

# Baulu Conservation Concession as an Other Effective Area-Based Conservation Measure (OECM): Loma Group, DRC

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## Abstract

This study examines the adequacy of the Baulu Conservation Concession (Democratic Republic of Congo) with the normative framework of OECMs of the Convention on Biological Diversity (CBD). Located in the Congo Basin, this 277,131-hectare concession, recently converted from industrial logging to a conservation model, represents a critical case study for reconciling ecological integrity and local development. The assessment is based on the secondary analysis of two complementary field studies: 1) a wildlife ecological analysis through participatory surveys of 80 hunters and reconnaissance walks (RECCE) over 24 km, and 2) an economic potential assessment through socioeconomic surveys of 160 households. These data were interpreted according to one of the eight criteria defined by the CBD for the recognition of OECMs and synthesized in a SWOT analysis. The study reveals a marked dichotomy. Ecologically, the concession has a notable species richness (43 species recorded), including 26.1% of threatened species (CR, EN, VU on the IUCN Red List) such as the Bonobo (*Pan paniscus*) and the Congo Peafowl (*Afropavo congensis*), confirming its global biological importance. Biodiversity indices (Shannon  $H' = 2.43$ ) indicate a complex and relatively preserved forest ecosystem. Socio-economically, local communities exhibit extreme dependence on natural resources (slash-and-burn agriculture: 38%, NTFP collection: 30%), widespread economic insecurity (median income < USD 40/month), and a historical distrust of conservation initiatives, exacerbated by a governance crisis and severe geographical isolation. Although the Baulu Concession meets

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the ecological conditions (CBD criteria A, B, C) to qualify for OECM status, it does not meet the requirements of governance (D), management (E), sustainability (G), and equity (H). Recognition as an OECM is therefore not feasible in the short term. The SWOT analysis identifies ecological strengths and funding opportunities as levers, but highlights that structural weaknesses (conflicting governance, lack of a management plan) and threats (anthropogenic pressure, instability) predominate. The study recommends, as priorities, the establishment of an inclusive dialogue, the co-construction of a legitimate governance structure, the development of a simplified management plan, and the development of equitable economic sectors. The concession should be considered an “OECM candidate,” requiring a transformative project to address the identified gaps and realize its potential as a hybrid and sustainable conservation model.

### Keywords

Post-Industrial Logging, Conservation Concession, NTFP, IUCN Red List Conservation, Wildlife, RECCE, Surveys, Hunters

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## 1. Introduction

The rapid degradation of ecosystems on a global scale has led the international community to recognize the need to diversify biodiversity conservation tools beyond the traditional network of protected areas. In this context, the concept of Other Effective Area-Based Conservation Measures (OECMs), adopted by the Convention on Biological Diversity (CBD), is emerging as a pivotal instrument of the Global Biodiversity Strategy 2030 (IUCN, 2020). OECMs designate areas where biodiversity conservation is effectively and sustainably ensured in situ, through governance and management mechanisms that may be other than strict conservation objectives, but which generate positive and lasting results (CBD, 2018).

The Congo Basin, the second largest tropical forest in the world, is both an epicentre of biodiversity and the basis of subsistence economies for millions of people (Eba’a Atyi et al., 2022). In the Democratic Republic of Congo (DRC), the Conservation Concession presents itself as an innovative hybrid model, aiming to reconcile ecological integrity and local development. Baulu Conservation Concession N°001/24, the subject of this study, perfectly illustrates this dynamic of post-logging transition towards a sustainable management model.

Located in the Maringa-Lopori-Wamba landscape, the Baulu concession is home to remarkable biodiversity, including flagship and endangered species such as the Bonobo (*Pan paniscus*) (Dupain et al., 2008) paradoxically, it is subject to strong anthropogenic pressures (hunting, slash-and-burn agriculture) and a historical mistrust of local communities (LC) towards conservation initiatives, inherited from past conflicts and fueled by a glaring lack of viable economic alternatives (Mayifilua et al., 2012).

In this context, preliminary studies conducted on wildlife and economic potential revealed a dual observation: exceptional ecological importance coupled with a crisis of governance and livelihoods. This tension makes Baulu both a priority and a complex candidate for recognition as an OECM. Such recognition could provide a framework of international legitimacy, mobilize technical and financial support, and, above all, provide a roadmap for transforming conflicts into virtuous partnerships for conservation.

This report aims to analyze the possibility of integrating the study area into the OECM framework. This assessment is based on the secondary analysis of two complementary field studies: an ecological analysis of the fauna and an assessment of the economic potential of forest resources. These primary data, collected in February 2025 via inventories (RECCE), surveys of 80 hunters and 160 households, are cross-referenced with a documentary review and interpreted in light of the OECM normative framework. The final objective is therefore to determine whether the area meets the criteria defined by the CBD to be recognized as an OECM, and to identify the strengths, weaknesses, opportunities, and threats (SWOT analysis) linked to such integration.

