence in the area and undertake regular assessments of programme activities and impacts to ensure that any potential negative impacts are identified, reported, documented, and addressed/resolved within in a timely manner.

4.3.3 Net Impacts on Other Stakeholders (CM3.3)

No net negative impacts on other stakeholders are anticipated. The project activities are designed to ensure that transhumant pastoralists that currently practice illegal grazing in the project area will be provided with improved access to sustainably managed pasture. These corridors will result in the integrity of ecosystem services being improved. The forest understory and barren ground will recover to perennial grasslands. Hydrology and microclimate will improve. This will ensure levels of regeneration that will support the carrying capacity of cattle in the future.

4.4 Community Impact Monitoring

4.4.1 Community Monitoring Plan (CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)

As previously stated in section 2.1.11, before AP signed a mandate to manage the CCA, transhumant pastoralists were driving their livestock deeper into the CCA which was resulting in large scale degradation and deforestation. The first objective of the project has been to ensure that the CCA is well protected and managed in a comprehensive way. By improving management, governance and technical capacities, the project has been able to effectively manage and enforce the national laws with regards to protected areas across the entire CCA. Moreover, this first objective was accomplished during a time of high national instability, insecurity and unrest, making it very difficult to reach and find communities, who were continuously under threat of armed groups

As a result of this regional instability and focus on law enforcement during its first years on site, most of the project impacts have been originally on biodiversity and climate. However, AP understands the need to build a strong constituency for conservation amongst local community members and has been engaging with communities through a variety of sensitization activities and other ad hoc assistance wherever possible. These community-based activities will continue to be a major focus of the project moving ahead.

Regular monitoring of the project's impacts on local communities has been, and will continue to be, conducted throughout the project's lifetime. African Parks have a sufficient number of well-trained staff that engage regularly with all local communities living on the periphery of the CCA. This regular engagement will ensure that all project impacts on communities are effectively and accurately monitored.

A theory of change was developed, and measurable indicators were established, to evaluate the community impacts of the project. The long-term success of the project relies heavily on building a strong constituency for conservation amongst the local communities living on the periphery of the CCA. Activities have been developed to build this constituency for conservation through ensuring community members understand the benefits of wildlife and habitat conservation, mitigating any perceived negative impacts of the management of the protected area and improving livelihoods through the sustainable use of natural resources and skills development. All the indicators will be designed to evaluate if the project activities are contributing towards meeting these objectives. The indicators will also be developed with the SMART framework in mind. This means that the indicators should be Simple, Measurable, Achievable, Relevant

and Time-bound. The indicators will be evaluated every five years and according to the results the project will reconsider them or set new goals in relation to the community impacts.

Table 45 provides the objectives/activities of the community monitoring plan and the indicators to measure, for the first monitoring period there will be minor differences in these objectives and the monitoring report will provide such differences.

Table 45: Community monitoring plan

Activity / objectives	Stakeholder monitored	Indicator / Output	Impact(s)	Responsibility	Frequency	Reporting
Train rangers, eco-monitors, tango-officers and control rooms operators	African Parks employees	Number of rangers trained Number of eco-monitors trained Number of eco-transhumance officers trained Number of control room operators trained	Reduced poaching, increase in wildlife and comprehensive habitat management Effective ranger force established Effective and formalized management structure for eco-teams in place	African Parks	Every verification period	Every verification period
Educate communities on the benefits of wildlife/habitat conservation and the sustainable use of natural resources	Local communities	Creation of a Chinko film presenting mandate, activities and highlighting the land use plan (Sango, English and French version) Development and recording of audio content with sensitization information in Sango and Arabic languages Radio campaign is carried out regionally/nationally A billboard campaign is carried out with focus on mandate and conservation	Communities understand the benefits of wildlife/habitat conservation and the sustainable use of natural resources Reduced poaching	African Parks	Once off	Once off
Enhance local skills	Local communities	Development of an income and skills training program for workers and communities Number of training workshops on sustainable uses of natural resources Number of visits by local leaders	The perceived negative impact of protected area management is mitigated Communities understand the benefits of wildlife/habitat conservation and the sustainable use of natural resources Improved livelihoods	African Parks	Every verification period	Every verification period

Activity / objectives	Stakeholder monitored	Indicator / Output	Impact(s)	Responsibility	Frequency	Reporting
Improve agricultural practices	Local communities	Number of farmers trained in sustainable agricultural practices Number of farmers using new techniques Number of ha under improved agriculture	Improved livelihoods Improved nutrition Reduced deforestation and degradation	African Parks	Every verification period	Every verification period
Implement income generating activities	Local communities	Number of community based IGA's being implemented (farming, fishing, hunting, mining)	That the communities surrounding the CPA are supportive of Chinko and its mandate	African Parks	Every verification period	Every verification period
Expand tourism opportunities	African Parks employees	Number of potential operators	Increased revenue from tourism activities Community outreach is expanded with an emphasis on sustainable natural resource management/utilization	African Parks	Every verification period	Every verification period
Support regional education	Local communities	Number of schools/universities visited every year	The perceived negative impact of protected area management is mitigated	African Parks	Every verification period	Every verification period

4.4.2 Monitoring Plan Dissemination (CM4.3)

Every monitoring period the relevant documentation about the results of the monitoring and verification of this project will be published in the VERRA platform. Summaries of these monitoring reports will be translated into local languages and disseminated amongst communities were appropriate. Project activities and their results will also be discussed at regular community consultation meetings. This will ensure that even with the high levels of illiteracy in the region, monitoring information will be made publicly available to all local communities living on the periphery of the park.

4.5 Optional Criterion: Exceptional Community Benefits

The project does not seek to be validated at the Gold Level for exceptional community benefits.

5 BIODIVERSITY

5.1 Without-Project Biodiversity Scenario

5.1.1 Existing Conditions (B1.1)

The biodiversity described in this section corresponds to the flora and fauna that has been reported in this region. Both primary and secondary sources of information have been reviewed. The project area is made up of uninhabited Medio-Sudanian and Sudano-Guinean savannah, with patches of Congolian lowland rainforest as well as a pristine freshwater river system. Chinko's mosaic of ecosystems located at such a latitude on the African continent, means that this area is rich and unique in biodiversity.

Fauna

Central African Republic is one of the most diverse countries on the African continent, with its widely contrasting climatic range, with there being deserts in the northern parts and rainforests in the south (Blom, Yamindou, & Prins, 2004). The CCA consists of a mosaic of undisturbed wooded savanna and rainforest. The convergence of the two vastly different ecosystems creates a unique area where species and habitats overlap. Initial scientific research has documented almost 80 large mammal species (>100g), excluding species from rich groups such as smaller bats, rodents or shrews.[132] As outlined in Aebischer et al., (2017) and Aebischer et al. (2020), there are also 26 species of carnivores, including top predators such as the endangered African wild dog, the highly vulnerable Northern lion and nine different species of mongoose, along with 11 primate species, including Eastern chimpanzees, 24 even-toed ungulates, including Eastern giant eland, bongo antelope, Lelwel hartebeest, eight different species of duikers as well as five ant-eating mammals, including all four species of the African pangolin in this area. To date, more than 400 bird species have been identified as living in Chinko,[133] with 50% of these bird species not being documented at present. It is predicted that about 600 bird species are likely to be inhabiting CAR, along with 115 fish species.[134]

Mammals

Certain species that have been discovered in the Chinko landscape include chimpanzees, elephants, giant forest hogs, lions, wild dogs, hartebeests, hippopotamuses, African golden cats and lowland bongos.

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[132] Supporting information: [5. Biodiversity\Mammals over 100g]

[133] Obtained from: African Parks Annual Report 2014, available at: https://www.africanparks.org/about-us/financials-and-annual-reports

[134] Estimation based on the expertise of the biodiversity experts working in Chinko.

Endangered species: The Chinko landscape is a key location for the endangered eastern subspecies of the chimpanzee (*Pan troglodytes schweinfurthii*). Aebischer et al., (2017) estimate that 910 chimpanzees live in the project area and predicts that a further 2,700 individuals may inhabit adjacent hunting zones, which confirms that Chinko is the most important site in CAR where Eastern chimpanzees can be found, as well as other species such as the lowland bongo antelope (*Tragelaphus eurycerus)* and African forest elephants (*Loxodonta cyclotis)*. The vulnerable Eastern giant eland, which is one of Chinko's most iconic species, is also an endangered species which requires urgent intervention to ensure its survival in the future (Table 46).

Birds

To date, more than 400 bird species have been identified in Chinko.[135] Key species located in the CCA include black-bellied bustards, buzzards, guineafowl, hoopoes, hornbills, kingfishers, secretary birds, stone partridges and sunbirds.

Table 46: List of threatened or endangered species documented on the project area[136]

Common name	Specie	State of conservation
		Red List of Threatened Species – UICN[137]
African White Backed Vulture	*Gyps africanus*	CR
Hooded Vulture	*Necrosyrtes monachus*	CR
Rüppell's Vulture	*Gyps rueppelli*	CR
Slender-snouted Crocodile	*Mecistops cataphractus*	CR
African forest elephant	*Loxodonta cyclotis*	CR
African wild dog	*Lycaon pictus*	EN
Bateleur	*Terathopius ecaudatus*	EN
Eastern chimpanzee	*Pan troglodytes schweinfurthii*	EN
Giant Ground pangolin	*Smutsia gigantea*	EN
Lelwel Hartebeest	*Alcelaphus buselaphus ssp. lelwel*	EN

[135] Obtained from: African Parks Annual Report 2014, available at: https://www.africanparks.org/about-us/financials-and-annual-reports

[136] List elaborated by African Parks' biodiversity experts working in Chinko based on the evidence collected during the years of work

[137] Category consulted in January 2023.

Common name	Specie	State of conservation
		Red List of Threatened Species – UICN[137]
Martial Eagle	*Polemaetus bellicosus*	EN
Secretarybird	*Sagittarius serpentarius*	EN
White-bellied pangolin	*Phataginus tricuspis*	EN
Giant pangolin	*Smutsia gigantea*	EN
African golden cat	*Caracal aurata*	VU
African leopard	*Panthera pardus*	VU
Beaudouin's Snake-eagle	*Circaetus beaudouini*	VU
Black-bellied pangolin	*Phataginus tetradactyla*	VU
Common hippopotamus	*Hippopotamus amphibius*	VU
Eastern giant eland antelope	*Tragelaphus derbianus gigas*	VU
Ground pangolin	*Smutsia temminckii*	VU
Kob	*Kobus kob ssp. kob*	VU
Leopard	*Panthera pardus*	VU
Long-tailed pangolin	*Phataginus tetradactyla*	VU
Northern African lion	*Panthera leo leo*	VU
Northern Ground-hornbill	*Bucorvus abyssinicus*	VU
Lowland bongo antelope	*Tragelaphus eurycerus*	NT
Bay duiker	*Cephalophus dorsalis*	NT
Congo clawless otter	*Aonyx congicus*	NT
Crowned Eagle	*Stephanoaetus coronatus*	NT
Defassa Waterbuck	*Kobus ellipsiprymnus ssp. defassa*	NT
Denham's Bustard	*Neotis denhami*	NT

Common name	Specie	State of conservation
		Red List of Threatened Species – UICN[137]
Lowland Bongo antelope	*Tragelaphus eurycerus*	NT
Western yellow backed duiker	*Cephalophus silvicultor castaneus*	NT
White-bellied Duiker	*Cephalophus leucogaster*	NT
White-naped Pigeon	*Columba albinucha*	NT
Yellow-backed Duiker	*Cephalophus silvicultor*	NT

Flora

Vegetation in Chinko is determined by the vegetation zones of the northern Congolian forest-savanna mosaic and the north-eastern Congolian lowland forest (Blom et al., 2004). The CCA contains large areas of successively dense forests which are dominated by large trees and shrubs, forming a heterogeneous ecotone of pristine moist forest and open savanna woodlands (Aebischer et al., 2017).

First preliminary results from the vegetation inventories and biomass plots show that the structure of rain forests in the CCA is as complex, stratified and high as major rain forests in South America or primary forests in Borneo. This finding is remarkable given the fact that forests in Eastern CAR are mainly riverine gallery forests and relatively small and fragmented at the edge of the Congo rain forest.

Preliminary results of the REDD+ vegetation inventory done in 2020 by African Parks showed the presence of certain typical rain forest like the critically endangered Mukulungu (*Autranella congolensis*) the endangered Wenge tree (*Millettia laurentii*) and true African ebony (*Diospyros crassiflora*). These species are heavily exploited all over their range and Chinko is a valuable stronghold for major individuals and might be crucial for the long-term preservation of a diverse gene pool for this economically important tree species. Other species found are: *Afzelia Africana, Afzelia bipindensis, Khaya grandifoliola, Mitragyna stipulosa* and *Pterygota macrocarpa*, all vulnerable and *Pouteria altissima*, a conservation dependent species.

Threats to biodiversity

Hunting, poaching and the illegal wildlife trade, is the largest threat to biodiversity in this region; local people hunt in the savannas throughout the year, but tend to hunt intensively during the rainy season. The main hunting methods used are trapping with snares and hunting with nets and guns. Hunting in this region consists of small-scale legal hunting for mostly local consumption, small-scale illegal hunting (poaching) by relatively local actors and large-scale poaching for commercial purposes. The distinction between small- and large-scale poaching is usually determined by the number of animals killed and the size of the operation. When small animals are hunted for commercial gain, they will be slaughtered in huge numbers, in comparison to a few being killed for local consumption only. Large-scale hunting can also be easily identified by the size of the animals being targeted and of the type of weapons used to kill them. The bigger the animal, the more likely it is to be under threat, which means that it is going to be a protected species. Larger animals are also more likely to be highly dangerous, therefore, the stakes are that much higher. (Ondoua Ondoua, G. et al 2017).

