PROJECT DESIGN DOCUMENT (PDD) FORM FOR ARTICLE 6.4 PROJECTS

(Version 01.0)

BASIC INFORMATION			
Project title:	>> Chobe Fire Management Project		
UNFCCC project reference number:	>>TBC		
Host Party:	Botswana		
Other participating Parties:	Australia		
Activity participant(s): (add rows if needed)	**Type of Party**	**Name of activity participant(s)**	**Party that is to provide authorization**
	Other participating Party	>> Maki Planet Systems	Choose a Party.
	Other participating Party	>> International Savanna Fire Management Initiative	Choose a Party.
	Other participating Party	>> Ministry of Environment and Tourism	Botswana
PDD version number:	>>v2		
PDD completion date:	03/10/2025		
Applied methodologies and standardised baselines, and their versions:	>> Proposed new methodology: “Savanna Fire Management (SFM) Methodology”		
Sectoral scope(s):	>>17. Other activities involving removals		
Type of the project:	☒ Emission reductions activity ☐ Removals activity ☐ Combined emission reductions and removals activity		
Estimated annual emission reductions or net removals over the crediting period (tCO_2e/year):	>> Expected average emissions reductions: 4,860 tCO2-e/yr		

SECTION A. Project description

A.1. Project purpose and general description

>> The proposed fire management operations under this project involve the strategic implementation of prescribed burning at landscape scale in the Early Dry Season (EDS) (May – July) to shift existing fire regimes of high intensity uncontrolled Late Dry Season (LDS) wildfires to low intensity fire regimes.

The project is located in the Chobe District of Botswana, found in the northeast corner of the country and near the borders with Namibia, Zambia, and Zimbabwe.

Implementation commences with ground burning techniques to protect infrastructure, life, and livelihood assets. Then aerial prescribed burning follows as an essential tool to establish sufficient strategic burns at that scale, to act as firebreaks, and to effectively reduce LDS fires in remote and inaccessible landscapes. Delayed ignition capsules are dispensed with the self-contained Raindance Systems R3 Machine secured on the standard seat of a helicopter (ie Robinson 44).

The project area is defined as the entire coverage of eligible fuel types within the project boundary, which contains portions of the Chobe National Park, and the entirety of three forest reserves and three communally leased hunting concessions.

The SFM methodology considers the baseline scenario to be the continuation of current fire management practices, or lack of, in applicable savannas, resulting in the continuation of late dry season destructive fires.

The expected average emissions reductions for the life of the project are 4,860 tCO2-e/yr.

A.2. Confirmation that the project aligns with the A6.4 activity types indicated by the host Party

>> The proposed fire management operations under this project involve the strategic implementation of

prescribed burning at landscape scale in the Early Dry Season (EDS) (May – July) to shift existing fire regimes of high intensity uncontrolled Late Dry Season (LDS) wildfires to low intensity fire regimes.

The project supports the AFOLU mitigation measures stated in Botswana’s NDC.

A.3. Demonstration that the project, does not constrain, but aligns with the policies, options and implementation plans of the host Party

>> The proposed project aligns with the Botswana’s national climate strategies and international commitments.

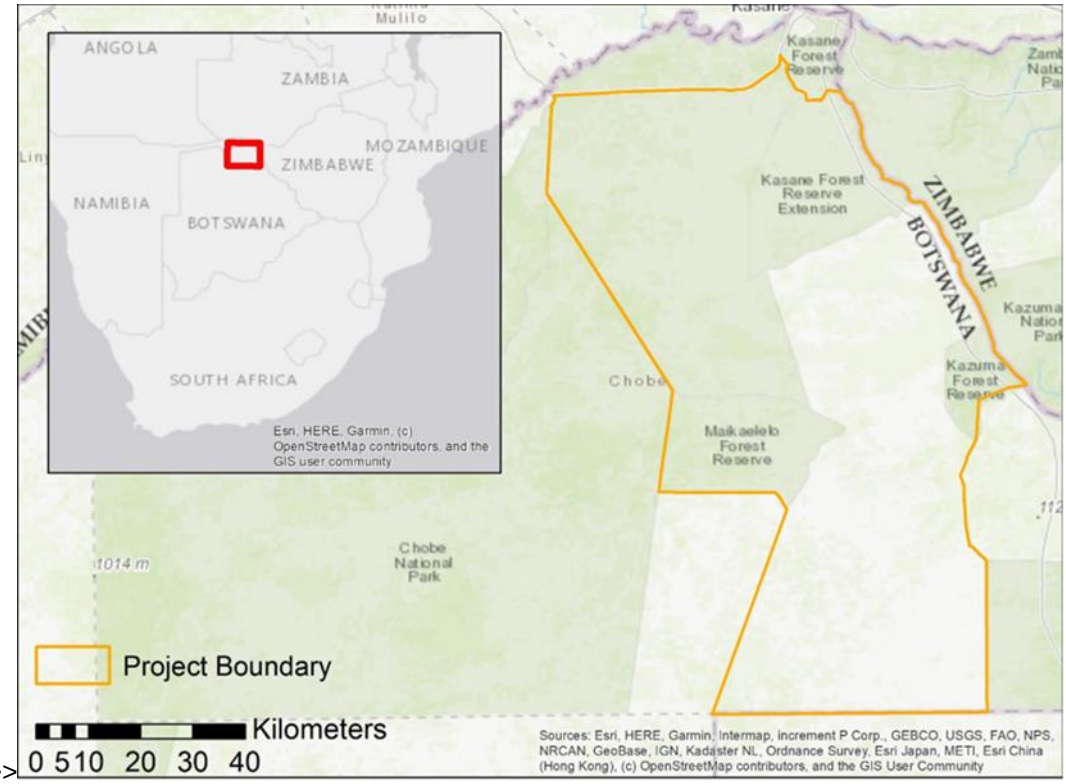
Botswana’s Nationally Determined Contribution (NDC) includes mitigation measures under the AFOLU sector, including wildfire management, e.g., management strategies, maintenance of fire breaks, early warning systems and community capacity building.

The National Climate Change Strategy for Botswana (NCCSB) aims to create an enabling environment for the implementation of the country's adaptation and mitigation plans to propel the country to meet its socio-economic development goals, achieving Vision 2036 targets and the SDGs. Under the NCCSB, one of the priority adaptation areas is Savanna and Woodland management, which is directly applicable to the type of projects the ISFM Methodology is targeting.

A.4. Project location

Host Party	Botswana
Region(s)/State(s)/Province(s)	>> Chobe District
Cities/towns/communities	>> Across the District
Geographic coordinates	>> The approximate coordinates of the project area centroid are: Longitude (decimal degrees) 25.1681 Latitude (decimal degrees) -18.4199
Map of project location	

>>



A.5. Technology/measures

A.5.1. Existing technologies/measures prior to project implementation

>> For thousands of years, Indigenous peoples around the world have used fire as a land management tool.

Such use of fire by Indigenous and local communities has often been interrupted. These interruptions to traditional management have resulted in high-intensity fire regimes and correspondingly high greenhouse gas (GHG) emissions from savanna wildfires.

The feasibility study “THE GLOBAL POTENTIAL OF INDIGENOUS FIRE MANAGEMENT” prepared by the United Nations University with contributions from fire experts from Australia, Latin America and Africa found the following with regards to the state of fire management in the project area and general Southern African region:

- Uncoordinated savanna burning results in LDS fires, characterized by high intensity, low levels of patchiness and a tendency to spread due to hot, dry and windy conditions throughout much of Africa. Frequent (annual-biennial) large-scale uncontrolled LDS wildfires, comparable to the northern Australian context, exist in sparsely populated rural settings, particularly in and around protected areas. These settings are the most feasible for methodology-based SFM application.
- Anthropogenic fires have been critical in shaping African savannas over the last 1.5 million years with humans possessing significant control over fire regimes and biomass burning for at least 400,000 years.

As such, savanna people and their contemporary land use are fundamental to SFiM application, particularly as African savanna supports large populations.

- The five distinct ethnic groups originating within African savannas all evolved in comparable environments and developed markedly similar traditional fire knowledge to manipulate savanna landscapes. Application of small fires throughout the dry season typically created a seasonal mosaic landscape, annually re-created by people, and consisting of unburned, early-burned, and recently burned patches.
- Traditional fire knowledge (TFK) remains largely intact in the more remote African settings and continues today in the form of traditional burning to support contemporary rural livelihoods of many African people. Traditional burning is most important, and is frequently used to support subsistence livelihoods of remote communities. It includes slash-and-burn agriculture, livestock grazing improvements, charcoal production, natural product harvesting, controlling pests, hunting and reducing wildfire threats.
- Insufficient and inconsistent land and fire management policies and legislation, administered by centralized governments with limited capacity, inadequately address the appropriate use of fire.

A.5.2. Technologies/measures implemented/deployed by the project

>> Fire management operations involve the strategic implementation of prescribed burning at landscape scale in the EDS (May – July) to shift existing fire regimes of high intensity uncontrolled LDS wildfires to low intensity fire regimes.

Implementation commences with ground burning techniques to protect infrastructure, life, and livelihood assets. Then aerial prescribed burning follows as an essential tool to establish sufficient strategic burns at that scale, to act as firebreaks, and to effectively reduce LDS fires in remote and inaccessible landscapes. Delayed ignition capsules are dispensed with the self-contained Raindance Systems R3 Machine secured on the standard seat of a helicopter (ie Robinson 44).

Remotely sensed fire information and GIS mapping is essential to inform SFM planning and includes fire history, near-real time active fire information, updated Sentinel 2 satellite imagery and associated fuel load mapping products. Field-based navigation systems containing this information are equally as important to guide and adapt implementation activities.

A small SFM Team comprised of a fire coordinator / manager and three to four accomplished individuals (5-10 years field experience) coordinate and implement the fire management activities. Community participation and support is encouraged to ensure that the practice is well accepted.

Fire management operations are structured on an annual planning, implementation, and monitoring cycle, as follows:

i) SFM Planning (April/May)

   a. Field surveys and fire information analysis to assess key fire management determinants

   b. Stakeholder consultations to review and plan fire management objectives, assess existing capacity / resources and determine implementation plan

ii) SFM Implementation (May to July)

   a. Strategic landscape scale EDS prescribed burning of low intensity self-limiting fires to reduce fire intensity, burned area and LDS wildfires

   b. Carefully implemented to protect fire-sensitive vegetation, improve ecosystem function (ie water cycling) and achieve land use and biodiversity management objectives

   c. Establish rotational mosaic burn patterns to diversify longer term Years Since Last Burn and reduce fire frequency.

iii) SFM Monitoring (May to November), include:

   a. Field and remotely sensed monitoring to assess the effectiveness of prescribed fires in achieving management objectives, confirm self-limiting fires and detect LDS fire ignitions.

   b. If safe to do so, undertake fire suppression and firefighting activities such as back burning into a live out-of-control wildfire to protect life, infrastructure, and carbon abatement.

   c. Stakeholder consultations to gauge support of partner organizations and local level partners.

Authorization from the DWNP ([Botswana] Wildlife Act, 2015) and the DF (Forests Act, 2015) will be required to implement prescribed burning in the GMA and National Forests, respectively.

Authorization from the Botswana Civil Aviation Authority is also required to approve the use of the R3 Machine and implement aerial burning. Permits are usually secured in April each year during the planning season.

A.5.3. Declaration related to the existence of a former project in the same geographical location

>> There are no registered Article 6.4 projects, component projects under an Article 6.4 Programme of Activities (PoA), or activities under any other international, regional, national, or subnational GHG mitigation crediting scheme within the geographical boundaries of the proposed project.

A.6. Parties and activity participants

(Add/remove rows as necessary)

Type of Party	Name of the Party	Activity participant(s)
Host Party	Botswana	Ministry of Environment and Tourism
Other participating Party	Australia	Maki Planet Systems Pty Ltd
Other participating Party	Australia	ISFMI

SECTION B. Application of methodologies and standardized baselines

B.1. References to methodologies and standardized baselines

>> The methodology for this project is the Savanna Fire Management (SFM) methodology (no reference number as this PDD is submitted as an example with a new proposed Article 6.4 methodology).

B.2. Applicability of methodologies and standardized baselines

>> Applicability conditions of the proposed SFM methodology (no reference number as this PDD is submitted with a new proposed Article 6.4 methodology):

Applicability condition in the methodological regulatory document or the methodological requirement specified by the host Party	Compliance of the project with the applicability condition in the methodological regulatory document or the methodological requirement specified by the host Party
>> (a) (Eligible ecosystems) Project activities must be located within woody savanna ecosystems that fall within the envelope of globally applicable savannas, as defined by vegetation structure, canopy cover, and fire-prone fuel characteristics. Projects can only be implemented in woody savanna systems for which the relevant parameters are available or can be developed using the procedure in the methodology appendix.	>> The project area location is dominated by the Tropical and Subtropical Grasslands, Savannas, and Shrublands biome with ecoregions consisting of Zamezian Baikiaea and Zambezian mopane woodlands. The eligible vegetation fuel types are open woodland and woodland within the project area.
>>(b) (Exclusions) The methodology is not applicable to grasslands, non-woody savannas, permanent water bodies, croplands, or urbanized areas. These exclusions prevent misapplication to ecosystems where fire dynamics and emissions reduction potential differ materially.	>> The project area has Chobe Forest vegetation which is comprised of open woodlands with grass understories and Ngamiland Tree Savanna vegetation types with dense tall shrubs scattered large trees, and grasslands. All ineligible areas have been removed from the project accounting area.
>>(c) (Seasonality) Eligible project areas must experience an extended annual dry season lasting	>> The start of the EDS is May 1st, the start of the LDS is August 1st, and the end of the LDS is

at least 4–5 months, during which cumulative rainfall is less than 10% of the mean annual rainfall of the wet season (MAR-W). This ensures that projects are only implemented in regions where fire seasonality is ecologically and climatically significant.	October 31st which covers 6 months out of the year. Based on the 1960-2015 Kasane precipitation records, the average cumulative rainfall from August 1st to October 31st was roughly 26 mm. This is well below 10% of the long-term annual average of 594 mm.
>>(d) (Project activities) Projects must aim to reduce the emission of methane and nitrous oxide from fire in eligible Vegetation Fuel Type pools by shifting the seasonality and/or reducing the extent of fire, primarily by implementing prescribed burns in the Early Dry Season (EDS).	>> Project activities are designed at a landscape scale and involve prescribed burning in the EDS to reduce fire intensity, frequency, and severity in LDS wildfires in order to reduce nitrous oxide and methane emissions from fires.
>>(e) (Legal and regulatory compliance) Activity participants must demonstrate tenure or rights to implement the activity (land ownership, customary rights, leasehold, or equivalent documentation). Projects are only eligible if they go beyond existing legal or regulatory requirements. Activities are not eligible where host-country law or regulation already mandates prescribed burning, the shift of fire regimes from LDS to EDS, or equivalent fire management practices.	>> The project activities are carried out in conjunction with the Government of Botswana, who have the land rights of the Chobe National Park, and the local community members, who actively participate in project design and operation.
>>(f) (Leakage avoidance or minimisation – project activities) The implementation of project activities must seek to avoid, and where not possible, minimise negative leakage by keeping EDS prescribed fires within the project area, primarily by not burning outside the project boundary and establishing boundary fire breaks.	>> The project activities involve prescribed burning within the project area and the establishment of fire breaks around key boundary locations. No burning outside the project area is undertaken.
>>(g) (Re-assessment of applicability) All applicability conditions that depend on ecological (vegetation type, rainfall thresholds) or legal/regulatory factors shall be reassessed at the renewal of each crediting period, in line with Appendix 1, Section 1 of the Baseline Standard.	>> The applicability conditions have been assessed at the beginning of the crediting period.