## 2. Materials and Methods

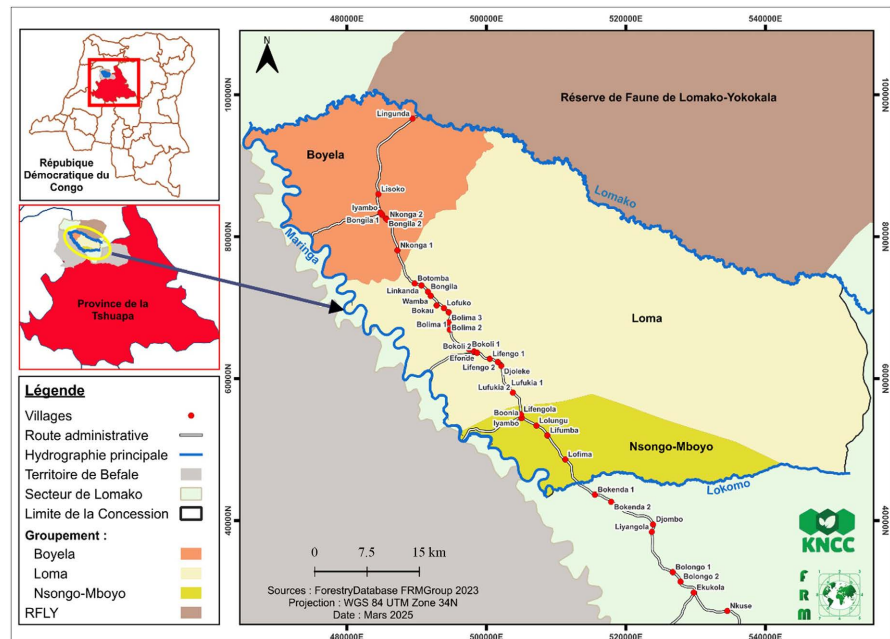
### 2.1. Study Area

The location of the study area is shown in **Figure 1**. Baulu Conservation Concession is located in the Tshuapa province in central DRC, in the central basin.

Administratively, the Baulu concession is entirely located in the territory: Befale; the sector: Lomako; the Boyela, Loma, and Nsongo-Mboyo groups.

From a geographical point of view, the total area is 277,131 ha. The boundaries of the Baulu Conservation Forest Concession are as follows (FRMi, 2023):

- 1) To the North: the left bank of the Lomako River, the part between its confluence with the Maringa River (geographic coordinates 0°51'35" north latitude and 21°41'43" east longitude) and its confluence with the Loilaka (geographic coordinates 0°39'48" north latitude and 21°27'30" east longitude);
- 2) To the East: the Loilaka River from its confluence with the Lomako to its source (geographic coordinates of 0°31'17" North latitude and 21°29'39" East longitude), then a straight line (1608m direction 191°) joining the source of the Loilaka River to the source of the unnamed river (geographic coordinates 0°30'15" North latitude and 21°29'39" East longitude), then the unnamed river to its confluence with the Lokomo (geographic coordinates 0°25'19" North latitude and 21°27'40" East longitude);
- 3) To the South: the right bank of the Lokomo River, the part between the confluence with an unnamed river (and the confluence with the Maringa River (geographic coordinates 0°51'35" North latitude and 21°41'43" East longitude);
- 4) To the West: the right bank of the Maringa River, the part between the confluences with the Lokomo and Lomako Rivers.



**Figure 1.** Location of the Baulu Conservation Forest Concession N°001/24.

## 2.2. Materials Used

The field equipment included navigation equipment (GPS, compass), data collection equipment (smartphones, power bank, waterproof paper sheets), as well as logistics and security equipment (motorcycle, machetes, boots).

## 2.3. Secondary Data

A documentary review was conducted, including research reports, scientific publications, historical forest inventories (IFCO, ICCN), and the Environmental and Social Impact Assessment (ESIA) of the concession.

## 2.4. Primary Data

This study is based on a secondary analysis of two complementary field diagnostics, carried out in February and March 2025: an ecological analysis of the fauna and a socioeconomic assessment. The collection of primary data was preceded by obtaining Free, Prior, and Informed Consent (FPIC) in 16 of the 17 villages of the Loma group.

### 2.4.1. Ecological Analysis of Fauna

A dual methodological approach was used to circumvent logistical and social constraints.

**1) Participatory surveys with hunters:** Five (5) experienced hunters were randomly selected from each of the 16 villages ( $n = 80$  in total). Semi-structured interviews were conducted using a questionnaire on KoBoToolbox (<https://ee.kobotoolbox.org/x/7m7DKRbu>) and a species identification guide to identify the wildlife present, an identification scene is shown in **Photo 1**.