Transhumant pastoralism also poses a threat to biodiversity in this region due to the illegal grazing that occurs. Cattle that are passing through CCA can cause extensive degradation of wildlife habitats, whether it is in terms of water quality, the transmission of diseases, outcompeting wildlife for resources as well as contributing towards poaching and illegal logging. Furthermore, pastoralism in the CAR involves burning the countryside so as to stimulate grass growth, generating degradation of the forest areas and natural grasslands. As transhumant pastoralism has become more intensified in recent years, due to severe droughts and other climatic conditions, it is highly likely that this practice will continue in the country (Ondoua Ondoua, G. et al 2017).

Even though there are no communities living inside the CCA, villages that are situated nearby pose a threat, especially concerning the practice of small-scale agriculture, which is common amongst local communities and involves clearing the forest in small areas (approximately 0.6 ha per field). This agricultural practice negatively impacts several ecological functions related to biodiversity conservation, climate regulation and water quality in the region (Ondoua Ondoua, G. et al 2017).

5.1.2 High Conservation Values (B1.2)

High Conservation Value	Chinko Conservation Area Zone
Qualifying Attribute	This area consists of the entire Sudano-Guinean savanna, with sections of the north-eastern Congolian lowland rainforest as well as the Chinko and Mbari rivers. The area comprises parts of the last continuous savannah and rainforest ecotone ecosystems in Africa (Hickisch & Aebischer, 2013) which is the habitat for several endangered species, including the African wild dog (*Lycaon pictus*), chimpanzee (*Pan troglodytes*) and the African forest elephant (*Loxodonta cyclotis)*, among others. Although, the Chinko core zone is one of only a few areas that has a fully trained rangers' team that protect the wildlife, prevent illegal poaching and incursion from cattle herds due to pastoralism.
Focal Area	Chinko Conservation Area.

High Conservation Value	Chinko and Mbari Rivers
Qualifying Attribute	Chinko's western and eastern boundaries are the Mbari and Chinko rivers, respectively. These are tributaries of the Bangui river, which later on became the Ubangi river. These rivers are important to the establishment and maintenance of the forest inside Chinko; it is imperative to understand that these are permanent rivers which also support the wildlife that depend on it for survival.
Focal Area	Western and eastern boundaries of the Chinko Conservation Area.

High Conservation Value	Threatened or endangered species
Qualifying Attribute	According to previous studies in the project area, there are almost 80 large mammal species in the region (>100g), all of them with different kind of threatened status under the IUCN categories.[138] There are 26 species of carnivores, including top predators such as the endangered African wild dog, the highly vulnerable Northern lion and nine different species of mongoose, along with 11 primate species including Eastern chimpanzees, 24 even-toed ungulates, including Eastern giant eland, bongo antelope, Lelwel hartebeest, eight different species of duikers as well as five ant-eating mammals, including all four species of the African pangolin. See table Table 46 for a detailed list of threatened or endangered species documented on the project area.
Focal Area	Chinko Conservation Area.

5.1.3 Without-project Scenario: Biodiversity (B1.3)

As previously stated, the project area is uninhabited. There are, however, a number of activities that currently take place in, and around, the area that have a direct impact on the biodiversity of the region. These activities include unsustainable hunting practices and the illegal wildlife trade, transhumant pastoralism and unsustainable agricultural practices, amongst others. Without the project, it is highly likely that these activities would continue, which would have a negative impact on the biodiversity of the project area.

The practice of pastoralism (transhumance) is common in Eastern CAR (Luizza, 2017). Pastoralism involves the strategic mobility of cattle through the landscape searching for water and grazing resources in areas of high rainfall variability. It is estimated that there are over 2 million cattle in the CAR. Moreover, in the country pastoralism involves burning the countryside in order to stimulate grass growth and allow for ease of movement, generating degradation of the forest areas and natural grasslands. In the project area, transhumant herders from Sudan and the CAR, represent the biggest challenge to the conservation and sustainability of the protected area. Pastoralism results in extensive degradation of wildlife habitats in terms of water quality, the transmission of diseases and cattle outcompeting with indigenous wildlife for resources. Transhumant pastoralists passing through the project area also practice poaching and illegal logging, which further impacts the biodiversity of the area. Transhumant pastoralism has been intensified in recent years due to severe droughts and other climatic conditions, as well as the tumultuous conflicts that are occurring in the surrounding countries (Sudan and South Sudan): it is expected that pastoralism will continue to intensify in the project area.

Without the projects unsustainable hunting practices, poaching, both on a small and commercial scale, and the illegal wildlife trade are likely to not only continue but intensify in the project area. The reason for this is because the high demand for meat and ivory by organised Sudanese poachers, and the demand for meat, fish and skin/scale by commercial poachers for exportation to the DRC. Unsustainable hunting and

[138] Supporting information: [5. Biodiversity\Mammals over 100g]

poaching will continue to take an enormous toll on tropical mammals, birds, reptiles and fish species in the project area. It is widely recognized that the loss of vertebrate populations can disrupt plant-animal interactions, threatening the integrity of natural ecosystems. Hunting can also alter the rate of pre-dispersal predation, seed dispersal, seed predation, seedling predation and herbivory. Any sort of change to these processes can have cascading effects for species composition, diversity and the structure of plant communities (Poulsen, Clark, & Palmer, 2013).

The agricultural practices of local communities living on the periphery of the project area are currently unsustainable: local farmers clear sections of the forest to plant their crops. Current agricultural practices are likely to continue and result in further degradation of the landscape. Without the project these agricultural practices will more than likely extend into the protected area, which would transform areas of the primary forest into a degraded mosaic.

Other unsustainable practices such as illegal gold mining that uses highly toxic chemicals, as well as logging, will also cause heavy erosion and micro-climate changes that would seriously affect biodiversity in the project area. Even though there are no large-scale mining or logging concessions occurring at present, the situation could change if the project was to no longer be present. Without the project the physical destruction and pollution of rivers linked to mining, logging and expansion of agriculture, will occur in the project area in the future.

5.2 Net Positive Biodiversity Impacts

5.2.1 Expected Biodiversity Changes (B2.1)

Biodiversity Element	Landscape connectivity
Estimated Change	Positive
Justification of Change	The Chinko Conservation Area in the eastern part of CAR, in the ecotone between the pristine moist forest and the open savanna woodlands, making the area one of the most diverse in the country. Here, habitats for different species are generated as they move from the savanna area into the forest area, making Chinko a central location that can provide shelter and transit zones for fauna. In addition, Chinko is surrounded by the Bangassou forest in the western part, which comprises the largest forest patch in eastern CAR (Aebischer et al., 2017), and the Zemongo Faunal Reserve in the eastern part. Moreover, the area is also connected with the eastern and western Bomu wildlife reserves in the Democratic Republic of the Congo (Figure 84).

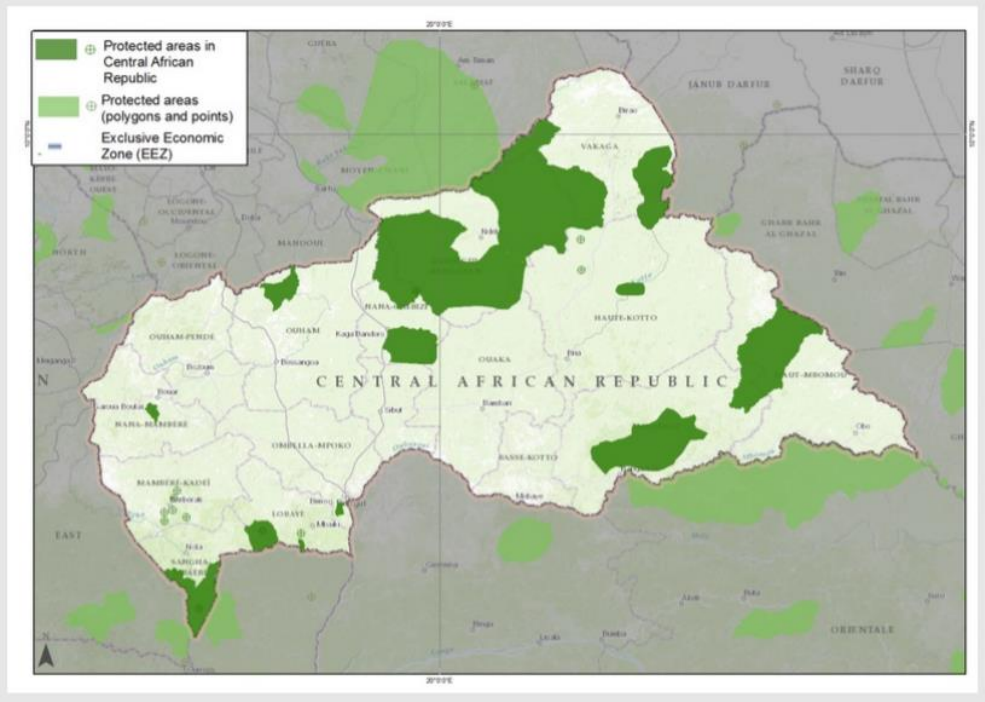


Figure 84: Protected area in the Central African Republic

Source: (BIOPAMA, 2015)

Biodiversity Element	Fauna (Threatened and endangered species)
Estimated Change	Positive
Justification of Change	The area contains several vulnerable and endangered species (Table 46), including the eastern chimpanzee (EN) (*Pan troglodytes schweinfurthii*), the African wild dog (EN) (*Lycaon pictus*), four species of pangolin present in Africa (VU), the African forest elephant (CR) (*Loxodonta cyclotis*), and big cats, including the northern African lion and the African leopard. The management of the area creates a safe place for wildlife, with them being protected by a team of rangers that patrol the area against illegal poaching and attempt to prevent conflicts with any of the pastoralism activities.

5.2.2 Mitigation Measures (B2.3)

Strategic Lines	Main activities to be implemented
Reduce poaching	• Core protection area expanded gradually. • Recruit, train and equip a sufficient number of Chinko rangers, eco-monitors, camp security guards and transhumance sensitisation officers.

Strategic Lines	Main activities to be implemented
	• Ensure that local laws with appropriate penalties are implemented at government level to ensure effective prosecutions and sentences. • Further develop an informant network with an associated incentive scheme which will act as an Early Warning System and information sharing platform.
Fire Management	• Keep fires as small as possible and burn sequentially. The wildlife and vegetation in the savanna of Eastern CAR are used to fires, which means that no special measurements need to be implemented.
Transhumance sensitisation	• Recruit sensitisation officers. • Establish Land Use Plan, including all required wildlife corridors and exclusion zones (inclusion of transhumance strategy).
Natural resources exploitation	• Establish buffer areas for sustainable fishing, hunting and the use of non-timber products.

5.2.3 Net Positive Biodiversity Impacts (B2.2, GL1.4)

Chinko/Mbari drainage basin is one of very few places where conditions for vegetation, habitats and ecological and evolutionary processes in pristine areas that have minimal human influence can take place (Hickisch & Aebischer, 2013).

However, the low human influence near Chinko can still impact the ecosystems and biodiversity if it is not controlled. As mentioned previously, the project area is threatened by transhumant pastoralism, unsustainable hunting practices and agriculture, which will undoubtedly continue in the future without the project.

With project activities already planned, negative effects from poaching or natural resources exploitation will be kept out of the project area, which will provide better conditions for biodiversity in terms of refuge and provision of ecosystem services such as food and shelter. In addition, management activities and sensitisation regarding the transhumant pastoralism practice will reduce the impact on the natural ecosystems and fauna, favouring the protection of vulnerable and endangered species.

Therefore, the net impact on biodiversity will be positive because of the protection of the ecosystems in the project area, as well as the conservation of vulnerable species which have their habitats in the park. Moreover, the management and sensitisation of transhumant pastoralism practice will improve conditions in the park, with specific zones for the movement of herds, reducing the impact on fauna from poaching and habitat degradation.

5.2.4 High Conservation Values Protected (B2.4)

As mentioned previously, the CCA has the capacity to conserve the biodiversity present in the ecotone of the savanna and rainforest areas. Furthermore, due to the nature of the activities proposed for implementation, no high conservation values are expected to be negatively affected. In fact, most of the

activities are focused on protecting and improving the conservation of the biodiversity, including the high conservation values. It is highly likely that some activities such as poaching or illegal hunting will take place outside of the area and could have a negative impact on the HCV, however, mitigation measures like the training of rangers, the establishment of buffer zones with sustainable practices and the improvement of the management of the area, will reduce any possible risks and affectations.

5.2.5 Species Used (B2.5)

The project does not contemplate the use of species.

5.2.6 Invasive Species (B2.5)

The project does not contemplate the use of invasive species.

5.2.7 Impacts of Non-native Species (B2.6)

No non-native species are used in the project zone as part of the project.

5.2.8 GMO Exclusion (B2.7)

No GMOs are used to generate GHG emissions reductions or removals.

5.2.9 Inputs Justification (B2.8)

No fertilizers, chemical pesticides, biological control agents and other inputs are used for the project.

5.2.10 Waste Products (B2.9)

No waste products are generated in the project activities.

5.3 Offsite Biodiversity Impacts

5.3.1 Negative Offsite Biodiversity Impacts (B3.1) and Mitigation Measures (B3.2)

It is likely that some negative impacts to biodiversity could take place outside of the project area, caused by law enforcement in the core area moving the hunting and poaching activities to the periphery of the project area. Thus, it is important that the management activities include local communities and transhumance pastoralism, in order to promote and control hunting activities and the sustainable use of natural resources, as well as working together with the government to ensure that regulations on poaching are enforced and that those who engage in these practices are penalised.

This means that the mitigation measures proposed to ensure that biodiversity is not affected inside the project area can be applied outside the area as well, which will also encourage the surrounding communities that their actions do not result in negative impacts on forest and fauna conservation. See section 5.2.2.

5.3.2 Net Offsite Biodiversity Benefits (B3.3)

By introducing mitigation measures, the negative impacts on biodiversity inside and outside the project area will be reduced. The mitigation measures will focus on local communities and transhumance pastoralism, which are essentially the same people who inhabit the surrounding areas of the project area. Therefore, the REDD+ project will offer benefits for biodiversity, especially when we compare these results with those calculated without a project assessment. Thanks to the project activities, vulnerable and endangered species will be impacted in a positive way, with their habitats being protected and the amount of poaching and illegal hunting occurring being dramatically reduced. Furthermore, by managing transhumance

pastoralism in the area this will reduce affectations on the natural ecosystems in the area, which support more than 70 mammal species in the park, including key species such as chimpanzees, elephants, wild dogs, lions and hippopotamuses, among others.