B.3. Project boundary, sources, sinks and greenhouse gases

>> The Chobe Fire Management Project is located in Chobe District, Botswana, in the northeast corner of the country near the borders with Namibia, Zambia, and Zimbabwe. The project area covers approximately 566,869 ha of eligible savanna fuel types, including portions of Chobe National Park, three forest reserves, and three communally leased hunting concessions.

The approximate coordinates of the project area centroid are: Longitude (decimal degrees) 25.1681 Latitude (decimal degrees) -18.4199.

The project boundary includes all eligible vegetation fuel types within this area. The project participants hold valid fire management permits and authorizations issued by the Department of Wildlife and National Parks (DWNP) and the Department of Forestry and Range Resources (DFRR) under the Wildlife Act (2015) and Forests Act (2015). Annual authorizations from the Botswana Civil Aviation Authority are also secured for the use of aerial ignition devices (Raindance R3 system). These permits are renewed annually prior to the start of each burning season.

A Leakage Belt of 10 km surrounding the project area will be delineated and monitored if eligible vegetation within this buffer exceeds 5% of project area, consistent with the methodology.

In accordance with the draft SFM methodology (v2.0) and the Baseline Standard, the project boundary encompasses all sources, sinks, and reservoirs (SSRs) that are significant and reasonably attributable to the activity (see table below)

The project boundary also includes regulatory and tenure requirements to ensure implementation within a robust legal framework. The activity participants hold valid fire management permits and authorizations issued by the relevant agencies of the government of Botswana, covering prescribed burning and related activities within the delineated project area. Legal rights to conduct fire management are demonstrated through recognized tenure arrangements (land titles, customary rights, or formal agreements with custodians). Compliance documents, including permits and environmental clearances, will be maintained and renewed at each crediting period. No mandatory laws currently require SFM practices (e.g., compulsory EDS burning), thereby ensuring additionality. At validation, the project will submit all supporting legal and regulatory evidence to confirm alignment with national frameworks.

B.3.1. Baseline emissions/removals

Source/reservoir/pool	GHG		Justification/Explanation
Biomass combustion from EDS and LDS fires in eligible savanna Vegetation Fuel Types	CO_2	☐ Included ☒ Not included	>> In line with the SFM methodology.
	CH_4	☒ Included ☐ Not included	>> In line with the SFM methodology.
	N_2O	☒ Included ☐ Not included	>> In line with the SFM methodology.
	-----	☐ Included ☒ Not included	>> In line with the SFM methodology.
Fossil fuel combustion from baseline fire management activities	CO_2	☐ Included ☒ Not included	>> In line with the SFM methodology.
	CH_4	☐ Included ☒ Not included	>> In line with the SFM methodology.
	N_2O	☐ Included ☒ Not included	>> In line with the SFM methodology.
	-----	☐ Included ☒ Not included	>> In line with the SFM methodology.
Soil organic carbon (SOC)	CO_2	☐ Included ☒ Not included	>> In line with the SFM methodology.
Harvested wood products	n/a	☐ Included ☒ Not included	>> In line with the SFM methodology.

B.3.2. Project emissions/removals

Source/reservoir/pool	GHG		Justification/Explanation
Biomass combustion from EDS and LDS fires in eligible savanna Vegetation Fuel Types	CO_2	☐ Included ☒ Not included	>> In line with the SFM methodology.
	CH_4	☒ Included ☐ Not included	>> In line with the SFM methodology.
	N_2O	☒ Included ☐ Not included	>> In line with the SFM methodology.
	-----	☐ Included ☒ Not included	>> In line with the SFM methodology.
Fossil fuel combustion from project operations (vehicles, aerial ignitions)	CO_2	☒ Included ☐ Not included	>> In line with the SFM methodology.
	CH_4	☒ Included ☐ Not included	>> In line with the SFM methodology.
	N_2O	☒ Included	>> In line with the SFM methodology.

		☐ Not included	
	-----	☐ Included ☒ Not included	>> In line with the SFM methodology.
Sequestration in biomass and dead woody debris carbon pools	CO_2	☐ Included ☒ Not included	>> In line with the SFM methodology.
	CH_4	☐ Included ☒ Not included	>> In line with the SFM methodology.
	N_2O	☐ Included ☒ Not included	>> In line with the SFM methodology.
	-----	☐ Included ☒ Not included	>>
Soil organic carbon (SOC)	CO_2	☐ Included ☒ Not included	>> In line with the SFM methodology.
Harvested wood products	n/a	☐ Included ☒ Not included	>> In line with the SFM methodology.

B.4. Establishment and description of baseline scenario

B.4.1. Identification of the baseline scenario

>> The baseline scenario is the continuation of uncontrolled Late Dry Season (LDS) fire regimes across the Chobe landscape, resulting in sustained high CH_4 and N_2O emissions.

Following the applied SFM methodology (v2.0) and the Baseline Standard, the baseline is quantified using the Historical Emissions Approach:

- Historical Reference Period (HRP): 2013–2022 (10 years).
- HRP satisfies methodological requirements: ≥7 years, ≥2× regional Fire Return Interval (FRI), ≤20 years.
- Burned area data stratified by season (EDS vs. LDS), vegetation fuel type (woodland vs. open woodland), and years-since-last-burn (YSLB) were mapped using Landsat (30 m) and Sentinel-2 (10 m) imagery, validated per methodology.

Annual baseline fire emissions were calculated using fuel accumulation curves, combustion efficiency, and emission factors specific to Miombo/Zambezian savanna fuel types. Emission factors and combustion efficiency parameters were applied in line with IPCC guidance and regionally appropriate data sources (Russel Smith 2024):

- Average annual baseline emissions (2013–2022): **28,519 tCO_2e.**
- Baseline period start date: 1 January 2013.
- Baseline period end date: 31 December 2022.
- Project start date: 1 January 2023.

To ensure conservativeness, the baseline is downward adjusted as per the methodology:

- Initial adjustment in Year 1 of crediting, reflecting uncertainty discount and alignment with expected project outcomes.
- Progressive ≥1% annual downward adjustment applied for subsequent years of the crediting period.

The adjusted baseline is then tested against a Business-as-Usual (BAU) scenario as per the Baseline Standard. The BAU scenario reflects the most likely future without the project, accounting for continuation of LDS fire regimes and relevant national policies or targets. The crediting baseline is confirmed to be lower than the BAU trajectory, thereby ensuring environmental integrity and alignment with the Paris Agreement's long-term goals.

B.4.2. Identification of the BAU scenario or reference benchmark

>> The Business-as-Usual (BAU) scenario for the Chobe Fire Management Project reflects the most likely continuation of fire regimes in the absence of project activities. Without the implementation of planned Early Dry Season (EDS) burning, the landscape would continue to experience frequent, extensive and high-intensity Late Dry Season (LDS) wildfires, consistent with observed historical patterns in the region.

In accordance with the Baseline Standard (A6.4-STAN-METH-004) and the applied SFM methodology, the BAU scenario has been assessed as follows:

- **Continuation of historical LDS patterns**: Frequent, high-intensity wildfires during August–October.
- **Policy context:** While Botswana has a Bush Fire Risk Management Plan (2016–2020), enforcement is limited. The Department of Forestry and Range Resources is not legally required to conduct effective EDS burning. No mandatory laws currently compel SFM practices.
- **Capacity constraints**: Lack of financial and institutional capacity has historically prevented large-scale EDS burning.
- **Host Party confirmation**: National stakeholders confirm that LDS fires remain dominant under BAU.

Thus, the BAU trajectory is expected to remain aligned with the unadjusted HRP average (28,519 tCO_2e/yr). The comparison confirms that the crediting baseline (downward adjusted) is more conservative than BAU, consistent with the Baseline Standard and Activity Standard.

B.5. Demonstration of additionality

B.5.1. Regulatory analysis

>> **Regulatory context**

In Botswana, fire management is addressed primarily under the Forest Act (2018) and related environmental legislation ((Chobe District Bush Fire Risk Management Plan, 2016-2020, 2015). These laws establish general obligations for fire prevention and suppression but do not mandate proactive fire regime management, such as systematic early dry season (EDS) prescribed burning. Regulations focus on preventing uncontrolled fires and penalizing negligence, rather than requiring the type of structured, emissions-reducing fire management implemented under the Chobe Project.

Alignment Regulatory Analysis

The updated SFM methodology requires a regulatory analysis to confirm that:

- No existing laws or regulations require the activity; and
- The project activity goes beyond legal obligations.

For the Chobe Fire Management Project:

- There is no legal requirement in Botswana obliging landholders, community groups, or conservation managers to implement EDS burning regimes or to track and reduce greenhouse gas (GHG) emissions from fire management.
- Existing legislation is focused on fire suppression and preventing damage to property or biodiversity, not on proactive management to generate carbon benefits.
- While the government encourages sustainable land management, these are policy objectives and not enforceable regulatory requirements.

Project's position relative to regulation

The Chobe Project introduces a structured SFM system that exceeds legal requirements by:

- Implementing scientifically designed prescribed burns in the EDS to reduce late dry season (LDS) wildfire emissions.
- Monitoring fire regimes, vegetation fuel types, and greenhouse gas emissions using a digital MRV system.
- Delivering carbon benefits (emission reductions) that are not mandated or incentivized under current law.

No fines, penalties, or compliance obligations are avoided by undertaking the activity — demonstrating the project is not legally required.

B.5.2. Avoidance of lock-in

>>The SFM methodology requires demonstration that the project does not create a lock-in of technologies, practices, or emissions-intensive pathways that are inconsistent with long-term decarbonization

objectives or national climate strategies. A project must therefore avoid dependence on carbon-intensive infrastructure or practices that would hinder future emission reductions or removals.

Chobe Fire Management project activities

- The Chobe Project implements a savanna fire management (SFM) regime based on the strategic use of early dry season (EDS) prescribed burns to reduce late dry season (LDS) wildfire emissions.
- The tools, infrastructure, and practices deployed are low-emission, scalable, and reversible, including manual and small-scale ignition equipment, ranger training, satellite-based monitoring, and community fire management planning.
- The project does not involve construction of permanent or emissions-intensive infrastructure, nor reliance on fossil-fuel dependent technologies beyond standard operational support (e.g., vehicles for fire crews, small-scale ignition tools).

No creation of technological or emissions-intensive lock-in

- No long-lived carbon-intensive assets: The project does not depend on industrial or fossil fuel–intensive infrastructure (e.g., power plants, large-scale machinery) that would need to be maintained throughout or after the crediting period.
- Alignment with best practice: SFM is widely recognized as a best-practice land management approach in savanna ecosystems (Australia, southern Africa, Brazil). It is compatible with evolving climate policies, ecosystem restoration, and Indigenous land management strategies.
- Reversibility and flexibility: The project's practices (fire calendars, ignition strategies, ranger operations) can be adapted over time as science and policy evolve, ensuring no long-term lock-in to a single approach.
- Consistency with long-term climate goals: By reducing GHG emissions from wildfires and supporting biodiversity conservation, the project is aligned with Botswana's national climate strategy and the goals of the Paris Agreement.

B.5.3. Financial additionality or performance-based approach

☒ Financial additionality ☐ Performance-based approach

(Select one option)

>> The Chobe project demonstrate additionality through the Investment Analysis – Simple Cost Analysis approach, in line with the SFM methodology:

The Chobe Fire Management Project currently does not generate any revenues given the SFM methodology is not operational yet. When the SFM methodology becomes operational, the Chobe Fire Management project will only generate revenues from the eventual sale of carbon credits.

To date, the Chobe Fire Management project has been undertaken at a Pilot Project capacity.

The below list shows annual operation cost estimates for a 200,000ha fire management project area (in USD):

- Planning & approvals: $50,000 lump sum
- Training (100 rangers × $500/year): $50,000
- Ignition operations: $150,000/year
- Transport & logistics: $100,000/year
- Aerial support (200 hours × $1,000/hr): $200,000/year
- MRV: $75,000/year
- Community engagement: $25,000/year
- Overheads (10%): $65,000
- Contingency (5%): $32,500

Total Annual Cost ≈ $747,500

Costs are strictly positive and the project is not financially viable without carbon credit revenues, but becomes viable with them, thus meeting financial additionality requirements

B.5.4. Common practice analysis

(This section is to be filled if the financial additionality or barrier analysis in the previous sub-section is followed for demonstrating additionality)

>> A review of fire management practices in Botswana and the wider Southern African region confirms that the systematic implementation of Early Dry Season (EDS) prescribed burning at landscape scale is not common practice.

- Regional context: In the Chobe District and surrounding Zambezian woodland ecosystems, fire management is primarily reactive. Uncontrolled Late Dry Season (LDS) wildfires dominate, driven by hot, dry and windy conditions.
- Existing measures: While the Chobe District Bush Fire Risk Management Plan (2016–2020) provided for EDS prescribed burning, the Department of Forestry and Range Resources (DFRR) has only a legal obligation to protect life and property, not to conduct proactive EDS burns. Implementation has been sporadic due to limited budgets, personnel, and aerial fire management capacity.
- Scale and resourcing: Effective landscape-scale EDS burning requires specialized aerial ignition equipment (e.g. Raindance R3 capsules, helicopters) and geospatial monitoring systems. These technologies are not widely available or funded in Botswana without international support.
- Comparable projects: No other large-scale SFM initiatives have been identified in Botswana or the Southern African region under current resource conditions. Traditional burning continues in some rural communities, but this is small-scale, subsistence-focused, and not comparable to the systematic EDS approach applied in this project.

The systematic application of landscape-scale EDS prescribed burning, supported by aerial ignition technologies, advanced remote sensing, and coordinated fire suppression, is not common practice in Botswana or the region. Therefore, the project activity goes beyond prevailing practices and cannot be considered business-as-usual without Article 6.4 incentives.

In fact, this project is a first of its kind of the broader region.

B.6. Addressing non-permanence and risks of reversals

B.6.1. Identification of risk of reversal

>> The main objective of the project is a reduction in fire emissions (CH4 and N2O) when compared to what would have happened in the absence of the project. There is therefore no reversal risk for the emissions reduction achieved by the project.

B.6.2. Reversals risk assessment

>> NA

B.6.3. Reversals risk mitigation plan

>> NA

B.6.4. Remediation of reversals

>> NA

B.7. Calculation of emission reductions or net removals

B.7.1. Calculation of BAU emissions/removals and baseline emissions/removals

B.7.1.1. Calculation of BAU emissions/removals

>> The conservative Business-as-Usual (BAU) emissions are determined in accordance with Section 8 of the Baseline Standard and the applied SFM methodology. Both ex ante (for the full crediting period) and ex post (for each year) calculations will be performed. The BAU scenario is redetermined at each renewal of the crediting period.

Step 1. Quantification of BAU emissions

The most likely BAU emissions in year *y* are calculated as:

$$BAU_y = BE_{HRP} \times f(\text{Trend}_y, \text{Policy}_y) \qquad (16)$$

Where:

- BAU_y= Most likely BAU emissions in year y (tCO_2e)
- BE_{HRP}= Baseline Emissions for Historical Reference Period = **28,519 tCO_2e/yr**
- $f(\text{Trend}_y, \text{Policy}_y)$= Adjustment function

For the Chobe Project :

- Trend adjustment: No statistically significant decreasing trend in LDS fire area over 2013–2022; therefore no adjustment.
- Policy adjustment: No nationally mandated prescribed burning or AFOLU emission cap.