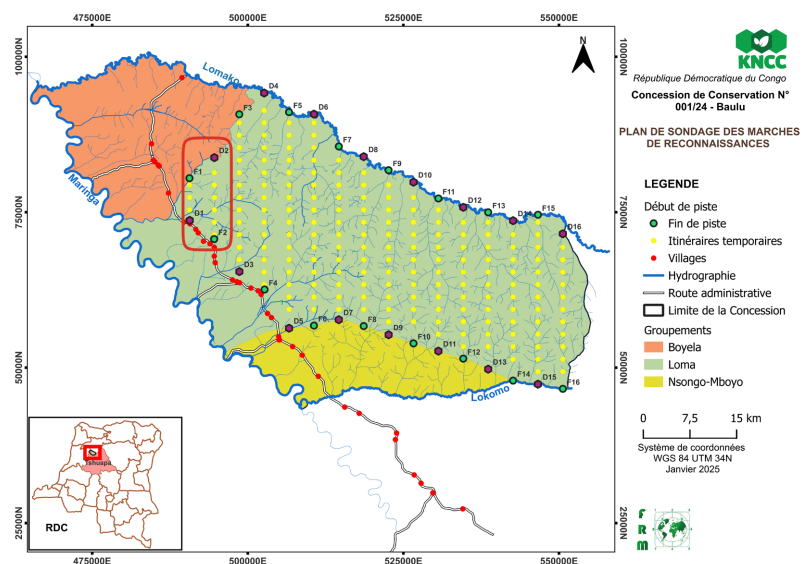


**Photo 1.** Identification of wildlife by a hunter from Bongila village.

**2) Reconnaissance marches (RECCE):** A field inventory was carried out on a 24 km transect, the route of which is highlighted in **Figure 2**. This transect was traversed over 6 days (4 hours/day during twilight periods). As illustrated in **Photo 2**, the method consisted of following a track or transect of least resistance while maintaining the compass direction, with the deviation angle not exceeding 40° (Mahamadou, 2010). A team of 7 people (tracker, porters, machete, GPS operator, paper and digital data pointer) systematically noted the signs of direct and indirect presence (footprints, droppings, tracks, vocalizations, direct observations).



**Photo 2.** Data collection in forests.



**Figure 2.** Survey plan for reconnaissance walks.

### 2.4.2. Socioeconomic Assessment

Data collection to assess economic opportunities was structured using a quantitative and qualitative approach. Initially, the sample size was calculated by applying the formula for an infinite population (Onyeka et al., 2015):

$$n = (Z^2 \cdot p \cdot (1 - P)) / m^2$$

where  $n$  is the sample size;  $z$  = confidence level according to the reduced centered normal distribution (for a 95% confidence level,  $z = 1.96$ );  $p$  = estimated proportion of the population that presents the characteristic (when unknown, we use  $p = 0.5$  which corresponds to the worst case, i.e., the greatest dispersion);  $m$  = tolerated margin of error (10% in this case).

For a finite population  $N = 9377$  (FRM, 2013).

Then, the correction coefficient for the finite population was applied:

$$n' = (n \cdot N) / (N + n)$$

with  $n = 96$  initially calculated, the adjusted size amounts to  $n' = 95$  households. However, to anticipate unforeseen events in the field (refusal to participate, incomplete data), this number was increased to 110 households during planning.

### 2.4.3. Adaptation to Field Constraints

The initial methodology had to be adapted in situ due to social constraints. To ensure an equitable distribution of “civilities” (informal financial compensation requested by communities) between villages, a purposive sampling of 10 households per village was adopted, bringing the final sample to 160 households spread across the 16 villages. Structured questionnaires on KoBoToolbox (<https://ee.kobotoolbox.org/x/q2mZPPRR>, as shown in **Photo 3**), were administered to collect data on economic activities, income, marketing, and perceptions towards conservation.



**Photo 3.** Surveys on economic potential in the village of Lofukia.

## 2.5. Data Processing and Data Analysis

All primary data was consolidated, cleaned, and organized in a Microsoft Excel database before analysis.

### 1) Ecological Analysis of Fauna

The assessment of species richness (SR), corresponding to the total number of species recorded, constituted the first stage of the analysis. This was completed by the study of three recognized biodiversity indices:

#### Shannon index ( $H'$ )

This index measures diversity by integrating both the total number of species and their relative abundance within the community studied (Rita et al., 2025).

$$H' = -\sum_{i=1}^s [p_i \ln p_i]$$

#### Simpson index (D)

It allows the quantification of the possible dominance of one or more species in the population (Pavoine, 2024).

$$D = \frac{1}{\sum_{i=1}^R [p_i]^2}$$

with  $i$ : A species in the study environment;  $s$ : Specific richness;  $p_i$ : Proportion of species  $i$  in relation to the total number of individuals ( $N$ ) in the study environment, which is calculated as follows:

$$p(i) = ni/N$$

where  $ni$  is the number of individuals for species  $i$ , and  $N$  is the total number (individuals of all species).

The method for analyzing data from wildlife biodiversity reconnaissance walks also involved calculating abundance indices. Here, the encounter rate was the unit of analysis. This is the kilometer abundance index (KAI), which made it easier to standardize the various presence indices per kilometer.

### 2) Socioeconomic Assessment

The variations and distribution of economic activities in relation to the village were generated using Microsoft Office Excel software, using diagrams. Comparisons between activity groups and activities were made using the `vioplot` function in R Studio, incorporating box plots. Chi-square and Kruskal-Wallis tests were carried out to determine whether there is a dependency between different variables (gender and activity; monthly income and education level; monthly income and activity or activity groups), using RStudio software.

### 3) Synthetic Assessment Framework

The ecological and socioeconomic results were interpreted qualitatively using the eight criteria defined by the CBD (2018) for the recognition of OECMs. A SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis was finally used to synthesize in an integrative manner the factors influencing the OECM potential of the site.

## 3. Results

### 3.1. Wealth, Conservation Status, and Diversity of Fauna

The combined evaluation of participatory surveys and reconnaissance walks provided a detailed result of the wildlife community.

### 3.1.1. Specific Richness

The inventory recorded a total of 43 species of mammals, birds, and reptiles, whose detailed distribution is presented in **Table 1**. Surveys of the 80 hunters identified 40 species, demonstrating detailed knowledge of the territory. The reconnaissance walks (RECCE) over 24 km confirmed the presence of 23 of these species through the observation of 202 signs of presence, such as fresh feces, illustrated by **Photo 3**. The majority of which were footprints (58%), tracks (19%), and droppings (11%).