5.4 Biodiversity Impact Monitoring

5.4.1 Biodiversity Monitoring Plan (B4.1, B4.2, GL1.4, GL3.4)

The main objective will be the restoration and maintenance of the ecosystem, so as to preserve maximal biodiversity and species numbers, and to allow natural ecological processes to flourish. Due to the high volume and various characteristics of the species present in the project area, multiple sampling methods have to be implemented when monitoring so as to reduce the possibility of the non-detection of species of interest:

- Camera traps are a cost-effective tool for large-scale monitoring of medium and large vertebrates (Buyaskas, Evans, & Mortelliti, 2020). It is important to have data about the location of the cameras with GPS, dates of installation and a physical description of the area where the camera is installed.
- Track counts and sightings on trails enable the detection of direct or indirect records of species such as footprints, shelters and bones, among others. The tracks made on paths, trails or roads, are counted during rangers' patrols. The tracks are georeferenced, with date and time of sighting registered, including a physical description of the area.
- Ultralight motorized aircraft (ULM) surveys are an efficient way to monitor the environment and wildlife over large areas (Linchant, Lisein, Semeki, Lejeune, & Vermeulen, 2015). It is important to have a standardise approach for the survey. The area is divided into transects with a standard separation and each transect is flown systematically following the same direction, for example, north to south, with a specific speed and height.
- Satellite collars placed on the animal's neck are used to record the GPS location of individuals at a pre-determined interval or on interrupt by an environmental sensor.

Table 47: Targets to monitor

Objectives	Targets	Sampling method	Areas to be monitored	Results
Continuous review and amendment of zoning in relation to key species and habitats for effective management and appropriate protection.	• Provide a comprehensive map with large wildlife biomass hot-spots. • Key species distribution. • High value habitats.	Camera traps	• Former hunting block, 36 Trois Riviére. • Eastern zones, Vovodo-Chinko. • Hunting zone of Alain Lefol and sahelo-sudanian.(if allowed) • Shrubland of Yata-Ngaya.(if allowed)	No. of independent detections
		Sightings on trails		No. of sightings on trails
		ULM surveys		Reports from the ULM surveys
Monitor wildlife to optimise conservation		Camera traps	Chinko Conservation Area.	No. of independent detections

Objectives	Targets	Sampling method	Areas to be monitored	Results
activities and strategies.	Annual baseline monitoring of focal fauna species[139]: Eastern giant eland (*Tragelaphus derbianus gigas),* West African buffalo *(Syncerus caffer),* Roan antelope*, (Hippotragus equinus),* Lowland Bongo antelope *(Tragelaphus eurycerus),* Lelwel Hartebeest *(Alcelaphus buselaphus), Waterbuck (Kobus ellipsiprymnus),* Northern lion *(Panthera leo leo),* Spotted hyena *(Crocuta Crocuta),* Leopard *(Panthera pardus),* African wild dog *(Lycaon pictus),* Eastern chimpanzee *(Pan troglodytes schweinfurthii), and* African forest elephant *(Loxodonta cyclotis)*	Sightings on trails		No. of sightings on trails
		ULM surveys		Reports from the ULM surveys
		Satellite collars		No. of satellite collarets installed and that are active
Monitor vulnerable and endangered species to secure	Annually monitor vulnerable and	Camera traps	Chinko Conservation Area.	No. of independent detections

[139] These are the focal species for annual biodiversity monitoring, however, considering the sampling methods used, it is possible that some other species will be eventually observed and sometimes reported and mentioned during monitoring reports but those will be sporadic events not yearly assessments.

Objectives	Targets	Sampling method	Areas to be monitored	Results
their permanence in the Chinko Conservation Area.	endangered species with special focus on: African wild dog *(Lycaon pictus),* Eastern chimpanzee *(Pan troglodytes schweinfurthii), and* African forest elephant *(Loxodonta cyclotis.*	Sightings on trails		No. of sightings on trails
		ULM surveys		Reports from the ULM surveys
		Satellite collars		No. of satellite collarets installed and that are active

5.4.2 Biodiversity Monitoring Plan Dissemination (B4.3)

Every monitoring period the relevant documentation about the results of the monitoring and verification of this project will be published in the VERRA platform. Summaries of these monitoring reports will be translated into local languages and disseminated amongst communities were appropriate. Project activities and their results will also be discussed at regular community consultation meetings. This will ensure that even with the high levels of illiteracy in the region, monitoring information will be made available to all local communities living on the periphery of the park. African Parks annual reports, publicly available in their website, also includes the main information of the biodiversity results.

5.5 Optional Criterion: Exceptional Biodiversity Benefits

The project hopes to achieve the Gold Level for exceptional biodiversity benefits due to the presence of at least five critically endangered, nine endangered and 12 vulnerable fauna species being in the area according to the IUCN (see Table 46). In addition, preliminary results of the vegetation inventory showed the presence of certain typical rain forest like the critically endangered Mukulungu (*Autranella congolensis*) the endangered Wenge tree (*Millettia laurentii*) and true African ebony (*Diospyros crassiflora*).

5.5.1 High Biodiversity Conservation Priority Status (GL3.1)

The Chinko Conservation Area conserves threatened fauna species including at least five critically endangered, nine endangered, as well as 12 vulnerable species according to the IUCN Red List (see Table 46).

Aebischer and associates have been studying the biodiversity of the Chinko/Mbari drainage basin, focusing on African elephants (Hickisch & Aebischer, 2013) (Figure 85), African wild dogs (Hickisch, 2013) (Figure 86), chimpanzees (Aebischer et al., 2017) (Figure 87) and Eastern derby eland (Brandlová et al., 2018). During the annual survey of the area, at least 800 chimpanzees; 50 elephants; 2788 buffalo; 437 giant eland; at least 76 African wild dogs and 30 lions were documented.[140]

[140] Obtained from: African Parks Annual Report 2018, available at: https://www.africanparks.org/about-us/financials-and-annual-reports



Figure 85: Forest elephants (*Loxodonta cyclotis*) in the project area

Source: (Hickisch & Aebischer, 2013)



Figure 86: African wild dogs (*Lycaon pictus*) and track records in the project area

Source: (Hickisch, 2013).

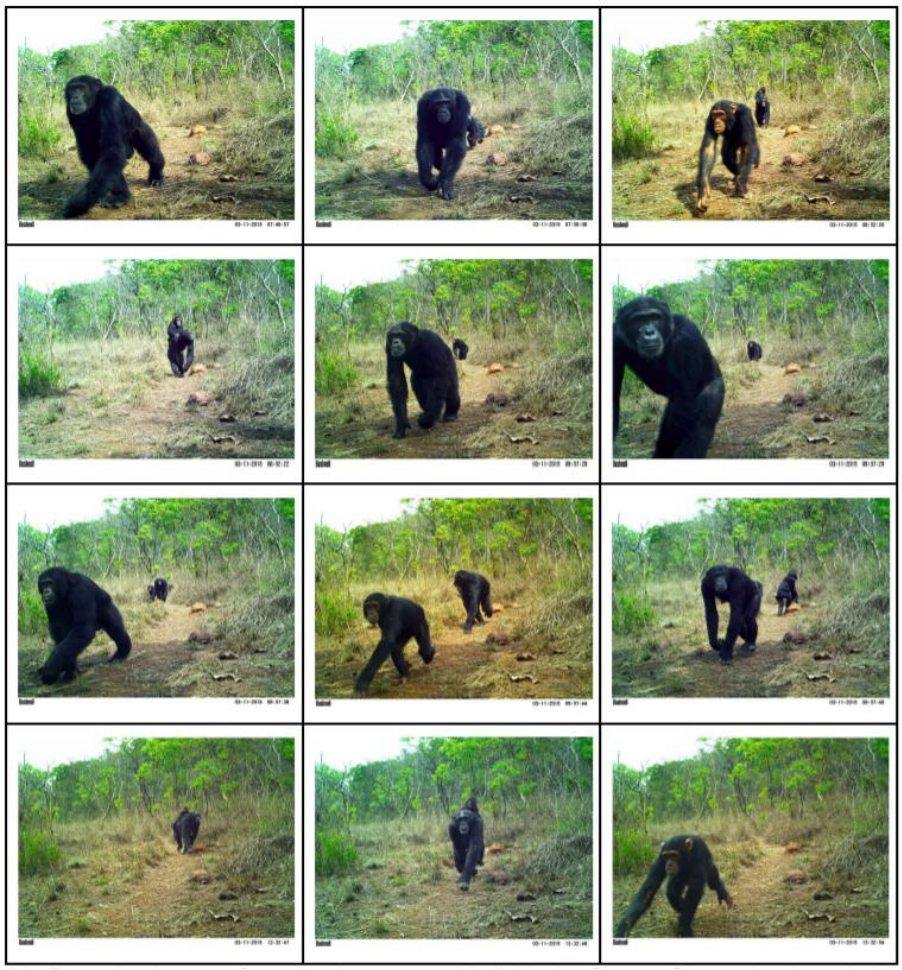


Figure 87: Individuals of Chimpanzees (*Pan troglodytes schweinfurthii)* in the project area

Source: (Aebischer et al., 2017)

5.5.2 Trigger Species Population Trends (GL3.2, GL3.3)

Trigger Species	Eastern Chimpanzee *(Pan troglodytes schweinfurthii)*
Population Trend at Start of Project	According to the 2018 annual survey, the population was between 800 and 1,000.[141]
Without-project Scenario	Habitat loss and poaching will affect chimpanzees the most in the without project scenario.
With-project Scenario	The Chinko Conservation Area has undertaken numerous actions regarding law enforcement and sensitisation in relation to transhumance pastoralism, in order to reduce the affectation of

[141] Obtained from: African Parks Annual Report 2018, available at: https://www.africanparks.org/about-us/financials-and-annual-reports

	natural habitats and ongoing poaching. The Chinko/Mbari area has some of the largest habitats and populations of chimpanzees.

Trigger Species	African wild dog *(Lycaon pictus)*
Population Trend at Start of Project	According to the 2018 annual survey, a total of 76 individuals were documented.[142]
Without-project Scenario	Habitat loss and hunting by retaliation of the species would likely occur in the without project scenario.
With-project Scenario	Project activities will contribute to the conservation of the species through the protection of their natural habitats, an improvement in connectivity between the area and its surroundings and a reduction in pressure of human conflicts.

Trigger Species	African forest Elephant *(Loxodonta cyclotis)*
Population Trend at Start of Project	According to the 2018 annual survey, between 50 and 150 individuals were documented.[143]
Without-project Scenario	Habitat loss and hunting by retaliation for crop damage are likely to occur in the without project scenario.
With-project Scenario	Project activities will contribute to the conservation of the species by protecting their natural habitats and reducing the pressure for human conflicts. Landscape connectivity is also important as part of the with-project scenario for this species.

[142] Obtained from: African Parks Annual Report 2018, available at: https://www.africanparks.org/about-us/financials-and-annual-reports

[143] Obtained from: African Parks Annual Report 2018, available at: https://www.africanparks.org/about-us/financials-and-annual-reports

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APPENDICES

Appendix 1: Project Document Requirements

Table 48 below present the different requirements of the methodology and the section when can be found if applicable.

Table 48: Project Document Requirements table

PDR #	Category	Requirement	Section
PDR 1	Applicability Conditions	For each applicability condition, a statement of whether it applies to the project. If the applicability condition does not apply to the project, justification for this conclusion.	3.1.2 - Table 6: Applicability conditions
PDR 2	Applicability Conditions	Where applicability conditions apply, credible evidence in the forms of analysis, documentation, or third-party reports to satisfy the condition.	3.1.2 - Table 6: Applicability conditions
PDR 3	Applicability Conditions	Definition of forest used by the project proponent and its source.	3.1.2 - Table 6: Applicability conditions
PDR 4	Spatial Project Boundaries	A digital (GIS-based) map of the project area with at least the above minimum requirements for delineation of the geographic boundaries.	3.1.3 - Figure 12: Spatial boundaries
PDR 5	Spatial Project Boundaries	Credible documentation demonstrating control of the project area, or documentation that the provisos listed in the case of less than 80% project control at the time of validation delineated in section 5.1 of the methodology are met.	2.5.9
PDR 6	Temporal Project Boundaries	The project start date.	3.1.3 - Temporal boundaries
PDR 7	Temporal Project Boundaries	The project crediting period start date and length.	3.1.3 - Temporal boundaries
PDR 8	Temporal Project Boundaries	The dates for mandatory baseline re-evaluation after the project start date.	3.1.3 - Temporal boundaries
PDR 9	Temporal Project Boundaries	A timeline including the first anticipated monitoring period showing when project activities will be implemented.	3.1.3 - Temporal boundaries
PDR 10	Temporal Project Boundaries	A timeline for anticipated subsequent monitoring periods.	3.1.3 - Temporal boundaries
PDR 11	Carbon Pools	A list of the greenhouse gases considered.	3.1.3 - Table 8: Included GHG Sources

PDR #	Category	Requirement	Section
PDR 12	Carbon Pools	A list of the selected carbon pools and evidence for the conservative exclusion of any optional pools.	3.1.3 - Table 9
PDR 13	Carbon Pools	The definition and evidence to support the definition of a merchantable tree if the baseline scenario or project activities include logging.	N/A
PDR 14	Grouped Projects	A list and descriptions of all enrolled project activity instances in the group at the time of validation.	3.1.3 - Spatial boundaries
PDR 15	Grouped Projects	A map of the designated geographic area within which all project activity instances in the group will be located, indicating that all instances are in the same region.	3.1.3 - Figure 12: Spatial boundaries
PDR 16	Grouped Projects	A map of the common reference area, proxy area, activity- shifting leakage area, and market leakage area.	3.1.3 - Figure 12: Spatial boundaries
PDR 17	Determining the Baseline Scenario	Show that the identified baseline type is the most plausible baseline scenario identified in section 7.	3.1.4
PDR 18	Agents and Drivers of Conversion	A list of the agents and drivers of conversion, including quantitative descriptions of agent mobilities.	3.1.4 - Identification of Agents and Drivers of Deforestation
PDR 19	Agents and Drivers of Conversion	A narrative describing the agents and drivers of conversion.	3.1.4 - Identification of Agents and Drivers of Deforestation
PDR 20	Agents and Drivers of Conversion	Descriptions of agents and drivers including any useful statistics and their sources.	3.1.4 - Identification of Agents and Drivers of Deforestation
PDR 21	Agents and Drivers of Conversion	A list of external drivers (covariates) of conversion used in the model, if any, that may be identified as part of a PRA, expert knowledge, or literature (eg, median household income, road density, rainfall).	N/A
PDR 22	Project Accounting Areas	A digital (GIS-based) map of the project accounting areas, including aerial or satellite imagery showing that they are forested as of the project start date and 10 years prior to the project start date.	3.1.4 - Figure 23: Project accounting area