Thus:

$$\boxed{BAU_y = 28{,}519\ tCO_2e/yr \text{ for each year of CP1}}$$

Step 2. Uncertainty adjustment

The conservative BAU baseline emissions are adjusted for uncertainty:

$$BAU_{cons,UNC,y} = BAU_y \times (1 - UNC_{BAU,CP1,y}) \qquad (17)$$

For Chobe, remote sensing–based burned area mapping accuracy exceeds 80%. With validation procedures, residual uncertainty is <10%. Assuming UNC = 0.1 (conservative):

$$\boxed{BAU_{cons,UNC,y} = 28{,}519 \times (1 - 0.1) = 25{,}667\ tCO_2e/yr}$$

Step 3. Minimum conservative BAU emissions

The minimum conservative BAU is defined relative to observed activity emissions (AE_y):

$$BAU_{cons,min,y} = BAU_y - (BAU_y - AE_y) \times 0.1 \qquad (18)$$

For Year 1 (2023), project monitoring estimated AE_2023 = 22,476 tCO_2e.

$$BAU_{cons,min,2023} = 28{,}519 - (28{,}519 - 22{,}476) \times 0.1 = 28{,}519 - 6{,}043 \times 0.1 = 28{,}519 - 604 = \mathbf{27{,}915\ tCO_2e}$$

Step 4. Select the lower of the two values

The conservative BAU for each year is the minimum of Step 2 and Step 3:

$$BE_{cons,y} = \min\{BAU_{cons,UNC,y}, BAU_{cons,min,y}\} \qquad (19)$$

For 2023: $BAU_{cons,UNC,y} = 25{,}667$ and $BAU_{cons,min,y} = 27{,}915$

Assuming those remain constant over the life of the project, the conservative BAU baseline for 2023 and all subsequent years is:

$$\boxed{\mathbf{BE_{cons,y} = 25{,}667\ tCO_2e}}$$

B.7.1.2. Calculation of baseline emissions/removals

>> Quantification of the baseline emissions relies on seasonality and vegetation types. Seasonality refers to the dry season, which is 5 to 6 months, during which the area receives 10% or less of annual rainfall. Vegetation types are naturally occurring woody savanna systems, in this case open woodland and woodland. The project dates help confirm the seasonality of the EDS and LDS, and the vegetation map and classification describe how seasonal accumulation of biomass may differ between seasons. Monthly burned area maps for each year are generated and used to create yearly Year Since Last Burn (YSLB) maps which indicate how many years have elapsed since an area has been burned. These maps describe when, where, and what vegetation was burned. YSLB maps and fuel size classes are used to calculate the fuel loads, which describe the GHG emissions from fire based on historical data, and fuel accumulation rates in the area. These potential GHG emissions are multiplied by the area burned to calculate the baseline fire emissions. This section describes the procedures and calculations used to determine baseline emissions and are summarized below.

1. Identify Key Project Dates that indicate the cut off dates for the EDS and LDS in the region where activities occur.
2. Generate a Vegetation Fuel Type Map and Vegetation Fuel Type Classification Table that describes the vegetation in the project area.
3. Generate Annual Burn Area Maps, using monthly burn areas maps. Maps must indicate burn area per EDS and LDS,
4. Generate Annual Years Since Last Burnt (YSLB) maps.
5. Estimate baseline fire emissions.
6. Estimate baseline emissions.

1. Key Project Dates

In accordance with Section B.5.2 of the SFM methodology, the dates for the Start of the EDS, Start of the LDS, and End of the LDS need to be defined according to the region where the project activities occur. The following table describes the key project dates for the region.

EDS and LDS cut off dates	Project Dates
Start of EDS	1st May
Start of LDS	1st August
End of LDS	31st October

2. Vegetation Fuel Type Map and Vegetation Fuel Type Classification Table

In accordance with Section C.5.1 of the SFM methodology, a vegetation fuel type map must be created at each verification event. The following figure describes the vegetation fuel type map for the project area.

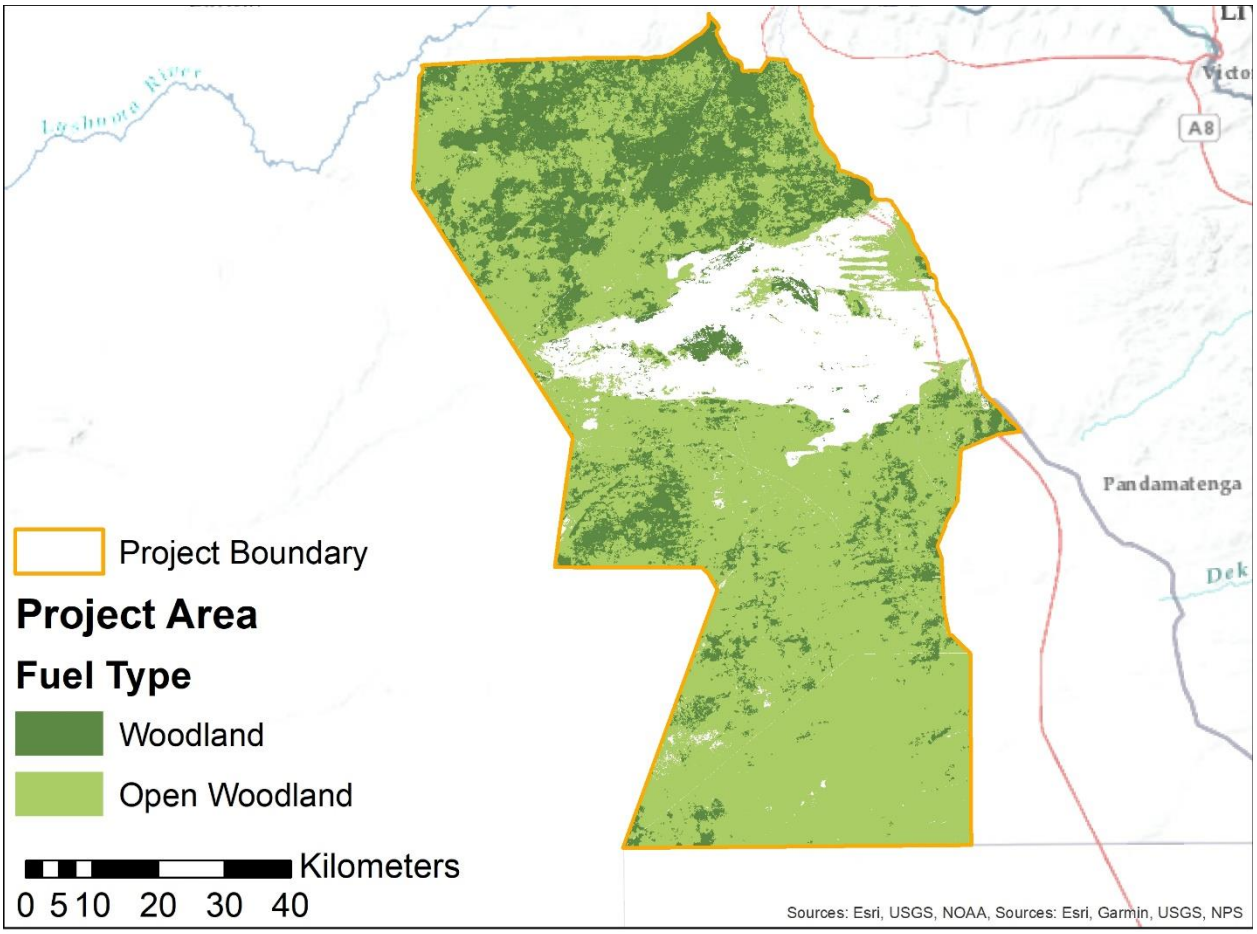


Figure Error! No text of specified style in document.**-1: Vegetation Fuel Type Map of Eligible Fuel Types in the Chobe Project Area**

3. Annual Burn Area Maps

Burned area raster data was obtained for each month in the calendar year and a numerical code was applied to each mapping unit indicating if it was burnt or unburnt. The creation and validation of these maps was conducted following the procedures in Section F.2 of the SFM Methodology. For the sample PD, ground truthing for map validation as not been performed.

4. YSLB Maps

In accordance with Section F.5 of the SFM methodology, YSLB maps were generated for each calendar year in the baseline period to help determine the fuel loads in the project area. Using monthly burned area data and the EDS and LDS season dates, seasonal burned area maps were created for the EDS and LDS for each calendar year in the baseline period. Then YSLB maps were created for each year using seasonal burned area maps following the classification procedures described in Section F.3 of the SFM methodology. For the sample PD, ground truthing for map validation as not been performed.

5. Baseline Fire Emissions

Many of the equations for estimating the baseline emissions are based on the fuel size class, vegetation fuel type, fire season, and calendar year. The variables associated with these parameters are defined and described below.

Where:

i	=	*Fuel size class, e.g., fine fuel, shrub, etc., as per Appendix E of the SFM Methodology*
v	=	*Vegetation fuel type, as defined in Appendix E of the SFM methodology*
s	=	*Fire season: Early Dry Season or Late Dry Season*
y	=	*Year 1, 2, 3, etc., and is taken to be a calendar year*

In order to determine the annual emissions from fires in each year of the baseline period, the following equations are required. To calculate the area burned for each fuel type, equation 8 from the SFM methodology is applied, as seen below.

Equation 8 in the SFM methodology

$$AB_{v,y,s,YSLB} = FSA_{v,y,s,YSLB} \times P_s$$

Where:

P_s = *Patchiness. Values for each season were calculated using the fixed parameters in Appendix E of the SFM methodology.*

$FSA_{v,y,s,YSLB}$ = *Fire surface area. Values for each vegetation, year, and season were determined following the procedures in Section 16.2 of the SFM methodology for each fuel type and fire season.*

The table below is an example showing the inputs and calculations for the year 2015 of the baseline emissions.

Table 2. Inputs used for year 2015 for $AB_{v,y,s,\text{YSLB}}$

Year	Vegetation type	Season	YSLB	Fire Surface Area	Patchiness	AB
y	*v*	*s*	*YSLB*	$FSA_{v,y,s,YSLB}$	P_s	$FSA_{v,y,s,YSLB} \times P_s$
2015	Open Woodland	EDS	1	0.14	0.6754	0.095
2015	Open Woodland	EDS	2	0	0.6754	0.000
2015	Open Woodland	EDS	3	5.24	0.6754	3.539
2015	Open Woodland	EDS	4	0	0.6754	0.000
2015	Open Woodland	EDS	5	0	0.6754	0.000
2015	Open Woodland	EDS	6	0	0.6754	0.000
2015	Open Woodland	LDS	1	51668.7	0.8189	42311.498
2015	Open Woodland	LDS	2	3900.5	0.8189	3194.119
2015	Open Woodland	LDS	3	55862.77	0.8189	45746.022
2015	Open Woodland	LDS	4	4176.83	0.8189	3420.406
2015	Open Woodland	LDS	5	712.1	0.8189	583.139
2015	Open Woodland	LDS	6	1662.79	0.8189	1361.659
2015	Woodland	EDS	1	0	0.6462	0.000
2015	Woodland	EDS	2	2.67	0.6462	1.725
2015	Woodland	EDS	3	0	0.6462	0.000
2015	Woodland	EDS	4	0	0.6462	0.000
2015	Woodland	EDS	5	0	0.6462	0.000
2015	Woodland	EDS	6	0.66	0.6462	0.426
2015	Woodland	LDS	1	14499.16	0.9428	13669.808
2015	Woodland	LDS	2	378.55	0.9428	356.897
2015	Woodland	LDS	3	1319.65	0.9428	1244.166
2015	Woodland	LDS	4	1828.37	0.9428	1723.787
2015	Woodland	LDS	5	1891.63	0.9428	1783.429
2015	Woodland	LDS	6	1872.23	0.9428	1765.138

The next step is to calculate fuel loads. As the SFM methodology, if there is no significant relationship between the fuel size classes and the YSLB maps, then fixed fuel accumulation values in Appendix E of the SFM Methodology should be used for the fuel load calculations. The project applies the fixed parameters for the Miombo woodlands in Appendix E which determined that there was no significant difference between coarse, heavy, and shrub fuel size classes and the YSLB maps. For the fine fuels, fixed parameters are provided for the YSLB.

Table 3. Inputs used for the $FL_{i,v,y,s}$

Year since last fire *YSLB*	Fine fuel class (*i*)				Coarse fuel class (*i*)		Heavy fuel class (*i*)		Shrub fuel class (*i*)	
	EDS (*s*)		LDS (*s*)		EDS and LDS *(s)*		EDS and LDS (*s*)		EDS and LDS (*s*)	
	Open Woodland	Woodland	Open woodland	Woodland	Open Woodland	Woodland	Open Woodland	Woodland	Open Woodland	Woodland
	v	*v*	*v*	*v*	*v*	*v*	*v*	*v*	*v*	*v*
1	2.27	2.16	2.56	2.40	0.55	0.52	0.91	0.99	3.37	1.58
2	2.63	2.50	2.97	2.78	0.55	0.52	0.91	0.99	3.37	2.25
3	2.87	2.72	3.24	3.02	0.55	0.52	0.91	0.99	3.37	2.77
4	3.05	2.88	3.45	3.21	0.55	0.52	0.91	0.99	3.37	3.21
5	3.20	3.02	3.61	3.36	0.55	0.52	0.91	0.99	3.37	3.60
6	3.33	3.14	3.76	3.50	0.55	0.52	0.91	0.99	3.37	3.95

To calculate the potential fire emissions from GHGs in each year and season, equation 9 from the SFM methodology is applied, as seen below. For ease of calculations, the project has forgone summing by vegetation type within this PD, and instead applies the summation in the following equation (equation 9). This does alter the calculations but provides the same result.

Equation 9 in SFM Methodology

$$PFE_{g,y,s} = \sum_{i}\sum_{v} BCE_{i,v,s} \times FL_{i,v,y,s} \times EF_{g,i,v,s} \times CC_{i,v,s} \times MtE_g \times EC_{g,i,v} \times GWP_g$$

Where:

$PFE_{g,y,s}$ = *Potential fire emissions from eligible greenhouse gas g, in year y, for fire season s (tCO_2e/ha)*

$BCE_{i,v,s}$ = *ning Efficiency for eligible fuel size class i, for eligible vegetation type v, in fire season s (%) from Appendix E of the SFM methodology.*

$FL_{i,v,y,s}$ = *l Load of eligible fuel size class i, from vegetation fuel type v, in year y, for fire season s (t/ha) from Appendix E of the SFM methodology.*

$EF_{g,i,v,s}$ = *mission Factor for N_2O and CH_4 GHGs, for eligible fuel size class i, for vegetation fuel type v, for fire season s (%) from Appendix E of the SFM methodology.*

$CC_{i,v,s}$ = *arbon Content for fuel size class i, for vegetation fuel type v, for fire season s (%) from Appendix E of the SFM methodology.*

MtE_g = *io of molecular to elemental mass for N_2O and CH_4 from the Data and Parameters table in monitoring section of the SFM methodology.*

$EC_{g,i,v}$ = *Ratio to convert other elements to carbon from Appendix E of the SFM methodology.*

GWP_g = *Global warming potential from Appendix E of the SFM methodology.*

The $BCE_{i,v,s}$ values for each fuel class, vegetation type, and season used in the baseline emissions calculations are shown in Table 4 and taken from Appendix E in the SFM methodology. Each fuel load

value in Table 3 for each year of the baseline was multiplied by the corresponding burning efficiency factor. Then, these multiplied values were summed for all fuel classes to represent the total fuel actually consumed in the fires observed by remote sensing. The total fuel consumed values were then multiplied by the remaining variables in Equation 9 for N_2O and CH_4.