**Table 1.** Specific faunal richness.

Class	Hunter Investigations (80)	RECCE (23 km)	Number of Species	Protected Species (DRC)	Endangered SPECIES (IUCN)
Birds	1	3	3	3	2 VU
Mammals	34	20	35	35	10 (4 EN, 2 CR, 4 VU)
Reptiles	5	0	5	1	1 CR
<b>TOTAL</b>	<b>40</b>	<b>23</b>	<b>43</b>	<b>39</b>	<b>13</b>



**Photo 3.** Fresh black duiker droppings.

### 3.1.2. Conservation Status and Threatened Species

The area is of exceptional ecological importance, with 26.1% of recorded species classified as threatened on the IUCN Red List. This proportion breaks down as follows:

- 1) 10% of species are Critically Endangered (CR), including the iconic Bonobo (*Pan paniscus*).
- 2) 10% are Endangered (EN), such as the Dryad Monkey (*Cercopithecus dryas*).
- 3) 10% are Vulnerable (VU), such as the Congo Peacock (*Afropavo congensis*).

### 3.1.3. Relative Abundance and Community Structure

As detailed in **Table 2**, the analysis of the Kilometric Abundance Index (IKA) reveals a community dominated by resilient species such as the Red River Hog (*Potamochoerus porcus*, IKA = 2.49 ind./km) and the dorsal-banded duiker (*Cephalophus dorsalis*, IKA = 2.47 ind./km). Conversely, predators such as the African Civet (*Civettictis civetta*, IKA = 0.03 ind./km) and the Crowned Eagle (*Stephanoaetus coronatus*, IKA = 0.03 ind./km) are extremely rare.

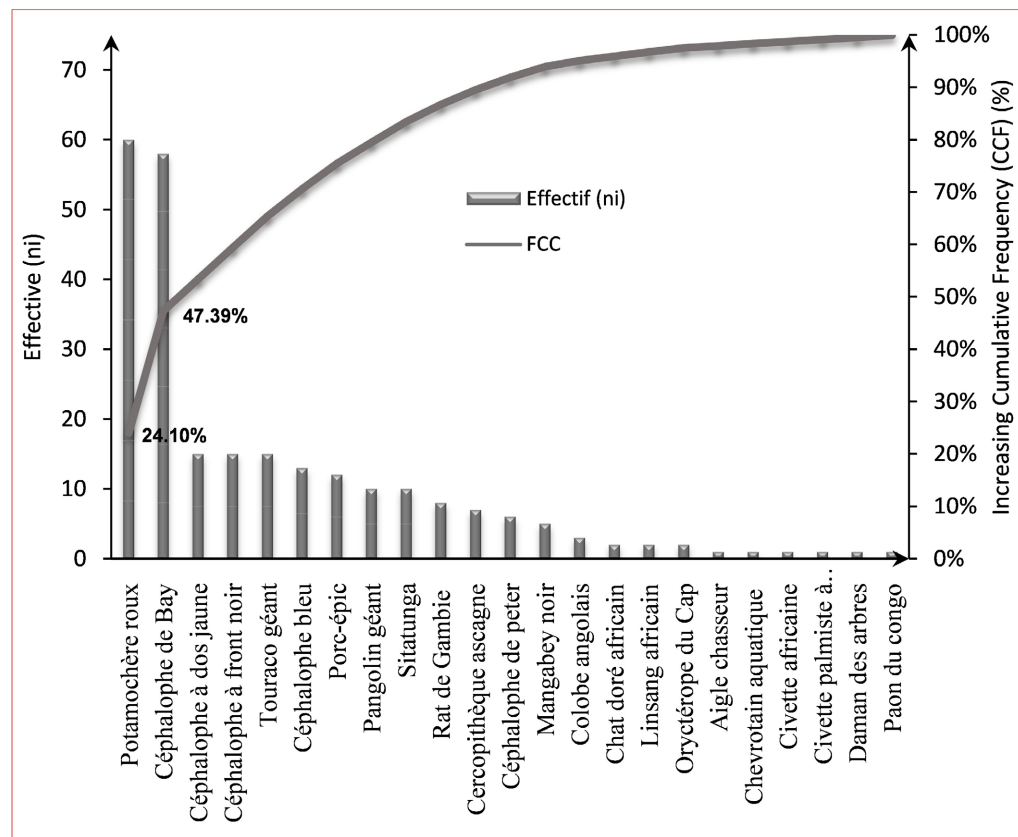
**Table 2.** Kilometric abundance indices.