PDR #	Category	Requirement	Section
PDR 23	Project Accounting Areas	Justify the project accounting areas using the identified agents and drivers of conversion, constraints to conversion, and attributes listed in section 6.2.	3.1.4 - Delineating Project Accounting Areas
PDR 24	Project Accounting Areas	Selection of patch size at which land conversion typically occurs.	N/A
PDR 25	Project Accounting Areas	Justification of selection of patch size for delineation of project accounting area.	N/A
PDR 26	Identifying the Baseline Type - Forest	If Types F-P1.a, F-P1.b or F-P2 are selected, justification for meeting the definition of APD in the current VCS-approved AFOLU Requirements.	N/A
PDR 27	Identifying the Baseline Type - Forest	If Type F-P1.a or F-P1.b is selected, evidence of legally- sanctioned commercial harvest in the baseline scenario.	N/A
PDR 28	Identifying the Baseline Type - Forest	If Type F-P1.a is selected, evidence of legally-sanctioned deforestation in the baseline scenario	N/A
PDR 29	Identifying the Baseline Type - Forest	If Type F-P1.b is selected, evidence of frontier configuration: Projects must demonstrate that the agent of degradation had access to the project area AND that comparable agents create roads for extraction of timber AND/OR Projects may produce permits, construction plans, contracts or tenders, budgets, or other evidence of the intent to construct roads.	N/A
PDR 30	Identifying the Baseline Type - Forest	If Type F-U1 is selected, a spatial analysis of the project area showing that at least 25% of the perimeter is within 120 meters of deforestation that occurred within 10 years prior to the project start date and showing that the reference area is adjacent to at least 25% of the project area.	N/A

PDR #	Category	Requirement	Section
PDR 31	Identifying the Baseline Type - Forest	If Type F-U2 is selected, a spatial analysis of the project area showing that at least 25% of the perimeter is within 120 meters of deforestation that occurred within 10 years prior to the project start date.	N/A
PDR 32	Identifying the Baseline Type - Forest	If Types F-U1, F-U2 or F-U3 is selected, a spatial analysis of the project area showing that it is within 120 meters of deforestation that occurred within 10 years prior to the project start date.	3.1.4 - Identifying Baseline types
PDR 33	Identifying the Baseline Type - Grassland	If Type G-P2 is selected, justification for meeting the definition of APC in the current VCS-approved AFOLU Requirements. Justification must include evidence of intent to convert the project area and that the converted land-use category would meet the definition of native grassland / shrubland conversion.	N/A
PDR 34	Identifying the Baseline Type - Grassland	If Type G-U1 is selected, a spatial analysis of the project area showing that the reference area is adjacent to at least 25% of the project area.	N/A
PDR 35	Delineation of the Proxy Areas	A map of the delineated boundaries.	3.1.3 - Figure 25 and Figure 26
PDR 36	Delineation of the Proxy Areas	Maps or other evidence that the proxy area's site characteristics and landscape configuration is similar to its respective project accounting area, including: Vegetation; Climatic conditions (eg, mean temperature, rainfall, etc.); Topographic constraints to conversion (slope, aspect, elevation); Land use and/or land cover; Soil map (if available) or other soil information; Applicable infrastructure (e.g., water ways, roads, railroad, airports, provision of electricity, and other access points); and	3.1.3 - Figure 12: Spatial boundaries

PDR #	Category	Requirement	Section
		Ownership/tenure boundaries that influence conversion (e.g., government holdings, private holdings and reserves).	
PDR 37	Delineation of the Proxy Areas	A narrative describing the rationale for selection of proxy area boundaries, including the proxy area's similarity to the corresponding project accounting area with respect to vegetation, soil and climatic conditions.	3.1.4 - Delineating Proxy Areas
PDR 38	Delineation of the Proxy Areas	Results of a spatial analysis to demonstrate the proxy area is converted, on average, as of the project start date.	3.1.4 - Delineating Proxy Areas
PDR 39	Describing the Baseline Scenarios for Selected Carbon Pools	A qualitative description of the baseline scenario for each selected carbon pool.	3.1.4 - Baseline scenarios for selected carbon pools
PDR 40	Delineation of the Reference Area for Planned and Unplanned Types	A map of the delineated boundaries, demonstrating that the reference area was held by the identified baseline agent or agents and does not include the project area.	3.1.3 - Figure 12: Spatial boundaries
PDR 41	Delineation of the Reference Area for Planned and Unplanned Types	Results of a spatial analysis to demonstrate the reference area had as much forest or native grassland as the project accounting area at some point in time during the historic reference period.	3.1.4
PDR 42	Delineation of the Reference Area for Planned and Unplanned Types	Evidence that the management practices of the baseline agent in the reference area are similar to those that would have been applied to the project accounting area or areas in the baseline.	3.1.4 - Delineating Reference Areas
PDR 43	Delineation of the Reference Area for Planned and Unplanned Types	A description of the rationale for selection of reference area boundaries.	3.1.4 - Delineating Reference Areas
PDR 44	Delineation of the Reference Area for Planned and Unplanned Types	The documentation required in the reference area selection requirements that the selected reference area meets the Reference Area Selection Requirements.	3.1.4 - Delineating Reference Areas

PDR #	Category	Requirement	Section
PDR 45	Defining the Reference Area for Planned Baseline Types	Evidence that secondary agents have been considered in the delineation of the reference area for baseline types F-P1.a and F-P1.b.	N/A
PDR 46	Defining the Reference Period for Planned Types	Established reference period boundaries.	N/A
PDR 47	Defining the Reference Period for Planned Types	The date when the agent acquired control of the reference area or when the land management practices employed in the reference area changed.	N/A
PDR 48	Defining the Reference Period for Unplanned Types	Established reference period boundaries.	3.1.4 - Defining the Historic Reference Period
PDR 49	Defining the Reference Period for Unplanned Types	A list of available historic imagery for the reference area.	3.1.4 - Defining the Historic Reference Period
PDR 50	Defining the Reference Period for Unplanned Types	A timeline of important events as they relate to the agents and drivers of conversion.	3.1.4 - Defining the Historic Reference Period
PDR 51	Defining the Reference Period for Unplanned Types	Narrative rationale for the selection of the reference period.	3.1.4 - Defining the Historic Reference Period
PDR 52	Historic Imagery to Parameterize α, β and θ	A map of the reference area showing the area of "double- coverage".	3.1.4 - Figure 53
PDR 53	Historic Imagery to Parameterize α, β and θ	Quantification of "double coverage"(greater than 90%).	3.1.4 - Selecting Historical Imagery
PDR 54	Historic Imagery to Parameterize α, β and θ	A line plot of the historic image dates to confirm stationarity.	3.1.4 - Figure 52
PDR 55	Historic Imagery to Parameterize α, β and θ	Evidence that all image pixels are not more than 30m x 30m.	3.1.4 - Table 28
PDR 56	Historic Imagery to Parameterize α, β and θ	Empirical evidence that imagery is registered to within 10% RMSE, on average.	3.1.4 - Selecting Historical Imagery
PDR 57	Sampling Conversion to Parameterize α, β and θ	The sample size.	3.1.4
PDR 58	Sampling Conversion to Parameterize α, β and θ	A map of the reference area showing the sample point locations.	3.1.4 - Figure 53
PDR 59	Parameterizing α, β and θ	The covariates that were considered and their data sources.	N/A

PDR #	Category	Requirement	Section
PDR 60	Parameterizing α, β and θ	The parameters in θ that were evaluated during model selection.	N/A
PDR 61	Parameterizing α, β and θ	The parameters in θ of the selected model.	N/A
PDR 62	Parameterizing α, β and θ	The rationale used for selecting θ including comparisons of AIC.	N/A
PDR 63	Minimizing Uncertainty in Parameters $\hat{\alpha}$, $\hat{\beta}$ and $\hat{\theta}$	A protocol for interpreting land cover state from imagery, which must include guidance for interpreting the following: Discerning conversion features using shape, texture and context in the reference area landscape Addressing seasonal variation of vegetation (phenology) within imagery Identifying and addressing the characteristics of specific landscape configurations (i.e., mosaic forest, grassland, etc.)	3.1.4 - Minimizing Uncertainty
PDR 64	Minimizing Uncertainty in Parameters $\hat{\alpha}$, $\hat{\beta}$ and $\hat{\theta}$	The results of an independent check of the interpretation.	3.1.4 - Minimizing Uncertainty
PDR 65	Minimizing Uncertainty in Parameters $\hat{\alpha}$, $\hat{\beta}$ and $\hat{\theta}$	Evidence that systematic errors, if any, from the independent check of the interpretation were corrected.	3.1.4 - Minimizing Uncertainty
PDR 66	Estimating Uncertainty in Parameters $\hat{\alpha}$, $\hat{\beta}$ and $\hat{\theta}$	The estimated uncertainty σEM from [F.13] and statistical summaries from model fitting software, if available.	3.1.4 - Table 29
PDR 67	Estimating Uncertainty in Parameters $\hat{\alpha}$, $\hat{\beta}$ and $\hat{\theta}$	Reference to uncertainty calculations.	3.1.4 - Estimating Uncertainty
PDR 68	Parameterizing t_{SA}	The parameter $\hat{t}_{SA}$ as the number of days after the primary agent begins commercial logging until when the secondary agent of deforestation is likely to begin degrading the project accounting area.	N/A
PDR 69	Parameterizing t_{SA}	A description of how $\hat{t}_{SA}$ was obtained.	N/A
PDR 70	Parameterizing t_{SA}	Harvest plans for the project accounting area under the baseline scenario, results from the PRA or analysis of the reference area to determine the parameter.	N/A

PDR #	Category	Requirement	Section
PDR 71	Parameterizing t_{PA}	The parameter $\hat{t}_{PA}$ as the number of days relative to the project start date when the primary agent began or would have begun legally sanctioned commercial logging in the project accounting area.	N/A
PDR 72	Parameterizing t_{PA}	A description of how $\hat{t}_{SA}$ was obtained.	N/A
PDR 73	Parameterizing t_{PA}	Harvest plans for the project accounting area under the baseline scenario or public records to support the determination of the parameter.	N/A
PDR 74	Determining x_0	A table of covariate values as of the project start date and a description of how the values were determined including any interpolation or extrapolation methods.	N/A
PDR 75	Determining x_0	Justification for why the rate of conversion predicted by covariates exceeds the rate indicated from historical conversion patterns.	N/A
PDR 76	Parameterizing *m*	The parameter m as the average carbon in merchantable trees cut each year as a result of legally sanctioned commercial logging.	N/A
PDR 77	Parameterizing *m*	Documentation of how m was determined. This may include an analysis of carbon stocks in merchantable trees in the project accounting area, timber harvest plans for the project accounting area or reference to a publication containing the maximum allowable cut applicable to the project area. The parameter must be greater than zero.	N/A
PDR 78	Determining γ	The project shift parameter γ as the number of days between the beginning of the historical reference period and the project start date.	N/A
PDR 79	Parameterizing *q*	The parameter q as the number of days between the onset of degradation and the beginning of conversion.	3.1.4 - Determining q

PDR #	Category	Requirement	Section
PDR 80	Parameterizing *q*	If the default of zero is not selected for q, then a justification for the determination of q.	N/A
PDR 81	Parameterizing $\boldsymbol{r}_U$	The parameter $\boldsymbol{r}_U$ as the ratio of converted perimeter to total threatened perimeter, or the ratio of converted area to total project accounting area(s), as of the project start date.	3.1.4 - Determining r_u
PDR 82	Parameterizing $\boldsymbol{r}_U$	Description of how $\boldsymbol{r}_U$ was obtained.	3.1.4 - Determining r_u
PDR 83	Parameterizing $\boldsymbol{r}_U$	Results of GIS analysis to determine or measure $\boldsymbol{r}_U$ in the project area including the dates of images used to identify conversion.	3.1.4 - Determining r_u
PDR 84	Empirically Estimating λ_{SOC}	Description of how samples from the reference area were selected including stratification, if any.	N/A
PDR 85	Empirically Estimating λ_{SOC}	A map of sample locations in the reference area.	N/A
PDR 86	Empirically Estimating λ_{SOC}	A table showing the conversion time for each area (farm or otherwise) from which samples were taken.	N/A
PDR 87	Empirically Estimating λ_{SOC}	Description of and statistics for the method applied to estimate λSOC.	N/A
PDR 88	Empirically Estimating λ_{SOC}	Graph of projected decay model over project lifetime.	N/A
PDR 89	Literature Estimates for λ_{SOC}	Inclusion of decay model on which parameter is based.	N/A
PDR 90	Literature Estimates for λ_{SOC}	Explicit description of referenced literature, including project location, sampling methodology, included species, sample size, duration of field experiments, and decay parameter upon which decay is based.	N/A
PDR 91	Literature Estimates for λ_{SOC}	Graph of projected decay model over project lifetime.	N/A
PDR 92	Literature Estimates for λ_{SOC}	If decay model is based on any other element besides carbon, defence of ability to predict carbon decay must be provided.	N/A
PDR 93	Baseline Re-evaluation	All required documentation as specified in section 6 for the project prior to the baseline re-evaluation.	N/A