Table 4. Fixed parameters used for $BCE_{i,v,s}$

Vegetation	Season	Fine	Coarse	Heavy	Shrub
v	*s*	*i*	*i*	*i*	*i*
Open Woodland	EDS	0.6594	0.1018	0.0105	0.049
Open Woodland	LDS	0.7642	0.1923	0.2333	0.0933
Woodland	EDS	0.5982	0.0577	0.0051	0.0542
Woodland	LDS	0.7	0.2118	0.0873	0.189

To calculate the total potential fire emissions ($PFE_{y,s}$) for each year and season, equation 9 from the SFM methodology was applied, as seen below. The sum of potential fire emissions from N_2O and CH_4 determined the total potential fire emissions for each year and each season. Table 5 shows the results of potential fire emissions for each GHG from the previous equation, along with the results from Equation 9 for year 2015.

Equation 9 in SFM Methodology

$$PFE_{y,s} = \sum_{g} PFE_{g,y,s}$$

Table 5. Inputs for year 2015 for $PFE_{y,s}$

Year	Vegetation	Season	PFE from CH_4 (tCO_2e)	PFE from N_2O (tCO_2e)	Total PFE (tCO_2e)
y	*v*	*s*	$PFE_{g,y,s}$	$PFE_{g,y,s}$	$\sum_{g} PFE_{g,y,s}$
2015	Open Woodland	EDS	0.057911	0.0435858	0.101496791
		EDS	0.06586876	0.0495751	0.115443843
		EDS	0.07117394	0.0535679	0.124741878
		EDS	0.07515282	0.0565626	0.131715404
		EDS	0.07846856	0.0590581	0.137526676
		EDS	0.0813422	0.0612209	0.142563112
		LDS	0.08151287	0.0755506	0.157063487
		LDS	0.0913782	0.0846943	0.176072551
		LDS	0.09787489	0.0907158	0.188590716
		LDS	0.10292786	0.0953992	0.198327066
		LDS	0.10677775	0.0989675	0.205745237
		LDS	0.11038702	0.1023128	0.212699773
	Woodland	EDS	0.05528559	0.0177882	0.07307379
		EDS	0.06466559	0.0208062	0.085471809
		EDS	0.07091839	0.0228181	0.093736465
		EDS	0.075597	0.0243234	0.099920423
		EDS	0.07970139	0.025644	0.105345404

Year	Vegetation	Season	PFE from CH_4 (tCO_2e)	PFE from N_2O (tCO_2e)	Total PFE (tCO_2e)
		EDS	0.08325277	0.0267867	0.11003944
		LDS	0.11273301	0.0390021	0.151735134
		LDS	0.13308181	0.0460422	0.179123986
		LDS	0.14688228	0.0508167	0.197698989
		LDS	0.15808519	0.0546926	0.212777751
		LDS	0.16734718	0.0578969	0.225244098
		LDS	0.17585456	0.0608402	0.236694777

To calculate the annual emissions from fires for each season, equation 7 from the SFM methodology is applied, as seen below. The *AB* values derived from equation 1 in Table 2 were multiplied by the $PFE_{y,s}$ values (Table 5) for each season and year of the baseline.

Equation 7 in SFM Methodology

$$E_{f,y,s} = \sum_{v} PFE_{y,s} \times AB_{v,y,s}$$

Where:

E_f : *Emission factor*

To calculate the annual emissions from fires each year in the baseline period, equation 6 from the SFM methodology is applied, as seen below. The annual emissions in the baseline period for each season and the total GHG emissions are provided in Table 6.

Equation 6 in SFM Methodology

$$E_{f,y} = \sum_{s} E_{f,y,s}$$

Table 6. Annual emissions in the baseline period

Year	EDS (tCO_2e)	LDS (tCO_2e)	Total Emissions (tCO_2e)
	$E_{f,y,s}$	$E_{f,y,s}$	$\sum_{s} E_{f,y,s}$
2013	1	15,509	15,511
2014	50	39,610	39,660
2015	1	20,494	20,494
2016	27	38,802	38,829
2017	0	44,884	44,884
2018	31	47,921	47,952
2019	48	5,667	5,715
2020	425	15,862	16,287
2021	989	10,323	11,312
2022	1,678	42,864	44,542

6. Baseline Emissions

To calculate the average annual baseline emissions from fires in the baseline period, equation 5 from the SFM methodology is applied, as seen below. The average annual baseline emissions for the project are **28,519 tCO_2e.**

Equation 5 in SFM Methodology

$$\overline{ABE}_{p,b} = \frac{1}{Y_{HRP}} \sum_{y=-HRP}^{-1} E_{p,b,f,y}$$

B.7.1.3. Calculation of the annual difference between baseline and BAU emissions/removals

>> In accordance with the Baseline Standard (§7.3), the annual difference between the conservative BAU emissions and the downward-adjusted baseline is calculated to confirm that the crediting baseline remains below the most likely BAU trajectory for each year of the crediting period.:

$$\Delta_y = BAU_{cons,y} - BE_{adj,y} \qquad (20)$$

Where:

Δ_y= Difference between conservative BAU and downward-adjusted baseline in year *y* (tCO_2e)

$BAU_{cons,y}$= Conservative BAU emissions in year *y* (from Equation (19))

$BE_{adj,y}$= Downward-adjusted baseline emissions in year *y* (from Equation (13) for y=1, and from Equation (14) for y>1)

Application to Chobe Fire Management Project (Year 1):

From Section B.7.1.1: $BAU_{cons,2023} = 25{,}667$ tCO_2e

From Section B.7.1.2: $BE_{adj,2023} = 25{,}667$ tCO_2e

Thus: $\Delta_{2023} = 25{,}667 - 25{,}667 = 0$ tCO_2e

This result is consistent with the methodology, since in the first year of crediting, the downward adjustment procedure ensures that the baseline is equal to or below the conservative BAU.

Application to subsequent years (ex-ante illustration):

Assuming a minimum 1% annual downward adjustment (r = 0.01) and a constant conservative BAU of 25,667 tCO_2e (to be reconfirmed ex post):

Year 2 (2024):

$BE_{adj,2024} = 25{,}410$ tCO_2e
$BAU_{cons,2024} = 25{,}667$ tCO_2e
$\Delta_{2024} = 25{,}667 - 25{,}410 = 257$ tCO_2e

Year 3 (2025):

$BE_{adj,2025} = 25{,}156$ tCO_2e
$\Delta_{2025} = 25{,}667 - 25{,}156 = 511$ tCO_2e

Etc. continuing annually until the end of the crediting period.

B.7.1.4. Factors or quantitative methods for downward adjustment of baseline

>> **Starting point (HRP baseline):**

The unadjusted baseline emissions equal the Historical Reference Period (HRP) average:

- $BE_{HRP} = 28{,}519$ tCO_2e/yr(HRP 2013–2022).

- For Year 1 (2023), monitored activity emissions (project scenario) are $AE_{2023} = 22{,}476$ tCO_2e.
- In accordance with Baseline Standard Section 7, a conservative downward adjustment is applied to embed ambition.

Downward adjustment in the first calendar year of the first crediting period

In Year 1, the methodology applies two adjustments to the unadjusted baseline BE_{HRP}:
(i) an uncertainty-based adjustment; and (ii) a minimum adjustment relative to ex-ante project emissions.
The final Year-1 adjusted baseline is the minimum of the two.

Step 1 — Determine uncertainty in baseline emissions
Quantify the 95% confidence relative uncertainty covering all drivers (burned-area detection, fuel loads, combustion completeness, emission factors, patchiness/mapping, etc.) to obtain $UNC_{BE_{HRP,CP1}}$.

For Chobe (conservative ex-ante assumption for CP1 planning and consistent with mapping QA/QC ≥90%), set $UNC_{BE_{HRP,CP1}} = 0.10$(to be confirmed ex post with full propagation).

Step 2 — Uncertainty-based downward adjustment

$$BE_{adj,UNC,y=1} = BE_{HRP,y=1} \times (1 - UNC_{BE_{HRP,CP1}}) \qquad (11)$$

With $BE_{HRP} = 28{,}519$and $UNC = 0.10$:

$$BE_{adj,UNC,1} = 28{,}519 \times 0.90 = \mathbf{25{,}667}\ tCO_2e$$

Step 3 — Minimum adjustment relative to project emissions

$$BE_{adj,min,y=1} = BE_{HRP,y=1} - (BE_{HRP,y=1} - AE_y) \times 0.1 \qquad (12)$$

With $AE_{2023} = 22{,}476$:

$$BE_{adj,min,1} = 28{,}519 - (28{,}519 - 22{,}476) \times 0.1 = 28{,}519 - 604.3 = \mathbf{27{,}915}\ tCO_2e$$

Step 4 — Select the lower value

$$BE_{adj,y=1} = \min\{BE_{adj,UNC,1};\ BE_{adj,min,1}\} \qquad (13)$$

Therefore: $BE_{adj,1} = \min\{25{,}667;\ 27{,}915\} = \mathbf{25{,}667}\ tCO_2e$

Downward adjustment in subsequent years

Per Baseline Standard §7.2, the baseline must decline each subsequent year to remain below BAU and increase ambition over time.

Annual conservative reduction rule:

$$BE_{adj,y} = BE_{adj,y-1} \times (1 - r_y), y > 1 \qquad (14)$$

- where $r_y \geq 0.01$and is composed of principled components:

$$r_y = \sum_i r_{y,i} \qquad (15)$$

Components to determine r_y(project-specific application):

- **Economic viability** $(r_{y,\text{econ}})$SFM is labor-intensive and typically depends on carbon revenue. In Chobe there are no confirmed recurring external grants; therefore, absent other funding, $r_{y,\text{econ}}$does not justify an increase above the minimum.
- **Incentive against excessive EDS burning** $(r_{y,\text{GHG-intensity}})$The Project did not lead to a decrease in area unburnt ≥2 years in year $y$to the HRP average, $(r_{y,\text{GHG-intensity}})$ does not justify an increase above the minimum

- **Host-Party long-term pathways** ($r_{y,\text{NDC/LT-LEDS}}$) The Host Party pathway does not specify a quantified annual decline $r_{y,\text{NDC/LT-LEDS}} = 0$.
- **Sufficiency (IPCC AR6, WGIII Ch.9)** ($r_{y,\text{sufficiency}}$) The Chobe is project operates in a low-resource fire management context) $r_{y,\text{sufficiency}} = 0$
- **Suppressed demand** ($r_{y,\text{suppr.dem.}}$) Where high baseline emissions reflect under-capacity, a lower trajectory may be justified; however, the net $r_y$must still be ≥ 0.01.
- **Other project-specific considerations** ($r_{y,\text{proj}}$) Apply any additional factor needed to ensure the downward-adjusted baseline stays below the conservative BAU (per Baseline Standard §§10.4–10.5). If, after (14)–(15), $BE_{adj,y}$is not below $BE^{BAU}_{cons,y}$(from B.7.1.1), increase $r_y$accordingly. n/a

Example application for Chobe (ex ante schedule, to be confirmed ex post)

- Year 1 result (from above): $\text{BE}_{\text{adj},1} = 25{,}667$ tCO_2e.
- Absent external grants, no binding NDC decline for the project area, and pending unburnt-area comparison, apply the minimum $r_y = 0.01$as a conservative starting point.
  - Year 2: $BE_{adj,2} = 25{,}667 \times (1 - 0.01) = 25{,}410$$tCO_2e$
  - Year 3: $BE_{adj,3} = 25{,}410 \times (1 - 0.01) = 25{,}156$$tCO_2e$
  - … continue annually with at least 1% decline (or higher if triggered by items 1–6 above).
- Each year, recalculate $r_y$using observed MRV (unburnt-area test), any external funding received, and policy alignment; ensure $BE_{adj,y} < BE^{BAU}_{cons,y}$(from Section B.7.1.1).
- Note: Once the ex-post uncertainty (Step 1) and the unburnt-area comparison are available for each calendar year, update $UNC_{BE_{HRP},CP1}$and $r_y$and re-publish the annual $BE_{adj,y}$values accordingly.

B.7.2. Calculation of project emissions/removals

>> Project Emissions are estimated using the same procedures and equations detailed in the baseline emission section, but as applied to monitored data from the project scenario. At present, only one year of the project crediting period has been monitored. An estimated 22,476 tCO2e were emitted from wildfires in the project area during calendar year 2023.

For the purpose of this illustrative PDD, emissions from consumption of fuel are assumed de minimis.

For reference - Fossil fuels typically used for SFM projects include, but are not limited to, fuels for helicopters, land vehicles and drip torches. E.g., a flagship SFM project in northern Australia reported annual emissions of 44.5 tCO2-e from burning of fossil fuels for project operation. This included over 320 hours of helicopter time. The project generated over 262,000 carbon credits from emissions reductions in the same year. The emissions from burning of fossil fuels represent 0.017% of the emissions reductions generated by the project, therefore considered non-material.

Nonetheless, the SFM Methodology includes provisions to monitor and calculate emissions associated with consumption of fossil fuels for the implementation of project activities.

B.7.3. Addressing of leakage

B.7.3.1. Sources of leakage

>>

Leakage source	Applicability	Rationale
Baseline equipment transfer	Not applicable	SFM does not rely on specialized capital whose transfer would shift emissions outside the project. Ignition tools/vehicles are routine, low-emission support assets; moving them does not plausibly increase off-boundary GHGs. In line with the methodology equipment transfer is not expected.

Leakage source	Applicability	Rationale
Competition for resource use	Not applicable	The project does not reduce access to productive resources (e.g., agricultural land, fuelwood) in a way that would push production/emissions elsewhere. Commodities and fuelwood production are not reduced in the project scenario.
Diversion of existing production processes or outputs (activity-shifting leakage)	Applicable & material (primary risk)	Displacement of LDS ignitions to neighbouring unmanaged lands is the principal leakage pathway. The methodology treats this explicitly via the Leakage Belt with harmonized MRV to detect/quantify off-boundary LDS emissions. For border-proximate projects, international leakage must be considered.
Increases in release of GHGs from the environment	Not applicable	EDS burns are cooler & patchier; SFM does not trigger off-site hydrological/soil disturbances that would increase GHG releases beyond project boundaries. Conservatively excluded by the methodology.
Positive leakage (spillover benefits)	Document, but not credit	SFM may reduce off-boundary LDS fire risk (buffering) or diffuse EDS practice to neighbours. Under PACM, net positive leakage sets leakage to 0 (no bonus credit).
International leakage (contextual check)	Potentially relevant	Chobe is near several borders; where ignition displacement across borders is plausible, extend the LB or apply conservative assumptions and document data access/attribution. Assumed not applicable for the purpose of this PDD.

B.7.3.2. Description of how leakage is avoided, minimized or addressed

>> In line with the SFM methodology: The project activities for the Chobe project include the establishment of boundary fire breaks, and the EDS prescribed burns have only been implemented within the project area.

B.7.3.3. Calculation of leakage emissions

>> To date, no fires have been displaced from within the project area to adjacent land. Therefore, reportable leakage emissions are zero.

B.7.4. Calculation of emission reductions or net removals

>> The GHG emission reductions are calculated as follows:

$$ER_y = (BE_{adj,y} - PE_y - LEAK_y)$$

Where:

- ER_y= Emission Reductions in year *y* (tCO_2e)
- $BE_{adj,y}$= The downward adjusted baseline emissions in year y (tCO_2e) – in line with the requirements of Section **Error! Reference source not found.**
- PE_y= Project emissions in year *y* (tCO_2e) - from equation **Error! Reference source not found.**)
- $LEAK_y$= Net leakage in year *y* (tCO_2e) – from equation **Error! Reference source not found.**). If $LEAK_y \leq 0$, it is conservatively set to zero.