Species	IKA R1 (8.21 km)	IKA R2 (6.52 km)	IKA R3 (9.49 km)	IKA Total
<i>Potamochoerus porcus</i>	2.19	2.76	2.53	2.49
<i>Cephalophus dorsalis</i>	0.85	3.83	2.74	2.47
<i>Cephalophus nigrifrons</i>	0.24	1.53	0.32	0.69
<i>Cephalophus silvicultor</i>	0.61	1.07	0.32	0.66
<i>Corythaeola cristata</i>	0.73	0.31	0.74	0.59
<i>Cephalophus monticola</i>	-	0.92	0.74	0.55
<i>Atherurus africanus</i>	0.24	0.92	0.42	0.52
<i>Manis gigantea</i>	0.12	1.07	0.21	0.46
<i>Tragelaphus spekeii</i>	0.49	0.77	0.11	0.45
<i>Cricetomys gambianus</i>	-	1.07	0.11	0.39
<i>Lophocebus aterrimus</i>	-	0.77	-	0.25
<i>Cercopithecus ascanius</i>	-	-	0.74	0.24
<i>Cephalophus callipygus</i>	-	-	0.63	0.21
<i>Colobus angolensis</i>	-	0.46	0	0.15
<i>Orycteropus afer</i>	0.12	0.15	0	0.09
<i>Caracal aurata</i>	0	0.15	0.11	0.08
<i>Poiana richardsonii</i>	-	-	0.21	0.07
<i>Afropavo congensis</i>	-	0.15	-	0.05
<i>Dendrohyrax arboreus</i>	-	0.15	-	0.05
<i>Hyemoschus aquaticus</i>	-	0.15	-	0.05
<i>Nandinia binotata</i>	-	-	0.11	0.036
<i>Civettictis civetta</i>	-	-	0.11	0.03
<i>Stephanoaetus coronatus</i>	-	-	0.11	0.03

**Note:** Legend: IKA R: Kilometric index of track abundance. Ind. Km: Indices per kilometer.

### 3.1.4. Ecosystem Diversity Indices

Biodiversity calculations indicate a complex and relatively preserved ecosystem. The Shannon index value ( $H' = 2.43$ ) and the low Simpson index value ( $D = 0.134$ ), whose distribution is visualized in **Figure 3**, confirm a moderate specific diversity and a balanced community, without marked dominance of a species.



**Figure 3.** Distribution of increasing cumulative frequencies of the workforce.

### 3.2. Socioeconomic Profile, Resource Dependence, and Local Perceptions

The survey of 160 households in the 16 villages of the Loma group shed light on living conditions, economic activities, and community perceptions.

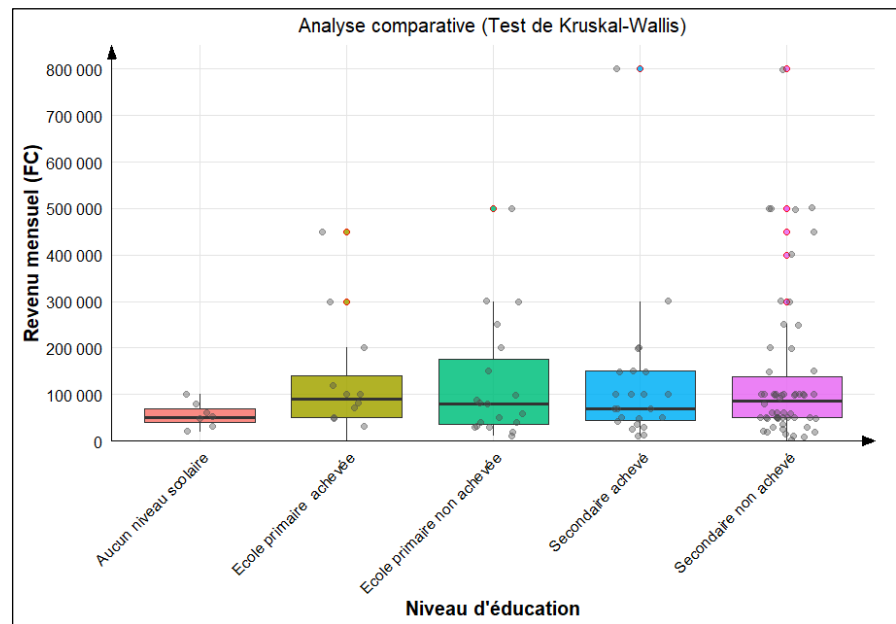
#### 3.2.1. Dependence on Natural Resources and Economic Activities

The local economy is characterized by an extreme dependence on natural resources for subsistence. The main activities are slash-and-burn agriculture (38% of reported activities), the collection of Non-Timber Forest Products (NTFPs) (30% of activities), mainly caterpillars (30% of NTFPs) and medicinal plants (25%), and hunting (11%), livestock farming (9%), and fishing (7%) complete this portrait of a harvesting economy.

#### 3.2.2. Gender Distribution of Activities and Income

A very marked division of labor according to gender was observed (Chi-square test,  $p$ -value =  $3.012e-10$ ). Men are mainly involved in hunting (65% of hunters), while women are responsible for collecting NTFPs (80% of collectors).

Despite this disparity in roles, median incomes are low and homogeneous (50,000 - 100,000 FC/month,  $\approx$  20 - 40 USD), as shown in **Figure 4**, with no significant difference related to the level of education (Kruskal-Wallis,  $p = 0.7329$ ) or the type of activity ( $p = 0.1063$ ).



**Figure 4.** Income variation by education level.

### 3.2.3. Marketing Constraints and Isolation

The area's isolation is a major obstacle to development. The main obstacles cited are the lack of reliable transportation (32%) and high logistics costs (27%). This situation reinforces dependence on intermediaries (45% of sales) and limits market access, with only 3% of production reaching urban markets.