PDR #	Category	Requirement	Section
PDR 94	Baseline Re-evaluation	All required documentation as specified in section 6 for the project after the baseline re-evaluation including the re-evaluation period.	N/A
PDR 95	Baseline Re-evaluation	A narrative of the re-evaluation including any obstacles and how they were overcome.	N/A
PDR 96	Re-evaluation of the Reference Area and Period	A map of the new reference area.	N/A
PDR 97	Re-parameterization of α, β and θ	Summary of new data observed in the new reference area.	N/A
PDR 98	Re-parameterization of α, β and θ	The re-parameterized values $\hat{\alpha}$, $\hat{\beta}$ and $\hat{\theta}$	N/A
PDR 99	Demonstration of Project Additionality	A list of alternative land use scenarios to the project.	3.1.5
PDR 100	Demonstration of Project Additionality	Justification for the selected baseline scenario. This justification can include expert knowledge, results from the participatory rural appraisal and ex-ante estimates of avoided emissions (see sections 6.1 and 8.4.7).	3.1.5
PDR 101	Demonstration of Project Additionality	An investment or barriers analysis proving that the project is not the most economical option.	3.1.5
PDR 102	Demonstration of Project Additionality	A common practice analysis including a list of project activities and the drivers of conversion that they address.	3.1.5
PDR 103	Demonstration of Project Additionality	Evident compliance with the minimum requirements of the aforementioned VCS tool. This evidence may be the same as the evidence provided to meet reporting requirements listed in section 4.	3.1.5
PDR 104	Leakage Mitigation Strategies	A list of project activities designed to mitigate leakage.	3.2.3 and Leakage Mitigation Strategies
PDR 105	Delineation of the Activity-Shifting Leakage Area	A map of the delineated boundaries.	3.2.3
PDR 106	Delineation of the Activity-Shifting Leakage Area	Maps of the landscape configuration, including: a. Topography (elevation, slope,	3.2.3

PDR #	Category	Requirement	Section
		aspect); b. Recent land use and land cover (either a thematic map created by the project proponent or publicly available map); c. Access points; d. Soil class maps (if available); e. Locations of important markets; f. Locations of important resources like waterways or roads; and Land ownership/tenure boundaries.	
PDR 107	Delineation of the Activity- Shifting Leakage Area	A narrative describing the rationale for selection of activity- shifting leakage area boundaries. If the activity-shifting leakage area is smaller than the project accounting area or cannot be defined, justification for the size of the area. If foreign agents have been identified as an agent of conversion, justification that they are unlikely to shift their activities outside the activity-shifting leakage area.	3.2.3 - Delineating the Activity-Shifting Leakage Area
PDR 108	Delineation of the Activity- Shifting Leakage Area	Results of a spatial analysis to demonstrate the activity- shifting leakage area is entirely forested as of the project start date.	Appending 6 – Land cover assessment
PDR 109	Delineation of the Activity- Shifting Leakage Area	Results of a spatial analysis to demonstrate the activity- shifting leakage area is no larger than the project accounting area.	3.2.3 – Methodology deviation applied
PDR 110	Determining the Market Discount Factor	The selected discount factor pL ME.	N/A
PDR 111	Determining the Market Discount Factor	Calculations of cL AGMT in the market leakage area, including references to literature if cited.	N/A
PDR 112	Determining the Market Discount Factor	Justification for the selection of the discount factor.	N/A
PDR 113	Delineation of the Market Leakage Area	A map of the delineated boundaries.	N/A

PDR #	Category	Requirement	Section
PDR 114	Delineation of the Market Leakage Area	Maps of the landscape configuration, including: a. Topography (elevation, slope, aspect); b. Recent land use and land cover (either a thematic map created by the project proponent or publicly available map); c. Access points; d. Soil class maps (if available); e. Locations of important markets; f. Locations of important resources like waterways or roads; and Land ownership/tenure boundaries.	N/A
PDR 115	Delineation of the Market Leakage Area	A narrative describing the rationale for selection of market leakage area boundaries.	N/A
PDR 116	Delineation of the Market Leakage Area	Results of a spatial analysis to demonstrate the market leakage area is entirely forested as of the project start date.	N/A
PDR 117	Delineation of the Market Leakage Area	Results of a spatial analysis to demonstrate the market leakage area is as large or larger than the project accounting area.	N/A
PDR 118	*Ex-Ante* Estimation of NERs	The projected avoided baseline emissions, project emissions and leakage for each monitoring period and vintage year over the lifetime of the project.	3.2.4
PDR 119	*Ex-Ante* Estimation of NERs	A narrative description of sources used to estimate the leakage rate and demonstration that the estimated rate is conservative.	3.2.3 - Estimating Emissions from Activity-Shifting Leakage
PDR 120	*Ex-Ante* Estimation of NERs	If included in project activities, a description of procedures used to estimate the rate of biomass burning, charcoal production or logging and	N/A

PDR #	Category	Requirement	Section
		demonstration that these estimates are conservative.	
PDR 121	Data and Parameters Available at Validation	The value for each variable in Appendix G.	3.3.1
PDR 122	Description of the Monitoring Plan	Summary of sampling procedures for the project accounting areas, with a copy of a sampling protocol used to carry out measurements.	3.3.3
PDR 123	Description of the Monitoring Plan	Summary of sampling procedures for the proxy areas, with a copy of a sampling protocol used to carry out measurements.	3.3.3
PDR 124	Description of the Monitoring Plan	Summary of sampling procedures for the activity-shifting leakage areas, with a copy of a sampling protocol used to carry out measurements.	3.3.3

Appendix 2: Delineating Reference Areas requirements

According to section 6.8.1.1 of the methodology, the reference area must address the following criteria in order to ensure that the agents and drivers of conversion are similar to those of the project accounting area, as well as to prove that those agents performed similarly in the reference area to the way they would have performed in the project accounting area under the baseline scenario.

1. The location and size of the reference area relative to the project accounting area

Requirement	**Section where it is explained**
a. A pair of maps showing the boundaries and size of the reference area and the project accounting area, including an indication of their locations relative to each other.	Figure 12 (available in Section 3.1.3, subsection "Spatial boundaries") presents a map showing the boundaries of the reference areas and the project accounting areas, including an indication of their locations relative to each other.
b. Written justification for the selection of the location of the reference area.	Section 3.1.4, subsection "Delineating Reference Areas", present the justification for the selection of the location of the references areas.

2. A description of the drivers of conversion, including the following, relative to the project area

Requirement	**Section where it is explained**
a. Written description of the socio-economic conditions in the reference area and project accounting area including the following data were available: i. Census data depicting relevant demographics and socioeconomic conditions ii. PRA data iii. Economic studies iv. Maps depicting demographic data and socio-economic conditions	As required by the PD template, Section 2.1.6, "Social parameters" presents a written description of the main settlements, the economic activities and socio-cultural information in the region. In addition, Section 3.1.4, subsection "Identification of agents and drivers of conversion" provide details of the agents and drivers of conversion Finally, Section 4.1.1, "Descriptions of Communities at Project Start", provides extra details of the communities at the project start.
b. Written description of the cultural conditions, such as historical events, cultural shifts, migration patterns, tribal traits and characteristics, and current cultural patterns including the following data were available: i. PRA data ii. Publications relevant to the cultural conditions in the area iii. Maps depicting cultural data	

3. The location(s) of the agents of conversion relative to the project accounting area and surrounding region including the following:

Requirement	Section where it is explained
a. A paired comparison of maps of the reference area and project accounting area, including locations of settlements or other population centers. For subsequent use in determining the mobilities of the agents of conversion.	Figure 28 presents a map indicating the settlements in the region. Figure 38 presents the pastoralism corridors in the country.

4. The mobilities of the agents of conversion relative to the project accounting area, including the following:

Requirement	Section where it is explained
a. Written description of the mobility of all primary and secondary agents in the project accounting area and reference area. Acceptable data sources should be used to demonstrate mobility, including geographic and/or anthropogenic factors that may influence their movement or access.	Section 3.1.4, subsection "Identification of Agents and Drivers of Deforestation" – presents a written description of the agents and its mobility.

5. Landscape configuration of the reference area and the project accounting area, including all of the following factors:

Requirement	Section where it is explained
a. A paired comparison of maps of the reference area and project accounting area, which must include the following criteria: i. Topographic constraints to conversion (slope, aspect, elevation); ii. Land use and/or land cover; iii. Soil map (if available) or other soil information; iv. Applicable infrastructure (e.g., water ways, roads, railroad, airports, provision of electricity, and other access points); v. Distance to important markets; and vi. Ownership/tenure boundaries that influence conversion (e.g., government holdings, private holdings and reserves).	Section 3.1.4, subsection "Delineating Reference Areas" presents a comparison of the reference areas and project accounting areas for the following criteria i. Slope and elevation. ii. Land cover. iii. Soil types. iv. Road network. v. Important markets. vi. Tenure
b. Written justification of similarities between the project and reference area using acceptable data sources.	In subsection "Delineating Reference Areas", each of the items presented above has its source and a short paragraph explaining its relevancy for the delineation of the RAs.

In addition, according to the requirements set in section 6.8.1.3 Baseline Types F-U1, F-U2, F-U3, G-U1 and G-U2, the following criteria was considered:

Requirement	Compliance?

The reference area must be in the same general region as the project area, but not necessarily adjacent to the project area.	Yes, the reference areas are all in the same general region as the project area, eastern CAR.
At some point in time during the historic reference period, the reference area must contain as much forested area as the project accounting area.	Yes, in order to verify the compliance with the forested area PD requirement, a comparison between the PAAs and the RAs was made. This demonstrates that the reference areas had as much forest as the PAAs at some point in time during the historic reference period date.
The reference area must not include the project area and must not be altered during the historic reference period.	Yes, the reference areas doesn't include the project area and won't be altered during the historic reference period. Any alteration to the reference areas that occurs in the future will be only to comply with any new methodological or standard requirements.
The boundaries of the reference area **must include one or more** of the following: i. Environmental, natural or political boundaries. ii. Major transportation infrastructure such as highways or railroads. iii. Land ownership/tenure boundaries. iv. Latitudinal or longitudinal degree boundaries.	Yes, the boundaries of the reference areas were delineated including the following: i. Land cover, slope, elevation range and country limits ii. Roads iii. Land ownership and tenure

Appendix 3: List of supporting documentation

Supporting folders

Folder	Name
01	Supports
02	Annexes
03	NPRT
04	GIS figures
05	Public summaries

Supports

Subfolder name
1. Summary • Census   ○ Profil socio-économique du Mbomou.pdf   ○ Profilsocio-écqHKoto.pdf
2. General • Audit communication   ○ 2211_CAPEP   ○ 2211_Representants invited   ○ 221103_Kocho   ○ 221109_Bangui office • Grievance mechanism   ○ APN Grievance Mechanism   ○ Chinko - Mécanisme de feedbacks, plaintes et réponses • Informational meetings   ○ Reports and lists   ▪ Février 2020_Fiches de sensibilisation.pdf   ▪ Fevrier 2020_sensibilisation faites par les chasseurs formés.pdf   ▪ janvier 2020.pdf   ▪ juillet 2020_Fiche de présence pour les réunion et sensibilisation.pdf   ▪ lettre de demande de création du groupement envoyée par la communauté.pdf   ○ agroforestrie et forestrie APN small.pdf   ○ Pastoralism_APN-Chinko_Aire-de-Conservation-de-Chinko_Aebischer-Thierry   ○ Stakeholder engagement.pdf • Location   ○ PAA1.kml   ○ PAA2.kml   ○ PAA3.kml   ○ Project Area.kml   ○ Reference Area.kml   ○ Leakage

• Project Ownership   ○ 2014_Chinko 50year agreement.pdf   ○ 2020_Chinko 25year agreement.pdf   ○ Institutional path PPP 2020   ○ Journal Officiel • Project Start Date   ○ 2016_Monthly reports   ○ APN_AnnualReport_2014_English.pdf   ○ APN_AnnualReport_2015_English.pdf   ○ APN_AnnualReport_2016_English.pdf • Safety SOPs • APN Human Rights Statement of Principles.pdf • APN Law Enforcement SOP Manual.pdf • Human Resources Manual.pdf • Human Rights Training Curriculum.pdf
3. Climate • ER calculations • PDR 38_Proxy.pptx • Imagery • Image interpretation protocol
5. Biodiversity • Mammals over 100g   ○ Chinko Species List - mammals over 100g - Aebischer Thierry - PhD - 2019 1.jpg   ○ Chinko Species List - mammals over 100g - Aebischer Thierry - PhD - 2019 2.jpg   ○ Chinko Species List - mammals over 100g - Aebischer Thierry - PhD - 2019 3.jpg • 2004_BlomPrins_StatusOfTtheProtectedAreasOfTheCentralAfricanRepublic.pdf • 2013_An Update on African Elephant Loxodonta Africana in the ChinkoMbari Drainage Basin, CAR.pdf • 2013_Chinko - Evidence of African wild dogs in the Central African Republic.pdf • 2013_Poulsenetal.pdf • 2017_Chinko - Pan troglodytes schweinfurthii - Aebischer et al Supplement.pdf • 2017_Chinko - Pan troglodytes schweinfurthii.pdf • 2017_Luizza_TranshumantPastoralismIssue.pdf • 2017_TRAFFIC_Garamba-Bili-Chinko.pdf

Annexes

Annex #	Name
Annex 1	Theory of change
Annex 2	Local stakeholder consultation package
Annex 3	Climate monitoring plan
Annex 4	Q/A & Q/C procedure for GIS products
Annex 5	Deforestation and conversion parameters calculations

NPRT

Contents
1. Internal Risks • Conservation agreements   ○ 2014_Chinko 50year agreement.pdf   ○ 2020_Chinko 25year agreement.pdf • CVs • CashFlow_2017_2030.xlsx
2. External Risks • Community Engagement   ○ SDAT 2019-2020.pdf • Political Risk   ○ wgidataset.xlsx
3. Natural Risks • Extreme Weather • Pest and Disease • Fire Analysis
Chinko-Risk-Report-Calculation-Tool.xls Chinko-Non-Permanence-Risk-Report.docx