In 2023, the GHG Emissions Reduction achieved by the project were:

$$ER_y = (25{,}667 - 22{,}476 - 0)$$

$$ER_y = 3{,}191\ tCO2e$$

Xx

Xx

B.7.5. Data and parameters fixed ex ante

Data/parameter	**>>** MtE_g
Description	>>. Ratio of molecular to elemental mass for greenhouse gas *g*
Data unit	>> Dimensionless
Equations referred	>>(9)
Purpose of data	☒ Baseline emissions/removals ☒ Project emissions/removals ☐ Leakage emissions
Value(s) applied	>>1.3333 for CH_4 1.5714 for N_2O
Source of data	☐ Measured ☒ Other sources Latest IPCC Report
Choice of data or measurement methods and procedures	>> IPCC is a reputable source
Additional comments	>> None

Data/parameter	**>>** $EC_{g,i,v,s}$
Description	>>. Ratio to convert other elements to carbon, for greenhouse gas *g*, for fuel size class *i*, for vegetation fuel type v, in season s
Data unit	>> Dimensionless
Equations referred	>>(9)
Purpose of data	☒ Baseline emissions/removals ☒ Project emissions/removals ☐ Leakage emissions
Value(s) applied	>>1 for CH_4 for all vegetation fuel types v and fuel size classes i For N_2O, the following values were applied:

Vegetation	EDS	LDS
Open Woodland	0.020	0.020
Woodland	0.015	0.020

Source of data	☐ Measured ☒ Other sources Russell-Smith et al. (2021)
Choice of data or measurement methods and procedures	>> Peer reviewed literature value.
Additional comments	>> None

Data/parameter	**>>** GWP_g
Description	>>. Global warming potential of greenhouse gas *g*
Data unit	>> Dimensionless
Equations referred	>> (9)
Purpose of data	☒ Baseline emissions/removals ☒ Project emissions/removals ☐ Leakage emissions
Value(s) applied	>>27 for CH_4 273 for N_2O
Source of data	☐ Measured ☒Other sources Most recent IPCC Assessment Report for CH_4 and N_2O
Choice of data or measurement methods and procedures	>> IPCC is a reputable source
Additional comments	>> None

Data/parameter	**>>** $CC_{i,v,s}$
Description	>>. Carbon Content for eligible fuel size class *i,* for vegetation fuel type v, for fire season *s*
Data unit	>> Proportion (%)
Equations referred	>> (9)
Purpose of data	☒ Baseline emissions/removals ☒ Project emissions/removals ☐ Leakage emissions
Value(s) applied	>> **Vegetation** / **EDS** / **LDS** Open Woodland / 49.01 / 48.59 Woodland / 43.48 / 46.44
Source of data	☐ Measured ☒Other sources Russell-Smith et al. (2021)
Choice of data or measurement methods and procedures	>> Peer reviewed literature value.
Additional comments	>> None

Data/parameter	**>>** $EF_{g,i,v,s}$
Description	>>. Emission Factor for eligible greenhouse gas *g*, for eligible fuel size class i, for vegetation fuel type v, for fire season s
Data unit	>> Proportion (%)
Equations referred	>> (9)
Purpose of data	☒ Baseline emissions/removals ☒ Project emissions/removals ☐ Leakage emissions

Value(s) applied	>> For N_2O: **Vegetation Type** / **EDS** / **LDS** Open Woodland / 0.60 / 0.70 Woodland / 0.0045 / 0.0045 For CH_4: **Vegetation Type** / **EDS** / **LDS** Open Woodland / 0.19 / 0.18 Woodland / 0.25 / 0.31
Source of data	☐ Measured ☒ Other sources Russell-Smith et al. (2021) and Vernooij et al. (2022), and nitrous oxide emissions factor equation described in Hurst *et al.* (1994)
Choice of data or measurement methods and procedures	>> The emission factors were derived from direct field measurements from fires across the Miombo biome.
Additional comments	>> None

Data/parameter	**>>** $BCE_{i,v,s}$
Description	>>. Burning Efficiency for eligible fuel size class i, for eligible vegetation type v, in fire season s. The proportion of fuel volatised in a fire, also known as proportion of fuel consumed by fire (consumption).
Data unit	>> Proportion (%)
Equations referred	>>(9)
Purpose of data	☒ Baseline emissions/removals ☒ Project emissions/removals ☐ Leakage emissions
Value(s) applied	*For fine fuels:* **Vegetation Type** / **EDS** / **LDS** Open Woodland / 65.94 / 76.42 Woodland / 59.82 / 70.00 *For coarse fuels:* **Vegetation Type** / **EDS** / **LDS** Open Woodland / 10.18 / 19.23 Woodland / 05.77 / 21.18 *For heavy fuels:* **Vegetation Type** / **EDS** / **LDS** Open Woodland / 01.05 / 23.33 Woodland / 00.51 / 08.73 *For shrub fuels:* **Vegetation Type** / **EDS** / **LDS** Open Woodland / 04.90 / 09.33

	Woodland	05.42	18.90	
Source of data	☐ Measured ☒ Other sources Russel-Smith 2023			
Choice of data or measurement methods and procedures	>> The emission factors were derived from direct field measurements from fires across the Miombo biome.			
Additional comments	>> None			

Data/parameter	**>>** P_s
Description	>>. Patchiness for fire season *s*
Data unit	>> Proportion burnt (%)
Equations referred	>> (8)
Purpose of data	☒ Baseline emissions/removals ☒ Project emissions/removals ☐ Leakage emissions
Value(s) applied	>>

Vegetation Type	EDS	LDS
Open Woodland	67.54	81.89
Woodland	64.62	94.28

Source of data	☐ Measured ☒ Other sources Russel-Smith, 2023	
Choice of data or measurement methods and procedures	>> Default factor for fuel types found in the project area, prescribed in the methodology.	
Additional comments	>> None	

Data/parameter	**>>** $FL_{i,v,y,s}$
Description	>>. Fuel Load of eligible fuel size class i, from vegetation fuel type v, in year y, for fire season s
Data unit	>> Tonnes per hectare (t/ha)
Equations referred	>>(9)
Purpose of data	☒ Baseline emissions/removals ☒ Project emissions/removals ☐ Leakage emissions
Value(s) applied	*For fine fuels:*

	EDS		LDS	
Years since fire	Open Woodland	Woodland	Open woodland	Woodland
1	2.27	2.16	2.56	2.40
2	2.63	2.50	2.97	2.78
3	2.87	2.72	3.24	3.02
4	3.05	2.88	3.45	3.21
5	3.20	3.02	3.61	3.36
6	3.33	3.14	3.76	3.50

For coarse fuels:

	EDS	LDS		
Years since fire	Open Woodland	Woodland	Open Woodland	Woodland
1	0.55	0.52	0.55	0.52
2	0.55	0.52	0.55	0.52
3	0.55	0.52	0.55	0.52
4	0.55	0.52	0.55	0.52
5	0.55	0.52	0.55	0.52
6	0.55	0.52	0.55	0.52

For heavy fuels:

	EDS	LDS		
Years since fire	Open Woodland	Woodland	Open Woodland	Woodland
1	0.91	0.99	0.91	0.99
2	0.91	0.99	0.91	0.99
3	0.91	0.99	0.91	0.99
4	0.91	0.99	0.91	0.99
5	0.91	0.99	0.91	0.99
6	0.91	0.99	0.91	0.99

For shrub fuels:

	EDS	LDS		
Years since fire	Open Woodland	Woodland	Open Woodland	Woodland
1	3.37	1.58	3.37	1.58
2	3.37	2.25	3.37	2.25
3	3.37	2.77	3.37	2.77
4	3.37	3.21	3.37	3.21
5	3.37	3.60	3.37	3.60
6	3.37	3.95	3.37	3.95

Source of data	☐ Measured ☒ Other sources Russell-Smith et al. 2023
Choice of data or measurement methods and procedures	>> The fuel loads were derived from direct field measurements from fires across the Miombo biome.
Additional comments	>> None

B.7.6. Summary of ex ante estimates of emission reductions/net removals

Year	Baseline emissions/removals (tCO_2e)	Project emissions/removals (tCO_2e)	Leakage emissions (tCO_2e)	Emission reductions/Net removals (tCO_2e)
Year 1	25,667	22,476	-	3,191
Year 2	25,410	19,237	-	6,173

Year 3	25,156	19,082	-	6,074
Year 4	24,905	18,928	-	5,977
Year 5	24,656	18,773	-	5,883
Year 6	24,409	18,774	-	5,635
Year 7	24,165	18,775	-	5,390
Year 8	23,923	18,776	-	5,147
Year 9	23,684	18,777	-	4,907
Year 10	23,447	18,778	-	4,669
Year 11	23,213	18,779	-	4,434
Year 12	22,981	18,780	-	4,201
Year 13	22,751	18,781	-	3,970
Year 14	22,523	18,782	-	3,741
Year 15	22,298	18,783	-	3,515
Total	359,188	286,281	-	72,907
Total number of years in the crediting period	15			
Annual average over the crediting period	23,946	19,085	-	4,860

B.8. Monitoring Plan

B.8.1. Data and parameters to be monitored

Data/parameter	**>>** A_v	
Description	>> Project area for fuel type v	
Data unit	>> ha	
Equations referred	>> NA	
Purpose of data	☒ Baseline emissions / removals ☒ Project emissions / removals ☐ Leakage emissions	
Measurement methods and procedures	>> Estimated from vegetation maps	
Entity/person responsible for the measurement	>> Maki Planet Systems	
Measuring instrument(s)	*Type of instrument*	>> Satellite data
	Accuracy class	>>Sentinel-2. Landsat
	Calibration requirements	>> NA
	Location	>> NA
Measurement intervals	>> Start of crediting period	

QA/QC procedures	>> Areas cross-checked with raw data and validated maps
Additional comment	>> NA

Data/parameter	**>>**$FSA_{v,y,s,YSLB}$,	
Description	>> Fire Surface Area for vegetation fuel type v, in year y, for fire season s	
Data unit	>> Hectares (ha)	
Equations referred	>> (8)	
Purpose of data	☒ Baseline emissions / removals ☒ Project emissions / removals ☐ Leakage emissions	
Measurement methods and procedures	>> Monthly fire surface areas were mapped in Sentinel-2 satellite data at 10m spatial resolution for the years 2016-2023 and in Landsat data at 30m spatial resolution (pre-2016 baseline years). A deep learning model using a UNet framework was developed, that was applied to the satellite data. Result were image segmentations of burned areas, where individual image segmentations were aggregated to monthly maps using GIS. The monthly maps provide the units burnt (1) or unburnt (0).	
Entity/person responsible for the measurement	>> Maki Planet Systems	
Measuring instrument(s)	*Type of instrument*	>>Satellite data
	Accuracy class	>> Sentinel-2, Landsat
	Calibration requirements	>> NA
	Location	>> NA
Measurement intervals	>> Every month.	
QA/QC procedures	>> The seasonal burn maps must be validated following the procedures in the SFM methodology. Seasonal burned area maps must be validated for the applicable season to which they refer. Each seasonal fire map must be validated at a time when each burned area is still visible (typically within 6months). Maps must have an accuracy of 80% or greater.	
Additional comment	>> None	

Data/parameter	**>>** $AB_{v,y,s,YSLB}$
Description	>> Area Burnt of vegetation fuel type *v*, in year *y*, for fire season *s* (ha)
Data unit	>> Hectares (ha)
Equations referred	>> (7)
Purpose of data	☒ Baseline emissions / removals ☒ Project emissions / removals ☐ Leakage emissions
Measurement methods and procedures	>> Calculation as follows: $$AB_{v,y,s,YSLB} = FSA_{v,y,s,YSLB} \times P_s$$
Entity/person responsible for the measurement	>> Maki Planet Systems

Measuring instrument(s)	*Type of instrument*	>>NA
	Accuracy class	>>NA
	Calibration requirements	>>NA
	Location	>>NA
Measurement intervals	>> At each verification event.	
QA/QC procedures	>> NA	
Additional comment	>>None	

Data/parameter	**>> Vegetation Fuel Type map**	
Description	>> Vegetation fuel types occurring within the project area	
Data unit	>> No unit	
Equations referred	>> all	
Purpose of data	☒ Baseline emissions / removals ☒ Project emissions / removals ☐ Leakage emissions	
Measurement methods and procedures	>> Multi-spectral images from Sentinel-2 were used for the Fuel Type Mapping. An object-based classification approach was applied to the satellite data using the software eCognition (Trimble). This object-based classification approach allows to combine unsupervised approaches with a rule-based and visually supervised refinement of the classification. Object-based approaches classifies spatially adjacent and spectrally similar groups of pixels, so called image objects, rather than individual pixels of the image, which results in more homogeneous classifications. The classification scheme has a hierarchical structure. On the first level, vegetation and non-vegetation areas were distinguished. In the second level, vegetation was subdivided into woodland and non-woodland and in the third level woodland density was differentiated based on spectral characteristics.	
Entity/person responsible for the measurement	>> Maki Planet Systems	
Measuring instrument(s)	*Type of instrument*	>> Satellite data
	Accuracy class	>> Sentinel-2, Landsat
	Calibration requirements	>> NA
	Location	>> NA
Measurement intervals	>> Updated at the start of every crediting period, or if major events occur, e.g., clearing events or other events, that significantly affect the Vegetation Fuel Type Map.	
QA/QC procedures	>> The vegetation fuel type maps must be validated following the procedures in the SFM methodology. Maps must have an accuracy of 80% or greater.	
Additional comment	>> None	

Data/parameter	**>> YSLB map**
Description	>> Years Since Last Burnt Map

Data unit	>> Years, spatial layer	
Equations referred	>> Appendix 2	
Purpose of data	☒ Baseline emissions / removals ☒ Project emissions / removals ☐ Leakage emissions	
Measurement methods and procedures	>> Aggregated monthly fire maps for each calendar year in the historical reference period and each calendar year for the project period.	
Entity/person responsible for the measurement	>>Maki Planet Systems	
Measuring instrument(s)	*Type of instrument*	>> Satellite imagery and GIS software
	Accuracy class	>>80% accuracy
	Calibration requirements	>> NA
	Location	>> NA
Measurement intervals	>> Annually	
QA/QC procedures	>> Maps are validated following the procedures in the SFM methodology, ie accuracy of 80% or greater.	
Additional comment	>>NA	

Data/parameter	**>>FCy**	
Description	>>Fuel consumption in year y	
Data unit	>> Litres	
Equations referred	>> (16)	
Purpose of data	☐ Baseline emissions / removals ☒ Project emissions / removals ☐ Leakage emissions	
Measurement methods and procedures	>> Monthly collection of invoices for vehicle fuel. The data is recorded and filed with project documentation.	
Entity/person responsible for the measurement	>> Maki Planet Systems	
Measuring instrument(s)	*Type of instrument*	>> Fuel invoices
	Accuracy class	>> NA
	Calibration requirements	>> NA
	Location	>> NA
Measurement intervals	>> Monthly	
QA/QC procedures	>> NA	
Additional comment	>> NA	

B.8.2. Sampling plan

>> NA - In line with the SFM methodology, the project does not directly require sampling.

B.8.3. Monitoring management system

>>Fire management operations involve the strategic implementation of prescribed burning at landscape scale in the EDS (May – July) to shift existing fire regimes of high intensity uncontrolled LDS wildfires to low intensity fire regimes.

Remotely sensed fire information and GIS mapping is essential to inform SFM planning and for monitoring purposes, and includes fire history, near-real time active fire information, updated Sentinel 2 satellite imagery and associated fuel load mapping products.

A small SFM Team comprised of a fire coordinator / manager and three to four accomplished individuals (5-10 years field experience) coordinate and implement the fire management activities. Community participation and support is encouraged to ensure that the practice is well accepted. The project proponent supports with all desktop-based work for planning, support during operations, monitoring and reporting of project activities.