### 3.2.4. Community Perceptions and Relationships with Conservation

Perceptions reveal a gap of distrust toward conservation initiatives. A significant portion of respondents (42%) declared themselves “neutral” about the impact of their activities on resources. However, 29% of respondents perceived a decline in wildlife resources, attributing it to agricultural and hunting practices. This distrust was concretely manifested during data collection through the widespread demand for “civility” and the curtailment of ecological inventories due to tensions.

## 3.3. Analysis of the Suitability of the Area to the CBD OECM Framework

This section applies the CBD's official Other Effective Area-Based Conservation Measures (OECM) assessment framework to the Baulu Conservation Concession. The assessment is structured in three steps and eight criteria.

### Step 1: Is the site important for biodiversity?

#### Criterion A: Presence of threatened, endemic, or restricted-range species

**Assessment:** Compliant. The inventory formally identified 43 species, 26.1% of which are classified as threatened on the IUCN Red List. This includes Critically Endangered (CR) species such as the Bonobo (*Pan paniscus*), the Congo Peafowl (*Afropavo congensis*), as well as Endangered (EN) and Vulnerable (VU) species. The presence of these species gives the site exceptional biological importance at a

global level.

**Criterion B: Presence of important, fragile, or critical habitats**

**Assessment:** Compliant. The site is covered by a dense, humid, semi-deciduous forest habitat characteristic of the Congo Basin. This ecosystem is recognized as a critical and irreplaceable habitat for a large number of identified threatened species (primates, elephants, Congo peafowl).

**Criterion C: Important ecosystem services**

**Assessment:** Compliant (inferred). As a large, intact tropical forest massif, the concession plays a crucial role in carbon sequestration (climate change mitigation), water cycle regulation (Maringa and Lomako rivers), and soil protection. Although not directly measured in the studies, these services are inherent to this type of ecosystem and provide a solid basis for existing REDD+/carbon projects.

**Step 2: Is the site effectively managed and governed for conservation?**

**Criterion D: Governance framework**

**Assessment:** Non-compliant (major flaw). Governance is currently conflictual, contested, and fragmented. Although a formal framework exists (Conservation Concession awarded to the KNCC company), it is rejected by a portion of the population (1 in 17 villages refuses FPIC). Historical mistrust, tensions during inventories, and the demand for “civility” demonstrate the absence of a legitimate, inclusive framework accepted by all stakeholders. This is the main obstacle to OECM recognition.

**Criterion E: Management measures**

**Assessment:** Partially Compliant/Non-Compliant. There is no formalized management plan or deliberate, active conservation measures. Current management relies on traditional practices (hunting, gathering) that are not geared toward a conservation objective and show signs of unsustainability (perceived resource decline). Hunting is unregulated, and there are no no-take zones or quotas. Management is therefore reactive and informal, falling far short of required standards.

**Criterion F: Conservation results**

**Assessment:** Partially Compliant. The status of biodiversity is currently good (evidence of past ecosystem effectiveness) but likely declining. The presence of sensitive species is a positive outcome. However, the rarity of some predators and local perceptions of decline indicate that current management measures (or lack thereof) are not effectively maintaining ecological integrity in the long term. The status is stable but vulnerable.

**Step 3: Does the site ensure long-term preservation?**

**Criterion G: Sustainability of arrangements**

**Assessment:** Non-compliant. Current arrangements are neither permanent nor stable. The governance crisis and the lack of tangible economic benefits from conservation for communities make the model untenable. The main economic activities (slash-and-burn agriculture, unsustainable hunting) are incompatible with long-term conservation objectives. Sustainability is not assured without a change in the model.

**Criterion H: Equitable sharing of benefits**

**Assessment:** Non-compliant. Inequalities are marked, particularly between the sexes (women carry out the bulk of the NTFP collection work without equitable access to the value created). Incomes are generally low and homogeneous, indicating that the benefits from the resources are not equitably distributed. The current system primarily benefits external intermediaries. Communities bear the opportunity costs of conservation (perceived access restrictions) alone without deriving significant benefits, which fuels mistrust.

**Table 3** summarizes the evaluation of the compliance of the Baulu Conservation Forest Concession with the CBD OECM framework.

**Table 3.** Assessment of the suitability of the area for the CDB OECM framework.

Criteria	Assessment	Main Justification
<b>A. Species</b>	Compliant	Confirmed presence of threatened species (CR, EN, VU-IUCN).
<b>B. Habitats</b>	Compliant	Dense semi-deciduous humid forest in good condition, critical habitat.
<b>C. Services</b>	Compliant	Carbon sequestration, water regulation (deduced from the ecosystem).
<b>D. Governance</b>	Non-compliant	Conflicts, mistrust, lack of a legitimate and inclusive framework.
<b>E. Management</b>	Non-compliant	Lack of a management plan or deliberate conservation measures.
<b>F. Results</b>	Partially	Current high biodiversity, but signs of potential decline.
<b>G. Sustainability</b>	Non-compliant	Current economic and social model incompatible with conservation.
<b>H. Equity</b>	Non-compliant	Gender inequalities, unshared benefits, low incomes.

Baulu Conservation Concession is of exceptional biological importance, fully meeting the first stage of the OECM framework. However, it does not currently meet the requirements for recognition as an OECM. Critical deficiencies in governance (D), management (E), sustainability (G), and equity (H) are such that long-term biodiversity conservation is not guaranteed. We believe the site should be considered a priority candidate for a capacity-building project to address these gaps.