GIS Figures

Figures #	Name
01	Project location
02	Vegetation Cover
03	Project Zone
04	Consulted communities
05	Spatial boundaries
06	Transhumance patterns in Chinko
07	Project Accounting Areas
08	Delimitation of the perimeter of deforestation in PA
09	Proxy areas
10	RA 1 – Location of agents of deforestation - Local communities
11	RA 1 - Elevation range
12	RA 1 - Slope
13	RA 1- Land Cover
14	RA 1- Soils

Figures #	Name
15	RA 1- Rivers and basins
16	RA 1 - Administrative boundaries
17	RA 1 - Markets
18	RA 1 - Tenure
19	RA 1 - Roads
20	RA 1 - Final delimitation
21	RA 2 - Elevation range
22	RA 2 - Slope
23	RA 2- Land Cover
24	RA 2 - Soils
25	RA 2 - Rivers and basins
26	RA 2 - Administrative boundaries
27	RA 2 - Markets
28	RA 2 - Tenure
29	RA 2 - Roads
30	RA 2 - Final delimitation
31	Location of landsat tiles used
32	Double point coverage
33	Converted perimeter
34	ASLA 1 – Delineation
35	ASLA 1 - Elevation range
36	ASLA 1 - Slope
37	ASLA 1 – Land Cover
38	ASLA 1 - Soils
39	ASLA 2 – Delineation
40	ASLA 2 - Elevation range
41	ASLA 2 - Slope
42	ASLA 2 – Land Cover
43	ASLA 2 - Soils
44	Ground truth data and sampling of interpreter
45	Land cover map 2001-2002
46	Land cover map 2015-2016
47	Vertices PAAs
48	PAA 1 delineation
49	ASLA 1 - Rivers and basins

Figures #	Name
50	ASLA 1 - Administrative boundaries
51	ASLA 1 - Markets
52	ASLA 1 - Tenure
53	ASLA 1 - Roads
54	ASLA 2- Rivers and basins
55	ASLA 2- Administrative boundaries
56	ASLA 2 - Markets
57	ASLA 2 - Tenure
58	ASLA 2 - Roads

Public summaries

Document name
PDD_Summary_Chinko_REDD_CAR_EN
PDD_Summary_Chinko_REDD_CAR_FR

Appendix 4: Public comments period

The project design document was listed on Verra webpage for its public comments period as required by the standard, however, no comments were received during the 30-days period, therefore, there was no need to modify the document to include details coming from the comments.

Appendix 5: Land-cover assessment

Introduction

For a proper delineation of the different spatial boundaries of the project, we undertook the production of two land-cover maps of two different periods, namely 2001-2002 and 2015-2016, that overlap the RAs and PAAs. These maps have a simple nomenclature of six land-cover classes: closed-canopy forest (CCF), open woodland savannah (OWS), wet edaphic grassland (WEG), dry edaphic grassland (DEG), bare soil (BS) and permanent surface water (PSW).

Data and methodology

To create the maps, we worked with the Google Earth Engine (GEE)[144] and depending on the map date; we used Landsat imagery coming from the satellites Landsat 8 (2015-2016) and Landsat 7 (2001-2002). GEE provides cloud mask and images atmospherically corrected. We also considered the digital elevation model (DEM) of the Shuttle Radar Topography Mission (SRTM) as input for the classification.

Figure 88 shows the workflow methodology. Sections below present the details as follows: in Section Stacking layers, we grouped the set of spectral layers and ancillary data that our classifier used as input features. In Section Sampling, we prepared the dataset for training and validation, taking into consideration

[144] https://code.earthengine.google.com/5db70244c48ead9ea153e9347c754176

the sampling provided by the project owner[145] (PO) and the additional samples that we interpreted to cover the full study area. Section Random forest classification defines the classifier and the parametrisation. In Section Accuracy assessment, we introduce the confusion matrix and Cohen's kappa as measurements of accuracy and reliability of the product respectively. Section Post-classification explains the guidelines to have both products that match the minimum mapping unit specifications from the methodology.

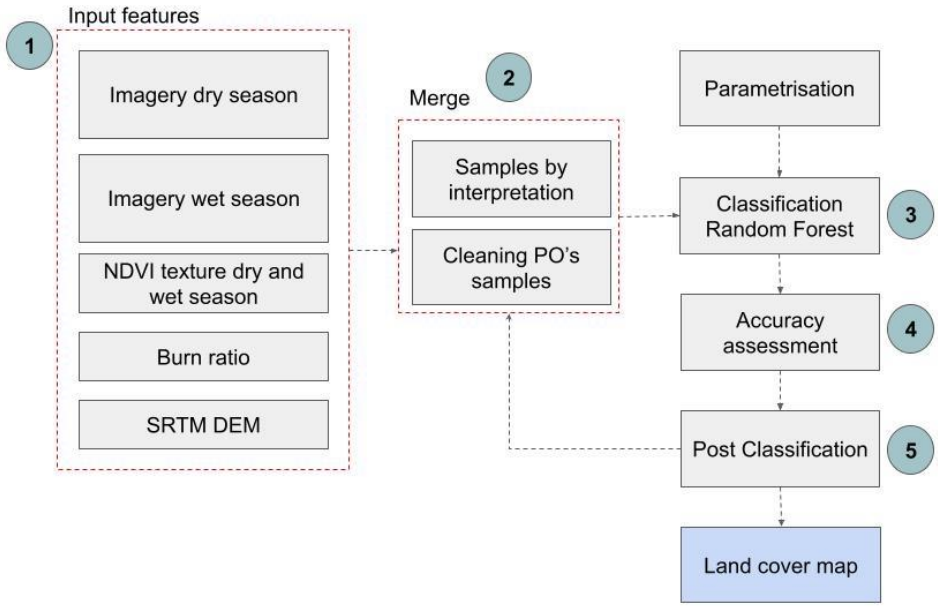


Figure 88: Workflow methodology

Stacking layers

We stacked a set of spectral bands and ancillary data that our classifier used as input features. This dataset consisted of Landsat images, vegetation indices, and the DEM.

First, we aimed to reproduce cloud-free and phenologically consistent images throughout the study area for the dry and wet season in Chinko, during the periods of 2001-2002 and 2015-2016, by generating composites of medians per band of Landsat imagery. Table 49 shows the bands from each sensor used to create each composite.

Table 49: Landsat bands L8 and L7[146]

Landsat 7 ETM Bands (µm)			**Landsat 8 OLI Bands (µm)**		
Band	**Resolution**	**Wavelength (µm)**	**Band**	**Resolution**	**Wavelength(µm)**
B1-Blue	30	0.441-0.514	B2-Blue	30	0.453-0.512
B2-Green	30	0.519-0.601	B3-Green	30	0.533-0.590

[145] https://www.sciencedirect.com/science/article/abs/pii/S0006320716307492

[146] Landsat Homepage | Landsat Science (nasa.gov)

Landsat 7 ETM Bands (µm)			Landsat 8 OLI Bands (µm)		
B3-Red	30	0.631-0.692	B4-Red	30	0.636-0.673
B4-NIR	30	0.772-0.898	B5-NIR	30	0.851-0.879
B5-SWIR-1	30	1.547-1.749	B6-SWIR-1	30	1.566-1.651
B7-SWIR-2	30	2.064-2.346	B7-SWIR-2	30	2.107-2.294

For example, with the 2001-2002 map, the near infrared (NIR) band of the wet season represented the median calculation at a pixel level of the available NIR bands from images of May to October of 2001 and May to October 2002. Table 50 summarises the periods that we work with to reproduce each composite.

Table 50: Image periods for the production of composites

Map	Composite	Season	Satellite/Sensor	Image periods
LC 2001-2002	Median wet 2001-2002	Wet	Landsat 7 ETM	May to October 2001 May to October 2002
	Median dry 2001-2002	Dry	Landsat 7 ETM	December 2000 to February 2001 December 2001 to February 2002
LC 2015-2016	Median wet 2015-2016	Wet	Landsat 8 OLI	May to October 2015 May to October 2016
	Median dry 2015-2016	Dry	Landsat 8 OLI	December 2014 to February 2015 December 2015 to February 2016

Second, the large vegetation variety in the region led us to consider two types of indices that could support the classifier in the discrimination of classes. We used the Normalised Difference Vegetation Index (NDVI) and the burn ratio index (BURN).

$$NDVI = \frac{NIR - RED}{NIR + RED}$$

$$BURN = \frac{NIR - SWIR}{NIR + SWIR}$$

Rather than considering information solely at the pixel level, it was possible to specify the context by analysing the standard deviation of the pixel neighbourhood. This enabled us to gain information not just about the considered pixel, but also about the context where it is immersed. For example, the open woodland savannah is a class that mixes the reflectance of trees and grass, and therefore a larger view of the classifier than the pixel scale can lead to improved classification performance.

Finally, the elevation may also be a good indicator of the type of vegetation. For example, wet grasslands occur on the low-lying level and often within the river or coastal floodplains[147]. The study area elevation ranges in average between 450 and 1,372 metres above sea level (masl).

Sampling

Ground truth polygons worked for the training and validation data of this classification. The polygons are based on known ground truth in areas where the fieldwork could be executed. However, in inaccessible areas, high-quality satellite images were used to cover more data (see the upper side of Figure 89). This survey distinguished four major types of vegetation forms with very different carbon storage characteristics and capacities: 1) closed-canopy forest, 2) open woodland savannah, 3) wet edaphic grassland, 4) dry edaphic grassland, and 5) permanent surface water.

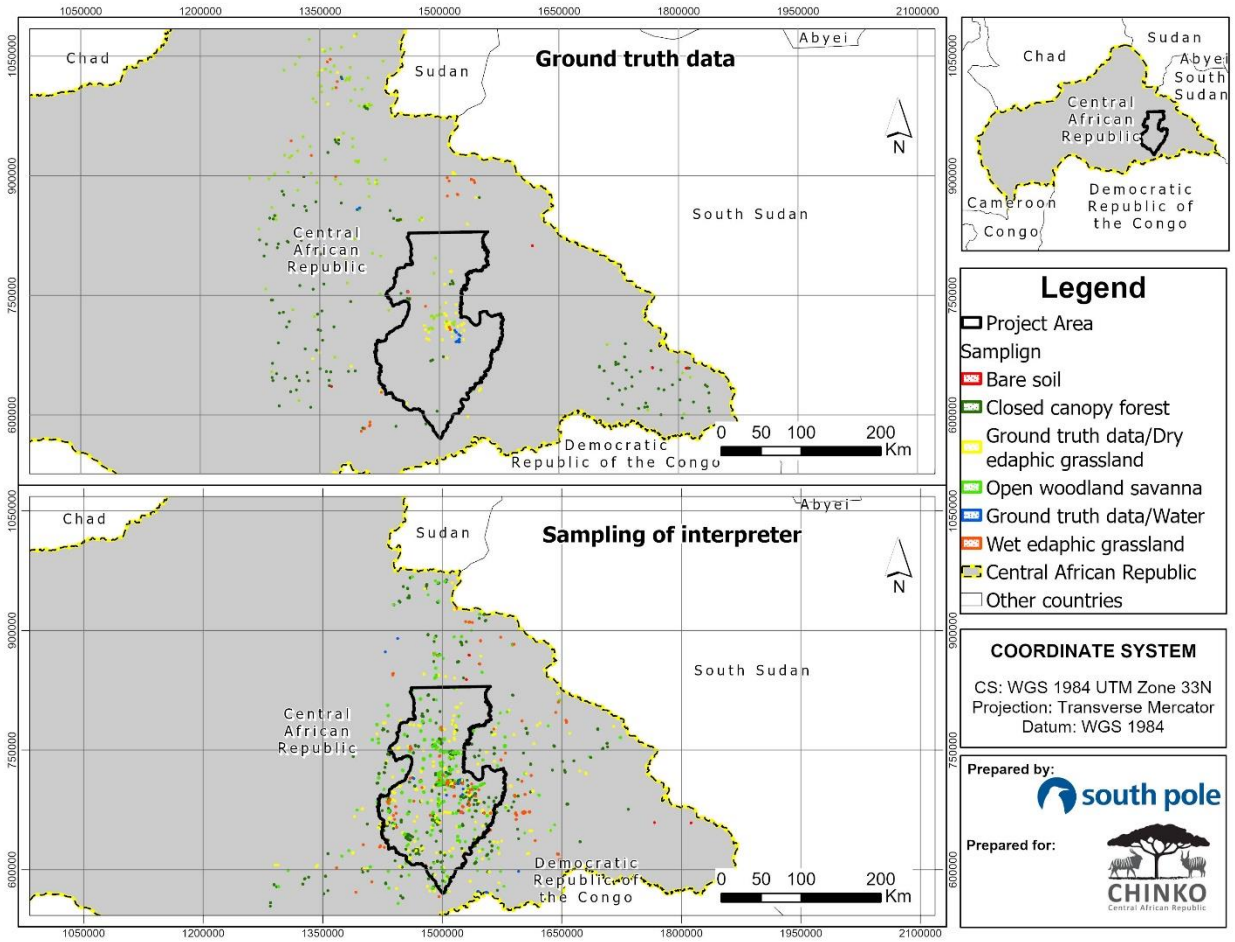


Figure 89: Ground truth data (up) and sampling of interpreter (down)

The dataset is biased towards ground truth data from more accessible areas. Large areas in the northwest and the east lack available samples. This led to an additional dataset of polygons of 90x 90 metres, created by the interpretation of Landsat 8 and Google Earth imagery (see the down part of Figure 89). Although ground truth data corresponds to a survey during the period from 2012 to 2016, and therefore covers the period of land-cover mapping (2015-2016), there must be land-cover areas with conversion to other classes

[147] https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/wet-grassland-and-grazing-marsh/

either by natural or anthropogenic factors. Similarly, for the 2001-2002 map production, there must already be conversion ongoing during the survey of 2012-2016, and thus, labels wrongly describing the land-cover state during the period 2001-2002.