SFM monitoring typically occurs during May to November and includes:

a. Field and remotely sensed monitoring to assess the effectiveness of prescribed fires in achieving management objectives, confirm self-limiting fires and detect LDS fire ignitions.

b. If safe to do so, undertake fire suppression and firefighting activities such as back burning into a live out-of-control wildfire to protect life, infrastructure, and carbon abatement.

c. Stakeholder consultations to gauge support of partner organizations and local level partners.

The remote sensing monitoring activities rely on satellite data and software to identify and collect data for the project area. Project data and records are stored in proprietary systems designed for carbon project management, hence providing a repository of project data and files for the duration of the crediting period.

B.8.4. Post-crediting period monitoring plan

>> NA

SECTION C. Start date, crediting period type and duration

C.1. Project start date

>> 1 January 2023

C.2. Expected operational lifetime of the project

>>The project activities bring about a permanent change in emissions for as long as the activities continue to be undertaken. This suggests that the project activities and associated benefits can extend beyond the crediting period, ensuring mitigation continues to be achieved, which contributes to equitable sharing by ensuring sustained environmental benefit for the host country

C.3. Project crediting period

C.3.1. Type of crediting period approved by the host Party

☒ Renewable ☐ Fixed

C.3.2. Start date of the crediting period

>> 1 January 2023

C.3.3. Duration of the crediting period

>> 15 years

The below sections have been left blank based on submission instructions.

SECTION D. Environmental impacts, social impacts and sustainable development impacts

D.1. Environmental and social impacts and sustainable development impacts as per the Article 6.4 sustainable development tool

D.1.1. Summary of the environmental and social risk assessment and applicable mitigation measures

>>

D.1.2. Summary of the sustainable development impacts assessment

>>

D.1.3. Monitoring plan of activity-level environmental and social indicators and activity-level SD indicators

>>

D.2. Environmental and social impacts as per the host Party regulations

D.2.1. Summary of host Party requirements

>>

D.2.2. Summary and conclusion of the assessment

>>

SECTION E. Local stakeholder consultation

E.1. Scope of the consultation

>>

E.2. Stakeholders invited

>>

E.3. Modalities for the consultation

>>

E.4. Summary of comments received

>>

E.5. Consideration of comments received

>>

SECTION F. Confirmation of avoidance of double or revived registration

A 6.4 mechanism	☐ **The proposed A6.4 project has not been already registered as an A6.4 project.** ☐ **The proposed A6.4 project has not been already included as a component project (CP) in a registered Article 6.4 mechanism programme of activities (A6.4 PoA).** ☐ **The proposed A6.4 project has not been previously deregistered from the Article 6.4 mechanism.** *>> Tick all the three boxes above as a confirmation of compliance with mandatory requirements.* ☐ **The proposed A6.4 project has not been excluded from a registered A6.4 PoA.** *>>Tick the box if applicable.*
Other	☐ **The proposed A6.4 project is not currently registered or being pursued for registration, or covered by a programme, under any other international, regional, national, subnational or sector-wide GHG mitigation crediting scheme.** ☐ **The proposed A6.4 project was previously registered under or covered by a programme under any other international, regional, national, or subnational or sector-wide GHG mitigation crediting scheme but deregistered or excluded from the other crediting scheme before fully consuming the crediting period under the other crediting scheme.** ☐ **The proposed A6.4 project is currently registered or covered by other international, regional, national, subnational or sector-wide GHG mitigation crediting scheme.** *>> Tick only one applicable box.*

Appendix 1. Contact information of activity participants

(Copy this table for each activity participant)

Organization name	>>
Country	Choose an item.
Address	>>
Telephone	>>
Mobile	>>
E-mail	>>
Website	>>
Contact person	>>

Appendix 2. Applicability of methodologies and standardized baselines

>>

Appendix 3. Further background information on ex ante calculation of emission reductions or net removals

>>

Appendix 4. Summary of post-registration changes

>>

Appendix 5. Further background information on monitoring plan

>>

Appendix 6. A6.4 Environmental and Social Safeguards Risk Assessment Form (A6.4-FORM-AC-015)

>>

Appendix 7. A6.4 Environmental and Social Management Plan Form (A6.4-FORM-AC-016)

>>

Appendix 8. A6.4 Sustainable Development Impact Form (A6.4-FORM-AC-017)

>>

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ATTACHMENT. Instructions for completing this form

1. General instructions

1. Compliance of project design with requirements

1.1 When completing this form for a proposed Article 6.4 project (hereinafter referred as proposed project), demonstrate the compliance with relevant requirements in: [1]

(a) The "Article 6.4 activity standard for projects";

(b) The Tool: "Article 6.4 sustainable development tool";

(c) The applied methodologies;

(d) The applied standardized baselines, where applicable; and

(e) Any other standards, methodologies, methodological tools and guidelines applied in accordance with the applied methodologies (hereinafter "any other standards, methodologies, methodological tools and guidelines to be applied in accordance with the applied (selected) methodologies" are collectively referred to as the other (applied) methodological regulatory documents);

(f) Methodological requirements that may be specified by the host Party in accordance with paragraph 27(a) of the rules, modalities and procedures (RMPs) for the Article 6.4 mechanism.[2]

2. Documenting post-registration changes

2.1 When documenting the changes that occurred to the project in accordance with the applicable provisions relating to post-registration changes:

(a) Prepare two versions of the PDD using this form, one in clean version and the other version indicating the changes to the previously approved PDD (i.e. the PDD at registration, renewal of the crediting period or the last post-registration change, whichever the latest) in track-change;

(b) Provide a summary of the changes in Appendix 4 below.

3. Confidential information

3.1 Where a PDD contains information that the activity participants wish to be treated as confidential/proprietary, submit the PDD in two versions:

(a) One version where all parts containing confidential/proprietary information are made illegible (e.g. by covering those parts with black ink) to be made publicly available without displaying confidential/proprietary information;

(b) Other version containing all information that is to be treated as confidential/proprietary by all parties handling this documentation (designated operational entities (DOEs), Supervisory Body members and alternate members, panel members, external experts requested to consider such documents in support of work for the Supervisory Body, and the secretariat).

3.2 Information is not considered proprietary or confidential if it is used to:

(a) Demonstrate additionality;

(b) Describe the application of the selected methodologies, standardized baselines and the other methodological regulatory documents; and

(c) Support the social, environment and sustainable development impact assessments.

(d) Make any data, values and formulae included in spreadsheets accessible and verifiable.

4. Working language

(a) Complete this form in English;

[1] The "Rules and Regulations" section of the UNFCCC Article 6.4 mechanism website (https://unfccc.int/process-and-meetings/bodies/constituted-bodies/article-64-supervisory-body/rules-and-regulations) contains all regulatory documents for the Article 6.4 mechanism, such as standards (including methodologies and standardized baselines), procedures, methodological tools, guidelines, clarifications and forms that are applicable to the A6.4 activities.

[2] Annex to decision 3/CMA.3.

(b) Prepare all attached documents in English, or provide full translation to English of relevant sections of documents if their originals were prepared in other language.

5. Format and lay-out of the form

(a) Complete this form using the same format without modifying its font, headings or logo, and without any other alteration to the form;

(b) Do not modify or delete tables and their columns in this form. Add rows of the tables as needed;

(c) Add additional appendices as needed.

6. Sections not applicable

6.1 If a section of this form is not applicable, explicitly state that the section is left blank intentionally.

7. Other instructions

7.1 Use an internationally recognized format for presentation of values. For example, use digits grouping in thousands and mark a decimal point with a dot (.), not with a comma (,).

7.2 Complete this form removing this Attachment.

8. Acronyms

8.1 The following acronyms are referred to in this form:

(a) PDD: project design document;

(b) Activity standard: Article 6.4 activity standard for projects;

(c) Sustainable development tool: Tool: Article 6.4 sustainable development tool.

2. Specific instructions

PROJECT DESIGN DOCUMENT (PDD) FORM FOR ARTICLE 6.4 PROJECTS

(Version 01.0)

BASIC INFORMATION	
Project title:	>> *Provide the title of the proposed project.*
UNFCCC project reference number:	>> *Provide the UNFCCC unique reference number for the proposed project received after publishing the notification of prior consideration.*
Host Party:	Choose a Party.
Other participating Parties:	Choose a Party. *Copy and paste the drop list menu to add more participating Parties, if needed.*
Activity participant(s): (add rows if needed)	**Type of Party** | **Name of activity participant(s)** | **Party that is to provide authorization** Choose a type of Party. | >> | Choose a Party. Choose a type of Party. | >> | Choose a Party. Choose a type of Party. | >> | Choose a Party. *Provide the name of the activity participants that are to be authorized by the participating Parties and indicate the type of Party (i.e. 'Host' or 'Other participating Party').*
PDD version number:	>> *Provide the version number of this PDD.*
PDD completion date:	**Click or tap to enter a date.**
Applied methodologies and standardised baselines, and their versions:	>> *Provide the UNFCCC reference numbers, titles and versions of the applied methodologies, and where applicable, the applied standardized baselines, using one line per applied methodology or standardized baseline.*
Sectoral scope(s):	>> *Provide all sectoral scopes of the project based on the applied methodologies, using one line per sectoral scope.*
Type of the project:	☐ Emission reductions activity ☐ Removals activity ☐ Combined emission reductions and removals activity
Estimated annual emission reductions or net removals over the crediting period (tCO_2e/year):	>> *Provide the estimated average annual amount of emission reductions or net removals to be achieved by the proposed project.*

SECTION A. Project description

A.1. Project purpose and general description

>>

Provide the purpose and a general description of the proposed project, including a summary of the following:

1. *The location of the proposed project.*
2. *The technologies/measures to be deployed and/or implemented by the project.*
3. *The project boundary.*
4. *The baseline scenario.*
5. *The estimates of annual average and total GHG emission reductions/net removals for the chosen crediting period.*

The detailed description of the above points shall be provided in sections A.4, A.5, B.3, B.4 and B.7 below. respectively.

A.2. Confirmation that the project aligns with the A6.4 activity types indicated by the host Party

>>

Justify how the proposed project is in compliance within the types of A6.4 activities indicated by the host Party that it would consider approving in accordance with paragraph 26(e) of the RMPs.

A.3. Demonstration that the project, does not constrain, but aligns with the policies, options and implementation plans of the host Party

>>

Justify how the proposed project does not constrain, but aligns with the policies, options and implementation plans of the host Party with regard to the latest nationally determined contribution (NDC) of the host Party, if applicable, its long-term low greenhouse gas emission development strategies (LT-LEDS), if it has submitted one, and the long-term temperature goal of the Paris Agreement and long-term goals of the Paris Agreement.

A.4. Project location

Host Party	Choose a Party.
Region(s)/State(s)/Province(s)	>> *Indicate the region(s)/state(s)/province(s).*
Cities/towns/communities	>> *Indicate the city(ies)/town(s)/community(ies), street name and number*
Geographic coordinates	>> *Indicate the geographical coordinates (e.g. Latitude XX°YY' South, Longitude XX°YY' West) where the proposed project is located.*
Map of project location	
>> *Provide an image containing a map that indicates the precise location of the proposed project.*	

A.5. Technology/measures

A.5.1. Existing technologies/measures prior to project implementation

>>

Describe the technologies/measures existing prior to the implementation of the proposed project at the same site, as applicable, including:

1. *Existing facilities, systems, practices and/or equipment:*
    - *List the facilities, systems, practices and/or equipment existing prior to the implementation of the proposed project at the same site.*
2. *Types and levels of services:*
    - *Specify the services provided by the existing facilities, systems, practices and/or equipment (such as the amount of a certain type of cement produced, the amount of electricity fed into the electricity grid, the production of timber, fuelwood or other biomass/bio-based products, provision of ecosystem/ ecological services such as watershed protection, habitat conservation, combating land degradation/ desertification, etc.).*
    - *Describe their relation, if any, to other facilities, systems and/or equipment outside the project boundary.*
3. *Arrangement of existing facilities:*
    - *Explain the arrangement of the existing facilities, systems, practices and/or equipment.*
4. *Age and lifetime of existing equipment:*
    - *Provide the age and average lifetime of the existing equipment based on the manufacturer's specifications and industry standards.*
5. *Installed capacities, load factors and efficiencies:*
    - *Provide the installed capacities, load factors and efficiencies of the existing equipment.*
6. *Energy and mass flows:*
    - *Describe the energy and mass flows and balances of the existing facilities, systems and/or equipment, if necessary.*
7. *Monitoring equipment:*
    - *Specify the monitoring equipment and their location in the systems.*

Provide a short summary of the baseline scenario as established in section B.4 below, including the equivalent information listed in paragraphs 1-7 above.

A.5.2. Technologies/measures implemented/deployed by the project

>>

Describe the technologies/measures to be deployed and/or implemented by the proposed project, including:

1. *Facilities, system, practices and/or equipment:*
    - *List the facilities, systems, practices and/or equipment that will be installed and/or modified by the proposed project.*
2. *Types and level of services:*
    - *Specify the services provided by the facilities, systems, practices and/or equipment (e.g. the amount of a certain type of cement produced or the amount of electricity fed into the electricity grid).*
    - *Describe their relation, if any, to other facilities, systems and equipment outside the project boundary.*
3. *Arrangement of facilities:*
    - *Explain the arrangement of the facilities, systems, practices and/or equipment.*

4. *Age and lifetime of equipment:*
    - *Provide the age and average lifetime of the equipment based on the manufacturer's specifications and industry standards.*
5. *Installed capacities, load factors and efficiencies:*
    - *Detail the installed capacities, load factors and efficiencies of the equipment.*
6. *Energy and mass flows:*
    - *Describe the energy and mass flows and balances of the facilities, systems and equipment, if necessary.*
7. *Monitoring equipment:*
    - *Specify the monitoring equipment and their location in the systems.*

A.5.3. Declaration related to the existence of a former project in the same geographical location

>>

Declare, if applicable, the existence of a registered A 6.4 project, component project under a registered A6.4 PoA or an activity under any other international, regional, national or subnational GHG mitigation crediting scheme whose crediting period has or has not expired in the same geographical location as the proposed project (collectively referred to as former project).

If a former project exists in the same location, demonstrate that the proposed project:

1. *Utilizes a different measure, technology(ies), technique(s) and/or resource(s) from those of the former project.*
2. *Does not share or utilize any of the assets of the former project.*
3. *Utilizes a different resource type compared to the former project.*

A.6. Parties and activity participants

(Add/remove rows as necessary)

Type of Party	Name of the Party	Activity participant(s)
Choose a type of Party.	Choose a Party.	
Choose a type of Party.	Choose a Party.	
Choose a type of Party.	Choose a Party.	

Select the type of Party ('Host Party' or 'Other participating Party') and the name of the Party from the drop list menu. Provide the names of the activity participants to be authorised by the respective Parties.

SECTION B. Application of methodologies and standardized baselines

B.1. References to methodologies and standardized baselines

>>

Provide the exact references (titles, versions and UNFCCC reference numbers) of the following:

1. *Selected methodologies:*
    - *The methodologies selected for the proposed project.*
2. *Other methodological regulatory documents:*
    - *Any other standards, methodologies or methodological tools and guidelines applied in accordance with the selected methodologies.*

3. *Selected standardized baselines (if applicable):*
    - *The standardized baselines selected for the proposed project.*
4. *Baseline approaches and other methodological requirements, including additionality specified by the host Party:*
    - *Baseline approaches, and other methodological requirements, including additionality, specified by the host Party in accordance with paragraph 27(a) of the RMPs, if applicable.*

For the exact references of the methodologies, other methodological regulatory documents including methodological tools, standardized baselines approved by the Supervisory Body, as well as the methodological requirements specified by the host Party, please refer to the UNFCCC website.