### 3.4. SWOT Analysis of the Area as OECM

The SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) synthesizes the key elements identified in the ecological, socioeconomic, and OECM analyses, as presented in **Table 4**. It aims to guide decision-making for future actions towards the recognition of the Baulu concession as an OECM.

**Table 4.** SWOT analysis.

INTERNAL (Factors specific to the area and its management)	POSITIVE (Factors favorable to the OECM objective)	NEGATIVE (Factors unfavorable to the OECM objective)
ORIGIN	<p><b>STRENGTHS (S)</b></p> <p><b>S1:</b> Exceptional biodiversity and proven presence of globally threatened species (26.1% of species classified according to the IUCN Red List).</p> <p><b>S2:</b> Dense humid semi-deciduous forest habitat in a good state of conservation.</p> <p><b>S3:</b> Solid traditional ecological knowledge held by hunters.</p> <p><b>S4:</b> Presence of a formal framework (Conservation Concession) and dedicated stakeholders (KNCC, AMAR).</p>	<p><b>WEAKNESSES (W)</b></p> <p><b>W1:</b> Conflicting governance and historical mistrust of local communities.</p> <p><b>W2:</b> Total absence of a formalized management plan and deliberate conservation measures.</p> <p><b>W3:</b> Critical and precarious economic dependence on natural resources.</p> <p><b>W4:</b> Extreme isolation limits any economic development.</p> <p><b>W5:</b> Marked social inequalities, particularly gender inequalities.</p>
	<p><b>OPPORTUNITIES (O)</b></p> <p><b>O1:</b> OECM recognition that can attract international funding and technical support.</p> <p><b>O2:</b> Existence of innovative financing mechanisms (REDD+, carbon credits, biodiversity).</p> <p><b>O3:</b> Growing demand for sustainable and equitable products (NTFPs) on international markets.</p> <p><b>O4:</b> National and international political context favorable to conservation (CBD, SDGs).</p> <p><b>O5:</b> Potential for scientific partnerships for monitoring and research.</p>	<p><b>THREATS (T)</b></p> <p><b>T1:</b> Population pressure and poverty leading to overexploitation of resources.</p> <p><b>T2:</b> Risk of land grabbing or poorly designed conservation projects (“fortress”).</p> <p><b>T3:</b> Expansion of illegal or unsustainable activities (targeted poaching).</p> <p><b>T4:</b> Socio-political instability in the DRC is likely to undermine long-term commitments.</p> <p><b>T5:</b> Climate change that could affect forest ecosystems and water resources.</p>
EXTERNAL (Contextual factors beyond direct control)		

## 4. Discussion

### 4.1. Ecological Wealth and Compliance with OECM Criteria

Baulu Conservation Concession reveals a fundamental paradox with exceptional ecological richness facing major socioeconomic and governance challenges. Ecologically, the site meets the basic criteria (A, B, C) of the OECM, with a richness of 43 species of which 26.1% are threatened (e.g., Bonobo, Congo Peafowl), confirming its status as a Congo Basin rainforest critical for global biodiversity. Diversity indices ( $H' = 2.43$ ) indicate a relatively preserved ecosystem, although the predominance of resilient species such as the Banded Duiker (*Cephalophus dorsalis*) and the River Pig (*Potamochoerus porcus*) may signal adaptation to moderate anthropogenic pressure (Belembo, 2008).

Historical community mistrust, inherited from past evictions from the Lomako Reserve, has directly compromised our ecological analysis of wildlife. The forced

interruption of inventories by local populations, who perceive these exercises as a threat to their access to resources, has likely led to an underestimation of wildlife richness.

#### **4.2. Socioeconomic Vulnerabilities and Equity Crisis**

However, this value is seriously threatened by structural weaknesses (W1 - W5) that make OECM integration unfeasible in the short term. The Loma group community has critical resource dependence (38% slash-and-burn agriculture, 30% NTFPs), exposing it to resource degradation and poverty. Marketing barriers (32% lack of reliable transport, 45% intermediaries) drastically limit incomes (median < USD 40/month), even though education is on the rise, contradicting general expectations (PNUD, 2020) and highlighting the importance of local realities. This economic precarity is reinforced by marked gender inequality, where women dominate NTFP collection (80%), but the benefits are not equitably distributed (non-compliance with criterion H), a dynamic widely observed in rural Africa (FAO, 2014; San-kiana Malankanga et al., 2019).

#### **4.3. The Governance Crisis and Historical Community Distrust as a Major Obstacle**

The main obstacle is the governance crisis (non-compliance with criterion D) and the historical distrust of communities towards conservation initiatives (Mahamadou, 2010). This distrust, exacerbated by the lack of a management plan (criterion E) and unsustainable arrangements (criterion G), results in a predominantly neutral or negative perception of the impact of activities on resources (Valdez, 2021). The absence of legitimate and inclusive governance prevents the guarantee of long-term conservation.

#### **4.4. The Status of the Candidate/Emerging OECM**

Accordingly, the Baulu Concession is considered a “Candidate” or “Emerging” OECM. This incremental approach, although not yet formalized in CBD guidelines, is increasingly advocated in the conservation literature for sites of high biological value but where governance and management arrangements are immature (Jonas et al., 2024). Only a transformative roadmap, focused on addressing governance issues and ensuring equity, will realize its potential and achieve international recognition. Our proposal positions Baulu as a case study for the application of a “candidate” approach in the DRC, where a conditional and incremental commitment towards OECM status could catalyze the necessary investments while maintaining high ambition.