Rather than using all data, we explored and cleaned the dataset by using Google Earth imagery. Table 51 shows the updated number of samples for 2001-2002 and Table 52 for 2015-2016. Each class depicts the number of polygons both from the ground truth one and from the interpreter dataset. After cleaning, we randomly split the ground truth dataset into 60% for validation and 40% for training. The latter was merged to the interpreter dataset in order to build the final training data for the classification.

The numbers highlighted in green show the final number of polygons that were worked with; this cleaning did not represent more than 5% of the data. Unlike the Grassland, Forest and Water classes, the ground truth dataset did not have a bare soil class, therefore 6 samples were created during the interpreter's inspection to validate this class (highlighted in red).

Table 51: Sampling for 2001-2002

Class	**Update of the ground truth dataset 2001-2002**		**Interpreter**
	Validation (60%)	**Training (40%)**	**Training**
CCF	233 **(217)**	156 **(146)**	**122**
OWS	219 **(218)**	46 **(46)**	**121**
WEG	114 **(98)**	77 **(60)**	**39**
DEG	154 **(135)**	103 **(76)**	**81**
BS	**6**		**7**
PSW	21**(16)**	14 **(14)**	**21**
Total samples	**747 (690)**	**396 (342)**	**391**

Table 52: Sampling for 2015-2016

Class	**Update of the ground truth dataset 2015-2016**		**Interpreter**
	Validation (60%)	**Training (40%)**	**Training**
CCF	233 **(233)**	156 **(156)**	**130**
OWS	219 **(205)**	46 **(46)**	**123**
WEG	114 **(97)**	77 **(67)**	**48**
DEG	154 **(146)**	103 **(103)**	**102**
BS	**6**		**7**
PSW	21**(19)**	14 **(14)**	**24**

Total samples	**747** (706)	**396** (386)	**434**

Using the identified classes and the wet and dry season NDVI bands, we constructed the scatterplot in Figure 90. This graphic enabled us to see that bands coming from different seasons may contribute to the separation of our classes. However, there are classes that depict a better aggregation than others. Whereas PSW, DEG, and CCF show a clear reparability, OWS and DEG have points that overlap and thus, likely represent a future confusion between both classes in the final map.

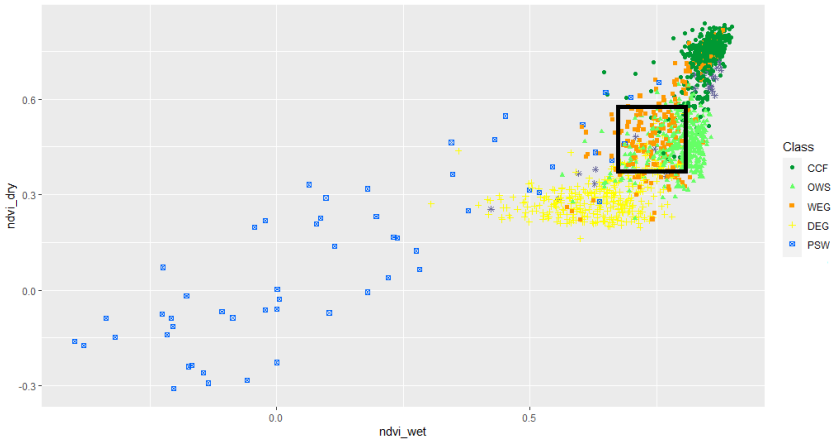


Figure 90: Scatterplot for dry and wet NDVI

Figure 91 shows, using boxplots, the magnitude and dispersion of each class by using NDVI values from the dry and wet seasons. In this case, we have added the bare soil class which may have spectral similarity with dry edaphic grassland during the dry season. However, the wet season makes the latter class more photosynthetically active and, thus, increases the NDVI and leads to a better contrast shown with the bare soil.

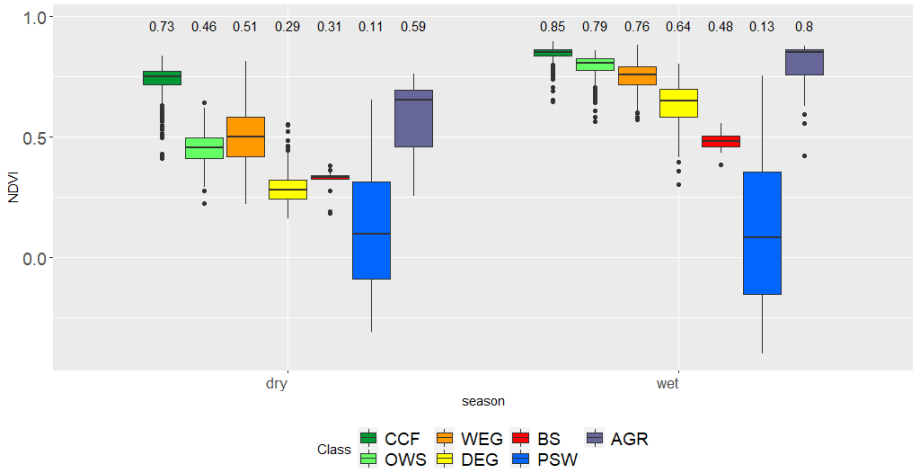


Figure 91: Analysis of variance of NDVI for the wet and dry season by boxplots

Random forest classification

Random forest (RF) represents state-of-the-art algorithms for its application in the production of land use land change (LULC) analysis[148], and are important for their ability to handle high dimensionality, being superior to unsupervised approaches, and insensitive to overfitting[149]. The fundamental idea behind RF is the construction of hundreds of decision trees, considered weak learners, which are then combined to transform them into a strong learner. Its implementation depends on setting up two parameters: number of trees ***ntree*** and number of variables randomly sampled as candidates at each split, ***mtry***. The suggested value for the parameter ***ntree*** is 100 and the ***mtry*** is equal to the square root of the number of input futures.

Accuracy assessment

Generally, classification accuracy depends on multiple factors: the nature of the training samples; the number of features (bands and ancillary data); the number of classes to be discriminated; the spatial resolution of the images; and the properties of the classifier. This workflow based the accuracy and the reliability of the product on the confusion matrix and Cohen's kappa[150].

Post-classification

Having the land-cover map in raster format, we distinguished the **forest classes** (OWS and CCF) and **grassland classes** (DEG and WEG) in order to apply minimum mapping units (MMU) methodological requirements. As shown in Figure 92, we undertook this post-processing by splitting the forest and grassland masks and applying **region groups** for both classes in order to identify connected regions, enabling the consideration of a set of pixels of the same class with mutual boundaries as one object. Subsequently, we **retrieved** only those objects that met the constraint area of each class. To do so, we considered the minimum number of pixels that add up to each MMU – six pixels for forest (0.5Ha) and 70 pixels for grassland (250m x 250m). Thereafter, we constructed binary maps of both layers and added each mask, plus the PSW and BS. With this new mask and the original land-cover map, we applied a **Nibble process** in order to merge those pixels that do not meet the MMU conditions to the nearest land-cover.

[148] Thanh, Phan, and Martin Kappas. 2018,. "Comparison of random forest, k-nearest neighbor, and support vector machine classifiers for land-cover classification using Sentinel-2 imagery." Sensors vol. 18, no 1, p. 18.

[149] Breiman, L. 2002. "Manual on setting up, using, and understanding random forests." Statistics Department University of California Berkeley CA, USA 1, 58.

[150] Congalton, R. G., and K Green. 2019. "Assessing the accuracy of remotely sensed data: principles and practices." CRC press.

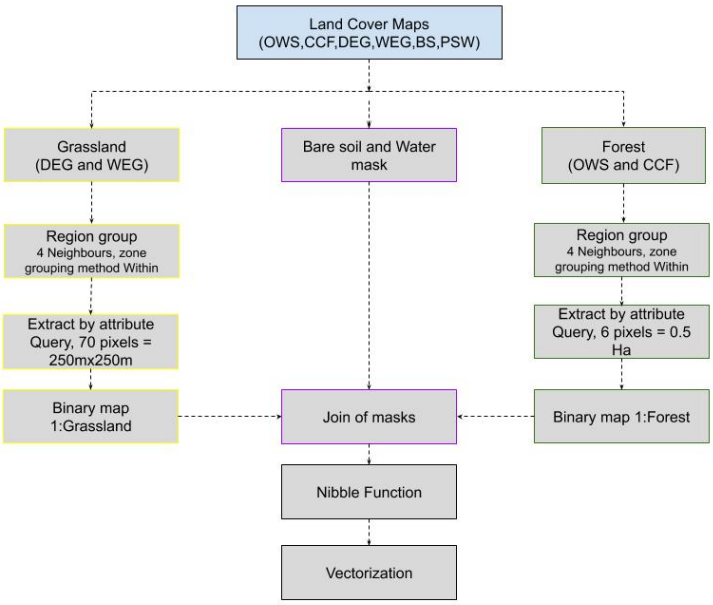


Figure 92: Workflow for a land-cover map production

Land-cover map

Even though a random forest classifier could support a high dimensionality comprising many bands, it is useful to highlight the importance of input features that could contribute more to the separation of these classes. After combining different inputs we found that neither the elevation nor the raw normalised vegetation indices contributed to the best performance of the classification. Instead, the spectral bands of the dry and wet seasons and the kernel of the NDVI created the optimal combination to achieve the best results.

Land-cover map 2001-2002

Figure 93 shows the land-cover map for 2001-2002 in Chinko. Visually, the open woodland savannah is more dominant in the project area than in the reference region. This class is characterised by the trees that are sufficiently widely spaced so that the canopy does not close. Closed-canopy forest cover is characterised by a dense growth of trees in which the top branches form a canopy, and where the light can barely reach the forest floor. This cover shows up around the rivers in the regions and generally in the south west of the reference area. Grasslands arise from the areas around Zemio and Djmah in the lower part of Chinko, and from Ouanda Djalle in the north.

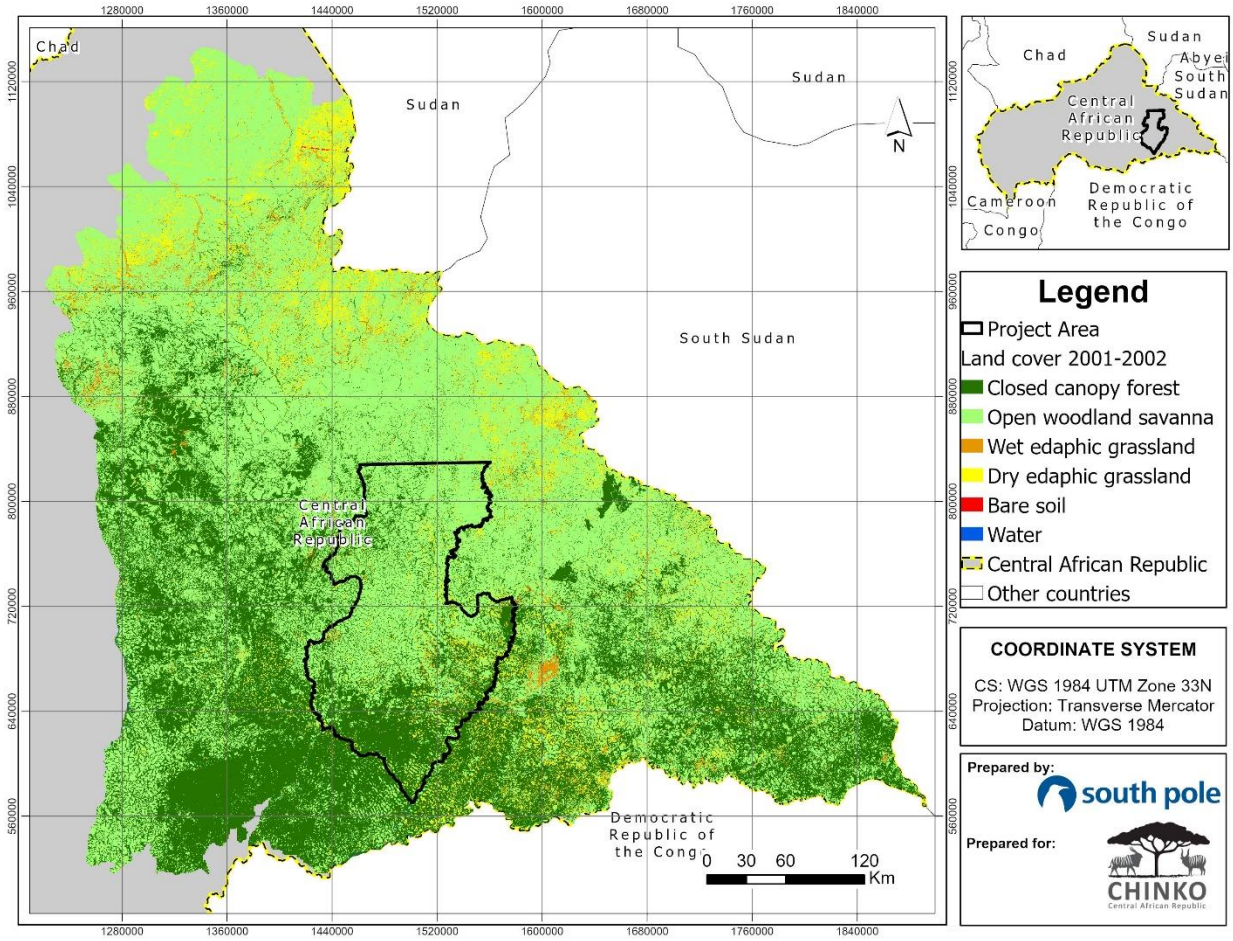


Figure 93: Land-cover map 2001-2002

In order to evaluate its accuracy, we calculated the confusion matrix and subsequently, a kappa statistic of 0.87. The proximity of this magnitude to one shows an agreement between precision and accuracy, which means that our classifier appears to deal very well with the discrimination of the six classes.

Table 53 shows the number of predicted pixels that overlapped the aforementioned evaluation polygons (see Section Sampling).