B.2. Applicability of methodologies and standardized baselines

>>

(Insert the UNFCCC reference number, title and version of the methodology, other methodological regulatory documents including methodological tool, standardized baseline approved by the Supervisory Body, or the methodological requirements specified by the host Party)

Applicability condition of methodological regulatory document or methodological requirement specified by the host Party	Compliance of the project with the applicability condition of methodological regulatory document or methodological requirement specified by the host Party
>>	>>
>>	>>
>>	>>
>>	>>

Justify the choice of the selected methodologies and, where applicable, the selected standardized baselines and the other methodological regulatory documents approved by the Supervisory Body, as well as the methodological requirements specified by host Party, by demonstrating that the proposed project meets all applicability conditions of these regulatory documents and the methodological requirements of the host Party, if applicable.

1. *Applicability conditions of the methodology, standardized baseline, other methodological regulatory document approved by the Supervisory Body, or the methodological requirements specified by the host Party:*
    - *Copy the exact text from the methodology, standardized baseline and other methodological regulatory document including methodological tool, and paste in the column 'Applicability condition of methodological regulatory document or methodological requirement specified by the host Party'.*
    - *Reproduce the exact text of the methodological requirements specified by the host Party in accordance with paragraph 27(a) of the RMPs, if applicable, in the column 'Applicability condition of methodological regulatory document or methodological requirement specified by the host Party'.*
    - *Describe the compliance of the proposed project with each applicability condition of the methodology, standardized baseline and other methodological regulatory document, as well as the respective methodological requirement and other conditions specified by the host Party, if applicable.*
2. *Tables:*
    - *Create one table for each methodology, methodological tool or standardized baseline.*
    - *Create a separate table for the methodological requirements specified by the host Party, if applicable.*

- *Add as many rows as necessary to cover all applicability conditions of the methodology, standardized baseline and other methodological regulatory document, as well as the methodological requirements by the host Party.*

B.3. Project boundary, sources, sinks and greenhouse gases

>>

Describe the project boundary of the proposed project, including the physical delineation, using GPS coordinates as appropriate.

B.3.1. Baseline emissions/removals

Source/reservoir/pool	GHG		Justification/Explanation
Source/reservoir/pool 01	CO_2	☐ Included ☐ Not included	>>
	CH_4	☐ Included ☐ Not included	>>
	N_2O	☐ Included ☐ Not included	>>
	-----	☐ Included ☐ Not included	>>
Source/reservoir/pool 02	CO_2	☐ Included ☐ Not included	>>
	CH_4	☐ Included ☐ Not included	>>
	N_2O	☐ Included ☐ Not included	>>
	-----	☐ Included ☐ Not included	>>
-----	CO_2	☐ Included ☐ Not included	>>
	CH_4	☐ Included ☐ Not included	>>
	N_2O	☐ Included ☐ Not included	>>
	-----	☐ Included ☐ Not included	>>

B.3.2. Project emissions/removals

Source/reservoir/pool	GHG		Justification/Explanation
Source/reservoir/pool 01	CO_2	☐ Included ☐ Not included	>>
	CH_4	☐ Included ☐ Not included	>>
	N_2O	☐ Included ☐ Not included	>>
	-----	☐ Included ☐ Not included	>>

Source/reservoir/pool 02	CO_2	☐ Included ☐ Not included	>>
	CH_4	☐ Included ☐ Not included	>>
	N_2O	☐ Included ☐ Not included	>>
	-----	☐ Included ☐ Not included	>>
-----	CO_2	☐ Included ☐ Not included	>>
	CH_4	☐ Included ☐ Not included	>>
	N_2O	☐ Included ☐ Not included	>>
	-----	☐ Included ☐ Not included	>>

Follow these instructions to fill out the tables in sections B.3.1 and B.3.2 above and provide additional documentation, when possible:

1. *Tables for sources, sinks and GHGs:*
   - *Indicate which sources, sinks and GHGs are included in the project boundary. This includes GHGs and sources under the control of the activity participants and that are significant and reasonably attributable to the project, in accordance with the applied methodologies and standardized baselines.*
   - *Add rows as needed.*
2. *Explanation and justification:*
   - *If the applied methodologies or standardized baselines allow choices regarding the inclusion of a source, sink or GHG in the project boundary, explain and justify the choice.*
3. *Flow diagram:*
   - *In addition to the table, where possible, present a flow diagram of the project boundary based on the description provided in section A.5 above.*
   - *The flow diagram should include all the facilities, systems and equipment, and flows of mass and energy described in section A.5 above.*
   - *Specifically, indicate in the diagram the emission sources and GHGs included in the project boundary and the data and parameters to be monitored.*

B.4. Establishment and description of the baseline scenario

B.4.1. Identification of the baseline scenario

>>

Follow these instructions to describe the baseline scenario for the proposed project:

1. *Baseline scenario description:*
   - *Describe the baseline scenario for the proposed project as per the requirements of the activity standard.*
   - *Explain how the baseline is established in accordance with applicable provisions for the establishment and description of baseline scenarios in the applied methodologies, standardized baseline and the other applied methodological regulatory documents.*
   - *Include the baseline approaches specified by the host Party in accordance with paragraph 27(a) of the RMPs, if applicable.*

- *If an approved standardized baseline that standardizes the baseline scenario is used, describe the baseline scenario as per the applied standardized baseline.*

2. *Information on facilities, system and equipment:*
   - *Provide information on the facilities, systems and equipment to be operated under both the project and the baseline scenarios.*
   - *If the project involves the replacement of existing equipment, follow the guidance on determining the remaining lifetime of equipment in the applied methodology, if applicable, to estimate the point in time when the existing equipment would be replaced in the absence of the proposed project.*
3. *Step-by-step procedure:*
   - *Describe how each step of the procedures in the applied methodologies, standardized baselines, and other applied methodological regulatory documents approved by the Supervisory Body as well as the baseline approaches specified by the host Party is applied.*
   - *Transparently document the outcome of each step.*
   - *Explain and justify key assumptions and rationales.*
   - *Provide and explain all data used to establish the baseline scenario, including variables, parameters, data sources, etc.*
   - *Provide all relevant documentation and/or references.*
4. *Future emissions and suppressed demand:*
   - *If future anthropogenic emissions by sources are projected to rise above the current levels due to the specific circumstances of the host Party, the guidance on suppressed demand in the applied methodology may be followed.*

Note that this section and section B.5 below are complementary. *Some of the steps undertaken in one section may overlap with the steps undertaken in the other section depending on the procedures used to establish the baseline scenario and demonstrate additionality. In such cases, replicate the same information in both sections and make a reference to the other section where the description is contained.*

B.4.2. Identification of the BAU scenario or reference benchmark

>>

Follow these instructions for the identification of the BAU scenario or reference benchmark:

1. *BAU Scenario or reference benchmark description:*
   - *Describe the BAU scenario or reference benchmark for the proposed project and explain how it is established in accordance with the applied methodologies.*
2. *Step-by-step procedure:*
   - *Describe how each step of the procedures in the applied methodologies is applied for estimating the BAU/reference benchmark.*
   - *Transparently document the outcome of each step.*
   - *Explain and justify key assumptions and rationales.*
   - *Provide and explain all data used to estimate BAU/reference benchmark emissions, including variables, parameters, data sources, etc.*
   - *Provide all relevant documentation and/or references.*

B.5. Demonstration of additionality

Note that this section and section B.4 above are complementary. *Some of the steps undertaken in one section may overlap with the steps undertaken in the other section depending on the procedures used to establish the baseline scenario and demonstrate additionality. In this case, replicate the same information in both sections and make a reference to the other section where the description is contained.*

B.5.1. Regulatory analysis

>>

Demonstrate that the proposed project represents mitigation that exceeds any mitigation that is required by law or regulation unless the law or regulation refers to or formally integrates the mechanism as an instrument for implementation, taking into account a law or regulation applicable to the proposed project that may require a certain technological, performance or management action.

B.5.2. Avoidance of lock-in

>>

Demonstrate that proposed project avoids locking in levels of emissions, technologies or carbon-intensive practices incompatible with paragraph 33 of the RMPs, including through assessment of the scale, lifetime, and emissions intensity of the project.

B.5.3. Financial additionality or performance-based approach

☐ Financial additionality ☐ Performance-based approach

(Select one option)

>>

The additionality shall be demonstrated following the requirements of the activity standard, the applied methodology(ies) and/or standardized baseline and the provisions of the standard 'Application of the requirements of Chapter V.B (Methodologies) for the development and assessment of Article 6.4 mechanism methodologies' and other applied methodological regulatory documents approved by the Supervisory Body, as well as the additionality approaches specified by the host Party in accordance with paragraph 27(a) of the RMPs, if applicable.

1. *Financial additionality can be provided either by:*
    - *Demonstration that the proposed project would not have occurred in the absence of the incentives from the Article 6.4 mechanism through an investment analysis (default approach); or*
    - *Assessment of barriers to the implementation of the project, such as financial and institutional barriers, first of its kind, taking into account all relevant national policies, including legislation and current practices within the activity sector and geographic area including Indigenous Traditional Knowledge and customary laws. To demonstrate additionality for the proposed project, thorough barrier analysis describe the barriers, including the reasons why investment analysis is not sufficient and include evidence of the barriers and how the mechanism will help overcome the barriers.*
    - *Complement the investment or barrier analysis with a common practice analysis as per section B5.4 below by demonstrating that the measure or technology is not already widespread through an analysis of the extent to which the proposed project type (e.g. technology or practice) has already diffused in the relevant sector and region.*
    - *Ensure that the financial additionality is provided in accordance with the applied methodologies, standardized baseline, the standard 'Application of the requirements of Chapter V.B (Methodologies) for the development and assessment of Article 6.4 mechanism methodologies' and other applied methodological regulatory documents approved by the Supervisory Body, as well as the additionality approaches specified by the host Party in accordance with paragraph 27(a) of the RMPs, if applicable.*
2. *Performance-based approach may be used as an alternative to the financial additionality subject to applicability conditions:*
    - *Demonstrate that:*
        - *The baseline approach(es) used are from paragraphs 36(i) or (ii) from the RMPs;*

- *The technologies or practices applied in the project outperform an ambitious threshold for emissions or emissions reductions, market penetration, or other unique characteristics, set at least at the level referred to in paragraph 36 (ii) of the RMPs.*

- *Ensure compliance with the requirements of the selected methodology and/or standardized baseline and the provisions of the standard 'Application of the requirements of Chapter V.B (Methodologies) for the development and assessment of Article 6.4 mechanism methodologies' and other applied methodological regulatory documents approved by the Supervisory Body, as well as the additionality approaches specified by the host Party in accordance with paragraph 27(a) of the RMPs, if applicable.*

Note that this section and section B.4 above are complementary. *Some of the steps undertaken in one section may overlap with the steps undertaken in the other section depending on the procedures used to establish the baseline scenario and demonstrate additionality. In this case, replicate the same information in both sections and make a reference to the other section where the description is contained.*

B.5.4. Common practice analysis

(This section is to be filled if the financial additionality or barrier analysis in the previous sub-section is followed for demonstrating additionality)

>>

Demonstrate that the measure or technology implemented/deployed by the project is not already widespread through an analysis of the extent to which the proposed project type (e.g. technology or practice) has already diffused in the relevant sector and region.

B.6. Addressing non-permanence and risk of reversals

B.6.1. Identification of risk of reversal

>>

Identify and justify the risks of reversals that may be attributed to the project as per the requirements of the selected methodology and/or standardized baseline, the provisions of the standard 'Requirements for activities involving removals under the Article 6.4 mechanism' and other applied methodological regulatory documents approved by the Supervisory Body.

The risks of reversals may be related to, inter alia:

1. *Activity finance and management, asset ownership, rising opportunity costs.*
2. *Regulatory uncertainty and social instability, political, governance and legal risks, acts of terrorism, crime, and war.*
3. *Natural disturbances and extreme events such as fires, pests, and droughts, hurricanes, floods, and landslides, earthquakes, volcanic eruptions, geological faults, and fractures.*
4. *Climate change impacts exacerbating any of the above risks.*

B.6.2. Reversals risk assessment

>>

Assess the risk of non-permanence of GHG emission reductions or net GHG removals, if applicable, that will be achieved by the proposed project over multiple NDC implementation period and comply with the requirements for reversal risk assessment of the selected methodology and/or standardized baseline, the provisions of the standard 'Requirements for activities involving removals under the Article 6.4 mechanism' and other applied methodological regulatory documents approved by the Supervisory Body.

Include in the reversal risk assessment a risk mitigation plan as per the section B.6.3 below, for a project involving removals, using the reversal risk assessment tool to identify, assess and mitigate reversal risks, and calculate an overall percentage-based risk rating.

B.6.3. Reversals risk mitigation plan

>>

If a risk of non-permanence is identified, develop and implement risk mitigation plan to address any risks identified through the reversal risk assessment following the relevant provisions of the standard 'Requirements for activities involving removals under the Article 6.4 mechanism' and other applied methodological regulatory documents approved by the Supervisory Body.

B.6.4. Remediation of reversals

>>

Describe the measures to be implemented to remediate reversals, including proactively mitigating reversal risks and avoiding reversals as per the requirements of the standard 'Requirements for activities involving removals under the Article 6.4 mechanism' and other applied methodological regulatory documents approved by the Supervisory Body.

B.7. Calculation of emission reductions or net removals

B.7.1. Calculation of BAU emissions/removals and baseline emissions/removals

B.7.1.1. Calculation of BAU emissions/removals

>>

Follow these instructions to provide the calculation of annual and total BAU emissions/removals:

- *Provide the equations as per the applied methodology.*
- *Describe and justify the methodological choices, the options/scenarios selected and all steps to be undertaken for the calculations.*
- *Ensure that the assumptions and choices result in conservative estimates.*
- *If sampling will be conducted, develop a sampling plan and describe it in accordance with the standard for sampling and surveys for Article 6.4 mechanism activities to be developed by the Supervisory Body.*

If the proposed project contains more than one component, apply the equations and explanation of methodological choices for each component separately.

B.7.1.2. Calculation of baseline emissions/removals

>>

Follow these instructions to provide the ex post calculation of baseline emissions/removals for each year of the crediting period and the total amount for the entire crediting period:

1. *Equations:*
    - *Provide the equations as per the applied methodology, methodological tool, standardized baseline, other applied methodological regulatory documents approved by the Supervisory Body as well as the baseline approaches specified by the host Party in accordance with paragraph 27(a) of the RMPs.*
    - *Indicate which parameters will be fixed ex ante and which will be monitored ex post.*
    - *If the equations to determine the ex ante and ex post baseline emissions/removals are different, indicate the equation for each approach.*
2. *Methodological choices:*
    - *Describe and justify the methodological choices, the options/scenarios selected and all steps to be undertaken for the calculations.*

- *If the methodological choices to determine the ex ante and ex post baseline emissions/removals are different, indicate the methodological choice for each approach.*

3. *Conservative estimates:*
   - *Ensure that the assumptions and choices result in conservative estimates.*
4. *Sampling plan (if applicable):*
   - *If sampling will be conducted, develop a sampling plan and describe it in accordance with the standard for sampling and surveys for Article 6.4 mechanism activities to be developed by the Supervisory Body.*

If the proposed project contains more than one component, apply the equations and explanation of methodological choices for each component separately.

B.7.1.3. Calculation of the annual difference between baseline and BAU emissions/removals

>>

Calculate the difference between annual and total BAU emissions/removals and baseline emissions/removals.