### **5. Conclusion**

This report assessed the Baulu Conservation Concession’s potential to meet the strict criteria for Other Effective Area-Based Conservation Measures (OECMs). From an ecological perspective, the conclusion is clear: the Loma Grouping is home

to a globally significant natural heritage. The confirmed presence of 43 species, some of which are threatened with global extinction, including the Bonobo, makes it a priority site for conservation. The quality of the forest habitats and the still-preserved biological diversity fully meet the basic criteria for an OECM. However, this ecological wealth is seriously threatened by deep structural weaknesses. A governance crisis, marked by mistrust and the absence of an inclusive decision-making framework, is the main obstacle. It is exacerbated by economic insecurity, which makes communities dependent on resources they unwittingly contribute to degrading, and by a complete lack of deliberate management measures for conservation. Therefore, the Baulu Concession cannot be recognized as an OECM at this time. Rather, it should be considered a “candidate OECM” or an “emerging OECM,” a site where biological importance is such that all efforts must be focused on addressing critical governance and livelihood gaps. The proposed roadmap, centered on reconciliation, co-governance, and equitable value creation, charts the way forward. It will require long-term commitment from all stakeholders, dedicated funding, and a patient and respectful approach. By saving the Baulu Concession, we are preserving much more than a forest. It is a model of reconciliation between humanity and nature that needs to be invented, demonstrating that the conservation of the most exceptional biodiversity can and must be based on social justice and the economic development of the communities that are its historical guardians. The potential is immense; it is up to the stakeholders to rise to this challenge together for future generations.

## 6. Recommendations for Integration into OECM

The conclusions of the OECM and SWOT analyses are unequivocal: the Baulu Concession has the ecological assets but not yet the governance and management frameworks.

The following recommendations are structured to transform the weaknesses identified in the SWOT analysis into strengths and to capitalize on opportunities, while mitigating threats. They specifically aim to address critical failures in governance (W1), management (W2), economic sustainability (W3, T1), and equity (W5), while building on ecological assets (S1, S2, S3) and financing opportunities (O1, O2).

### Axis 1: Governance and Institutional Strengthening (D & H Criteria)

#### 1. Facilitating Inclusive Dialogue and Resolving Conflicts

**a) Action:** Organize a “Baulu Conciliation Forum” facilitated by an independent and recognized mediator, involving traditional chiefs, representatives of the 17 villages (including the recalcitrant village), women’s and youth associations, KNCC, and AMAR.

**b) Objective:** To establish a transparent dialogue on past grievances, expectations, and concerns. This forum should lead to a memorandum of understanding clarifying the rules of future engagement and collaboration.

#### 2. Co-Constructing a Shared Governance Structure

**a) Action:** Create a Joint Management Committee (CGC) for the concession, with equal and fair representation (e.g., 1 elected representative per village, 1 representative of hunters, 1 representative of NTFP collectors (mostly women), 1 from KNCC, and 1 from AMAR).

**b) Objective:** To formalize a legitimate decision-making body where communities are not consulted but are genuine partners. The CGC will be the cornerstone of future OECM governance.

#### **Axis 2: Management and Conservation (Criteria E & F)**

##### **3. Develop a Simple and Operational Management Plan**

**a) Action:** The CGC must prioritize and validate simple and immediate conservation measures, without waiting for a complex plan:

**b) Restoration Zones:** Identify with hunters 2 - 3 temporary “protected” zones (duration: 1 year, renewable) to allow the regeneration of the most targeted species.

**c) Community Rules:** Formalize in writing the customary hunting rules (periods, prohibited techniques, protected species) and adopt them as internal regulations of the concession.

**d) Hard Core Protection:** Map and strictly protect Congo Peafowl nesting areas and confirmed Bonobo nests.

##### **4. Establish a Participatory Ecological Monitoring System (SSEP)**

**a) Action:** Form a “network of ecological sentinels” made up of local volunteer hunters equipped with simple smartphone applications to report targeted observations monthly (observations of key species, signs of poaching).

**b) Objective:** To have monitoring data at a lower cost, directly involve knowledge holders, and create a first form of green employment linked to monitoring.

#### **Axis 3: Sustainable and Equitable Economic Development (Criteria G & H)**

##### **5. Lifting the Logistics Bottleneck**

**a) Action:** Finance a feasibility study for a river collective transport solution (e.g., provision of a motorized canoe with trailer for supply and evacuation of products, managed by a village cooperative).

**b) Objective:** To radically reduce the power of intermediaries and allow producers to access the Befale or Boende markets to sell their products at a fair price.

##### **6. Developing Value-Added Sectors for and by Women**

**a) Action:** Support the creation of a Women’s Cooperative of Loma NTFPs for processing (solar drying of caterpillars, packaging of medicinal plants) and collective marketing.

**b) Objective:** Capture more value locally, diversify household income, and economically empower women, who are the main managers of these resources.

##### **7. Explore and Co-Construct Retribution Mechanisms**

**a) Action:** Launch a prospective study with communities to define the most equitable distribution mechanism for future REDD+/carbon revenues (direct payment to households, investment in common goods-health, school, or mixed).

**b) Objective:** To avoid future conflicts and ensure that the benefits of conser-

vation are perceived as fair and direct, a sine qua non condition for membership.

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## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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