Table 53: Confusion matrix of the 2001-2002 land-cover map

		Ground truth						
		CCF	**OWS**	**WEG**	**DEG**	**BS**	**PSW**	**Total**
Classified results	**CCF**	10,742	458	162	6	0	2	**11,370**
	OWS	1,310	30,130	296	181	0	0	**31,917**
	WEG	350	600	2,632	50	0	4	**3,636**
	DEG	0	159	0	2,892	6	0	**3,057**

	BS	0	0	0	6	11	0	**17**
	PWS	7	0	0	0	0	179	**186**
	Total	**12,409**	**31,347**	**3,090**	**3,135**	**17**	**185**	**50,183**

From the information in Table 53 it is possible to construct Table 54, which shows the normalisation, and highlights the classification producer accuracy with percentages larger than 85% per class, except for the bare soil class that is weakly predicted and has a high degree of confusion with the DEG class.

Table 54: Normalisation of the confusion matrix for the 2001-2002 land-cover map

		Normalisation: Ground truth					
		CCF	**OWS**	**WEG**	**DEG**	**BS**	**PSW**
Classified results	**CCF**	86.6%	1.5%	5.2%	0.2%	0.0%	1.1%
	OWS	10.6%	96.1%	9.6%	5.8%	0.0%	0.0%
	WEG	2.8%	1.9%	85.2%	1.6%	0.0%	2.2%
	DEG	0.0%	0.5%	0.0%	92.2%	35.3%	0.0%
	BS	0.0%	0.0%	0.0%	0.2%	64.7%	0.0%
	PWS	0.1%	0.0%	0.0%	0.0%	0.0%	96.8%

Land-cover map 2015-2016

Similarly, in the case of the 2015-2016 map, we calculated the confusion matrix (see Table 55), resulting in a kappa statistic of 0.92.

Table 55: Confusion matrix for the 2015-2016 land-cover map

		Ground truth						
		CCF	**OWS**	**WEG**	**DEG**	**BS**	**PSW**	**Total**
Classified results	**CCF**	11,671	183	110	34	0	6	**12,004**
	OWS	630	43,843	617	110	0	0	**45,200**
	WEG	260	382	3,735	49	0	0	**4,426**
	DEG	1	32	52	3080	0	0	**3,165**
	BS	0	0	0	17	34	0	**51**
	PWS	15	0	3	0	0	181	**199**
	Total	**12,577**	**44,440**	**4,517**	**3,290**	**34**	**187**	**65,045**

Table 56 can give us also a better insight into the classifier performance per class.

Table 56: Normalisation of the confusion matrix for the 2015-2016 land-cover map

		Normalisation: Ground truth					
		CCF	**OWS**	**WEG**	**DEG**	**BS**	**PSW**
Classified results	**CCF**	92.8%	0.4%	2.4%	1.0%	0.0%	3.2%
	OWS	5.0%	98.7%	13.7%	3.3%	0.0%	0.0%
	WEG	2.1%	0.9%	82.7%	1.5%	0.0%	0.0%
	DEG	0.0%	0.1%	1.2%	93.6%	0.0%	0.0%
	BS	0.0%	0.0%	0.0%	0.5%	100.0%	0.0%
	PWS	0.1%	0.0%	0.1%	0.0%	0.0%	96.8%

Using the same process as the 2001-2002 map, we built the confusion matrix through the validation data and saw a possible confusion in the identification of OWS and WEG classes, that is, WEG areas were classified as forest (2.4% CCF and 13.7% OWS). Figure 94 shows the final map of land-cover for 2015-2016.

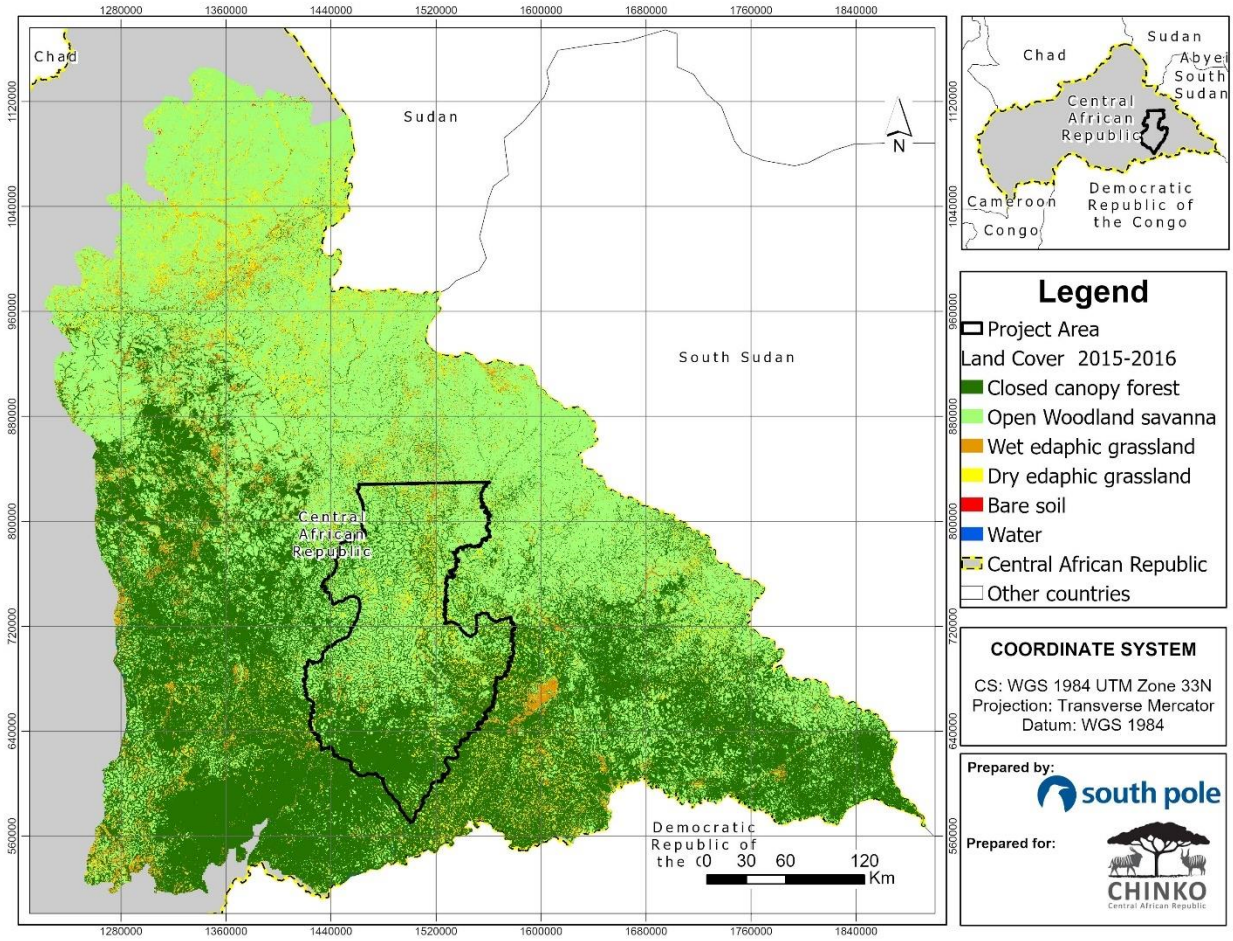


Figure 94: Land-cover map 2015-2016

Post-classification

Minimum Mapping Unit

In order to follow the requirements for minimum mapping units, we implemented the methodology proposed in Section Accuracy assessment. Figure 95 shows, for example, how small areas of WEG which are among other classes, are merged during post-classification to the nearest neighbour class.

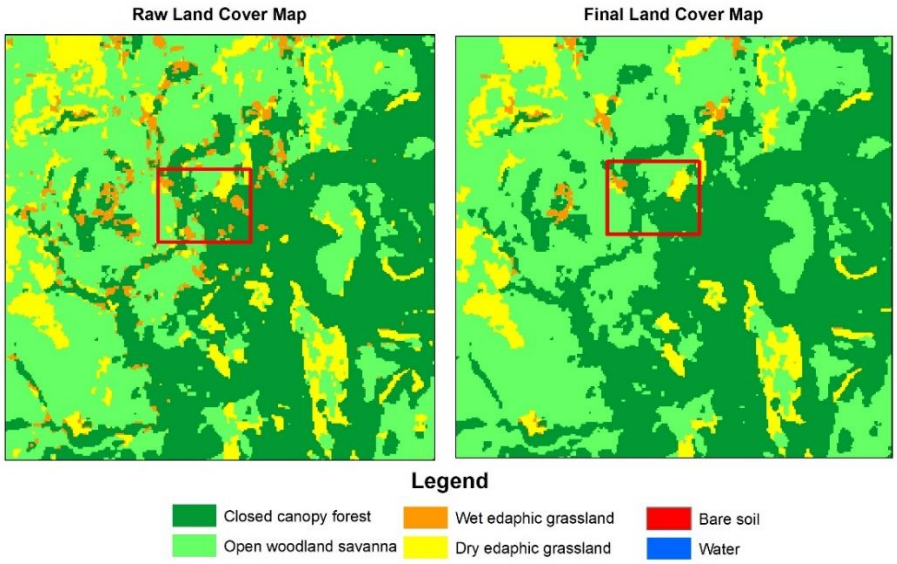


Figure 95: Post-classification fixing of minimum mapping units for grassland and forest classes

Stable forest determination and initial forest cover categorization

The stable forest layer comes from an intersection of 2001-2002 and 2015-2016 land cover maps. To comply with applicability condition 2 of the methodology and to ensure that the final eligible area does not contain any areas that have been non-forested in the historical period, a mask containing the non-forest areas in both periods was extracted from the intersection obtaining a stable forest area for the period 2001-2016. To initially determine the Land Cover category of the Stable Forest class, the 2015-2016 map was considered as the final output as the statistical estimators of the 2015-2016 (kappa value and confusion matrix) coverage showed a better fit.

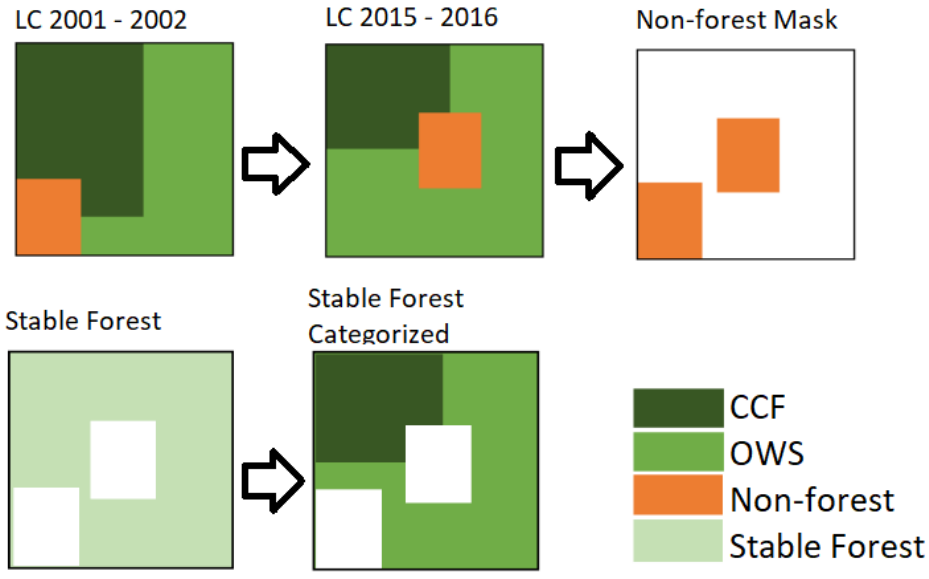


Figure 96: Eligible area determination

Overlaying with other sources

As a final step to determine the stable forest category area within each PAA we included an analysis using the Global Forest Canopy Height, 2019 dataset from GLAD[151], which is a 30-m spatial resolution global forest canopy height map developed through the integration of the Global Ecosystem Dynamics Investigation (GEDI) lidar forest structure measurements and Landsat analysis-ready data time-series. This was overlain with the 2015-2016 LULC map that delineated all stable forest classes (CCF and OWS).

Based on the information from the dataset, African Parks' experience in the field, and relevant scientific literature[152] [153], we further refined our definition of CCF as any woody vegetation >10 m without a continuous grass layer, that was previously classified as CCF in the 2015-2016 LULC map. The 10 m threshold was selected as the datasets own accuracy metrics demonstrate higher overall accuracy when classifying forests with a height greater than 10 m as described by Potapov et al., 2020. Furthermore, Hansen et al. 2016 research for mapping tree height distributions across Central Africa showed that clusters of tree height between 5 and 10m corresponds to primary dry seasonal woodlands, while clusters with tree height over 10m correspond to evergreen, denser forest.

OWS is defined as a woody vegetation of various heights and a continuous grass layer. It must be noted that while OWS can contain trees of heights up to 30m, these are isolated trees that do not form a closed canopy. These areas, then, are not classified as CCF as they would not meet the canopy height metric of 10m in a 30x30m pixel used by the dataset. All areas that were classified as CCF prior to this step that did not meet the new CCF definition, were reclassified as OWS. This was because these areas are still considered stable forest, as demonstrated in the stable forest determination process described above.

The main benefit of this approach is that it removes any uncertainty along the edges of CCF classifications that were present in the original 2015-2016 LULC map reclassifying the transition zones as OWS due to their smaller canopy height (less than 10m across a 30x30m pixel).

[151] Available at https://glad.umd.edu/dataset/gedi

[152] P. Potapov, X. Li, A. Hernandez-Serna, A. Tyukavina, M.C. Hansen, A. Kommareddy, A. Pickens, S. Turubanova, H. Tang, C.E. Silva, J. Armston, R. Dubayah, J. B. Blair, M. Hofton (2020) Mapping and monitoring global forest canopy height through integration of GEDI and Landsat data. Remote Sensing of Environment, 112165. https://doi.org/10.1016/j.rse.2020.112165.

[153] Matthew C. Hansen, Peter V. Potapov, Scott J. Goetz, Svetlana Turubanova, Alexandra Tyukavina, Alexander Krylov, Anil Kommareddy, Alexey Egorov, (2016) Mapping tree height distributions in Sub-Saharan Africa using Landsat 7 and 8 data. Remote Sensing of Environment, Volume 185, https://doi.org/10.1016/j.rse.2016.02.023