Confirm whether baseline emissions/removals are below BAU. This calculation shall remain fixed for the entire crediting period.

B.7.1.4. Factors or qualitative methods for downward adjustment of baseline

>>

Include factors or qualitative methods for downwards adjustment of baseline in accordance with the Standard: Application of the requirements of Chapter V.B(methodologies) for the development and assessment of Article 6.4 mechanism methodologies.

B.7.2. Calculation of project emissions/removals

>>

Follow these instructions to provide the ex post calculation of projects emissions/removals for each year of the crediting period:

1. *Equations:*
   - *Provide the equations as per the applied methodology, methodological tool, standardized baseline and other applied methodological regulatory documents.*
   - *Indicate which parameters will be fixed ex ante and which will be monitored ex post.*
   - *If the equations to determine the ex ante and ex post project emissions/removals are different, indicate the equation for each approach.*
2. *Methodological choices:*
   - *Describe and justify the methodological choices, the options/scenarios selected and all steps to be undertaken for the calculations.*
   - *If the methodological choices to determine the ex ante and ex post project emissions/removals are different, indicate the methodological choice for each approach.*
3. *Performance of project equipment (if applicable):*
   - *Describe approaches to determine the performance of project equipment as per the activity standard.*
4. *Norms, specifications, standards and procedures:*
   - *Identify and justify the use of norms, specifications, standards and test procedures.*
5. *Conservative estimates:*

- *Ensure that the assumptions and choices result in conservative estimates.*

6. *Sampling plan (if applicable):*
    - *If sampling will be conducted, develop a sampling plan and describe it in accordance with the standard for sampling and surveys for Article 6.4 mechanism activities to be developed by the Supervisory Body.*

If the proposed project contains more than one component, apply the equations and explanation of methodological choices for each component separately.

B.7.3. Addressing of leakage

B.7.3.1. Sources of leakage

>>

Follow the instructions below:

- *List all potential sources of leakage that may reasonably be attributable to the project as per the requirements of the selected methodology and/or standardized baseline and the provisions of the standard 'Application of the requirements of Chapter V.B (Methodologies) for the development and assessment of Article 6.4 mechanism methodologies' and other applied methodological regulatory documents approved by the Supervisory Body, and describe how each source is being addressed.*
- *Take into account the relevant information from the DNA of the host Party on leakage, where applicable and as per the application of the tool developed by the Supervisory Body.*
- *If any source of leakage is excluded from the consideration, justify its exclusion.*

B.7.3.2. Description of how leakages is avoided, minimized or addressed

>>

Follow the instructions below:

- *Provide detailed information on how leakages are avoided and, where not possible, minimized, or addressed, using approaches 85 (a) to (e) of the standard 'Application of the requirements of Chapter V.B (Methodologies) for the development and assessment of Article 6.4 mechanism methodologies'.*

B.7.3.3. Calculation of leakage emissions

>>

Follow these instructions to provide the calculation of the ex post leakage emissions for each year of the crediting period:

1. *Equations:*
    - *Provide the equations as per the applied methodology, methodological tool, standardized baseline and other applied methodological regulatory documents.*
    - *Indicate which parameters will be fixed ex ante and which will be monitored ex post.*
    - *If the equations to determine the ex ante and ex post leakage emissions are different, indicate the equation for each approach.*
2. *Methodological choices:*
    - *Describe and justify the methodological choices, the options/scenarios selected and all steps to be undertaken for the calculations, including by indicating which parameters will be fixed ex ante and which will be monitored ex post.*
    - *If the methodological choices to determine the ex ante and ex post leakage emissions are different, indicate the methodological choice for each approach.*

3. *Conservative estimates:*
    - *Ensure that the assumptions and choices result in conservative estimates.*

If the proposed project contains more than one component, apply the equations and explanation of methodological choices for each component separately.

B.7.4. Calculation of emission reductions or net removals

>>

Follow these instructions to provide the calculation of emission reductions/net removals:

Equations:

- *Provide the equations as per the applied methodology, methodological tool, standardized baseline and other applied methodological regulatory documents.*

Calculations:

- *Provide sample calculations for all formulae used to calculate emission reductions/net removals.*
- *Apply values, based on the equations provided in the methodologies, methodological tools or standardized baseline.*
- *Attach spreadsheets to the PDD to present full calculations for emission reductions/net removals (if applicable).*

B.7.5. Data and parameters fixed ex ante

(Copy this table for each piece of data or parameter)

Data/parameter	**>>** *Ensure that the name of the parameter matches with the information provided in the equations in sections B.7.1, B.7.2 or B.7.3 above.*
Description	>> *Ensure that the description of the parameter matches with the information provided in the equations in sections B.7.1, B.7.2 or B.7.3 above.*
Data unit	>> *Ensure that the unit of the parameter matches with the information provided in the equations in sections B.7.1, B.7.2 or B.7.3 above.*
Equations referred	>> *Indicate in which equation(s) the parameter is used.*
Purpose of data	☐ Baseline emissions / removals ☐ Project emissions / removals ☐ Leakage emissions *Tick the applicable box(es).*
Value(s) applied	>> • *Provide the values of the parameter that will be applied for the entire crediting period.* • *Where a time series of data is used, where several measurements are undertaken or where surveys have been conducted, provide detailed information in Appendix 5 below.* • *Use one table to report multiple values referring to the same data or parameter.* • *If necessary, include references to spreadsheets for additional data.*
Source of data	☐ Measured ☐ Other sources *Tick the applicable box. 'Other sources' include official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature, etc.*
Choice of data or measurement methods and procedures	>> *If the parameter is 'Measured', explain the measurement methods and procedures (e.g. which standards have been used), indicate the responsible*

	person/entity that undertook the measurement, the date of the measurement and the measurement results. *If the parameter is from 'Other sources', indicate the source of the parameter and justify the choice of the data.*
Additional comments	>>

To compile information on the data and parameters that are not monitored during the crediting period but are determined before the registration of the project and remain fixed throughout the crediting period, use the instructions below to fill the table:

- *Include data and parameters that are determined before the registration of the project and remain fixed throughout the crediting period.*
- *Do not include parameters that are calculated with equations provided in the applied methodologies, methodological tools or standardized baselines.*

B.7.6. Summary of ex ante estimates of emission reductions/net removals

Year	Baseline emissions/removals (tCO_2e)	Project emissions/removals (tCO_2e)	Leakage emissions (tCO_2e)	Emission reductions/Net removals (tCO_2e)
Year 1				
Year 2				
Year 3				
Year …				
Total				
Total number of years in the crediting period				
Annual average over the crediting period				

Use the estimates determined in sections B.7.1, B.7.2 and B.7.3 above to fill the table. Add rows as needed to reflect the number of years of the crediting period to which the PDD is applicable.

B.8. Monitoring Plan

B.8.1. Data and parameters to be monitored

(Copy this table for each piece of data or parameter)

Include a compilation of information on the data and parameters that are not monitored during the crediting period of the project but are determined before its registration and remain fixed throughout the crediting period. Use the instructions below to fill the table.

Data/parameter	**>>** *Ensure that the name of the parameter matches with the information provided in the equations in sections B.7.1, B.7.2 or B.7.3 above.*
Description	>> *Ensure that the description of the parameter matches with the information provided in the equations in sections B.7.1, B.7.2 or B.7.3 above.*
Data unit	>> *Ensure that the unit of the parameter matches with the information provided in the equations in sections B.7.1, B.7.2 or B.7.3 above.*
Equations referred	>> *Indicate in which equation(s) the parameter is used.*

<table>
<tr><td>Purpose of data</td><td colspan="2">☐ Baseline emissions / removals ☐ Project emissions / removals ☐ Leakage emissions

Tick the applicable box(es).</td></tr>
<tr><td>Measurement methods and procedures</td><td colspan="2">>> Explain whether the approach to measuring the parameter, e.g. directly, via sampling, indirectly, interview with users, manual counting.

Indicate which accepted industry standards, or national or international standards, were applied, if relevant.</td></tr>
<tr><td>Entity/person responsible for the measurement</td><td colspan="2">>> Explain who has the responsibility to ensure the monitoring of the parameter, e.g. the plant operator, the electric utility, an external laboratory, etc.</td></tr>
<tr><td rowspan="4">Measuring instrument(s)</td><td>Type of instrument</td><td>>> Indicate which type of instrument will be used for the monitoring (e.g. electricity-meter, weight-scale, gas analyser, etc) and whether it is certified to national or IEC standards.</td></tr>
<tr><td>Accuracy class</td><td>>> Indicate the exact or the minimum accuracy class of the measuring instrument.</td></tr>
<tr><td>Calibration requirements</td><td>>>
1. Calibration procedures:
• Indicate the calibration procedures to be applied.
• Specify the responsible person/entity who/that will perform the calibration and whether the person/entity is accredited.
2. Calibration frequency:
• If the applied methodologies, applied standardized baselines, other applied methodological regulatory documents or the Supervisory Body's guidance do not specify any requirements for calibration frequency for measuring equipment, follow these steps:
○ Ensure that the equipment is calibrated in accordance with the local/national standards or the manufacturer's specifications.
○ If local/national standards or the manufacturer's specifications are not available, international standards may be used.</td></tr>
<tr><td>Location</td><td>>> Indicate the location of the measuring instrument, e.g. substation, main gas line, entrance of the anaerobic digester, etc.</td></tr>
<tr><td>Measurement intervals</td><td colspan="2">>>
• Specify the measurement interval of the parameter.
• If the methodology or methodological tool does not specify the measurement interval, and if the parameter continuously impacts the GHG emission reductions or net GHG removals (e.g. quantity of fuel inputs, amount of heat or electricity produced, gas captured), measure continuously and record at appropriate intervals.</td></tr>
<tr><td>QA/QC procedures</td><td colspan="2">>>
• Explain the QA/QC procedures employed, e.g. any cross-checking with data from other sources if the measured data has high levels of uncertainty.
• Review the data collected, measures to prevent loss of data (backups), measures employed in case of erroneous reading, etc.</td></tr>
<tr><td>Additional comment</td><td colspan="2">>> Provide any additional comment to the monitoring of the parameter that is not covered above.</td></tr>
</table>

B.8.2. Sampling plan

>>

Develop and provide a description of the sampling plan in accordance with the standard for sampling and surveys for Article 6.4 mechanism activities to be developed by the Supervisory Body.

B.8.3. Monitoring management system

>>

Provide a description of:

- *The operational and management structure to be put in place to implement the monitoring plan.*
- *Provisions to ensure that data monitored and required for verification of GHG emission reductions or net GHG removals and issuance of A6.4ERs are kept and archived for at least two years after the end of the final crediting period or the last issuance of A6.4ERs, whichever occurs later.*

B.8.4. Post-crediting period monitoring plan

>>

For projects involving removals, describe the monitoring after the end of the last active crediting period of the project to assess whether any reversals have occurred as per the requirements of the selected methodology and/or standardized baseline, the provisions of the standard 'Requirements for activities involving removals under the Article 6.4 mechanism' and other applied methodological regulatory documents approved by the Supervisory Body.

SECTION C. Start date, crediting period type and duration

C.1. Project start date

>>

Provide the start date of the project, in the format DD/MM/YYYY, based on the definition of 'start date of the proposed A6.4 project' in the activity standard and indicate the evidence.

C.2. Expected operational lifetime of the project

>>

Indicate and justify the expected operational lifetime of the project.

C.3. Project crediting period

C.3.1. Type of crediting period approved by the host Party

☐ Renewable ☐ Fixed

Tick the applicable box.

C.3.2. Start date of the crediting period

>>

Indicate the start date of the crediting period in the format DD/MM/YYYY as approved by the host Party.

C.3.3. Duration of the crediting period

>>

Indicate the duration of the crediting period as approved by the host Party.

SECTION D. Environmental impacts, social impacts and sustainable development impacts

D.1. Environmental and social impacts and sustainable development impacts as per the Article 6.4 sustainable development tool

D.1.1. Summary of the environmental and social risk assessment and applicable mitigation measures

>>

- *Provide a summary of the assessment of the environmental and social impacts in accordance with the Article 6.4 sustainable development tool. Provide the respective Article 6.4 sustainable development tool forms in Appendixes 6 and 7.*
- *Reflect the results of the assessment of the environmental and social safeguards and outcomes of the risk assessment including identification, evaluation, and avoidance of environmental and/or social risks in the A6.4 Environmental and Social Safeguards Risk Assessment Form and the relevant mitigation and minimization measures in the A6.4 Environmental and social management plan form. Attach the completed forms as Appendixes 6 and 7.*

D.1.2. Summary of the sustainable development impacts assessment

>>

- *Provide a summary of the sustainable development impacts in accordance with the Article 6.4 sustainable development tool. Provide the respective Article 6.4 sustainable development tool form in Appendix 8.*
- *Reflect the evaluation of sustainable development impacts in the A6.4 Sustainable Development Impact Form. Attach the completed form as Appendix 8.*

D.1.3. Monitoring plan of activity-level environmental and social indicators and activity-level SD indicators

>>

Provide the description of the monitoring plan of the social and environmental impacts and sustainable development impacts, and planned mitigation measures of negative impacts, if any, in accordance with the Article 6.4 sustainable development tool. Provide the respective Article 6.4 sustainable development tool forms in Appendixes 6, 7 and 8:

- *Reflect the set of minimization and mitigation measures and monitoring of the environmental social impacts to be implemented in the A6.4 Environmental and Social Management Plan Form. Attach the completed form as Appendix 7.*
- *Reflect the measuring, monitoring and reporting methodology of the sustainable development impacts in the A6.4 Sustainable Development Impact Form. Attach the completed form as Appendix 8.*

D.2. Environmental and social impacts as per the host Party regulations

D.2.1. Summary of host Party requirements

>>

Describe the host Party requirements for environmental impact assessment and/or social impact assessment, if any.

D.2.2. Summary and conclusion of the assessment

>>

Provide a summary and conclusions of the environmental impact assessment and/or social impact assessment required by the host Party, if any.

SECTION E. Local stakeholder consultation

E.1. Scope of the consultation

>>

Explain the scope of the consultation, as a minimum, the potential direct positive and negative impacts that the proposed project may have.

E.2. Stakeholders invited

>>

Follow the instructions below:

1. *Indicate which stakeholders were invited to participate in the stakeholder consultation.*
2. *Describe their relationship with the proposed project.*
3. *Explain how the invitations were communicated.*
4. *Ensure that, at a minimum, the following are invited:*
    - *Representatives of local stakeholders directly impacted by the proposed project, including local communities and indigenous peoples as applicable; and*
    - *Representatives of local authorities relevant to the project.*

E.3. Modalities for the consultation

>>

Describe the steps/actions taken to invite comments, taking into account local and national circumstances. Indicate how the consultation was conducted, including the date of the consultation and taking into account means that are appropriate for the local and national circumstances, and how comments were received (e.g. in writing, orally, etc).

E.4. Summary of comments received

>>

Provide a summary report of the comments received.

E.5. Consideration of comments received

>>

Describe how comments received were taken into account. If comments were not incorporated, provide a proper justification.

SECTION F. Confirmation of avoidance of double or revived registration

A 6.4 mechanism	☐ **The proposed A6.4 project has not been already registered as an A6.4 project.** ☐ **The proposed A6.4 project has not been already included as a component project (CP) in a registered Article 6.4 mechanism programme of activities (A6.4 PoA).** ☐ **The proposed A6.4 project has not been previously deregistered from the Article 6.4 mechanism.** *Tick all the three boxes above as a confirmation of compliance with mandatory requirements.* ☐ **The proposed A6.4 project was a CP in a registered A6.4 PoA but has been previously excluded.** *Tick the box if applicable.* *If this box is ticked, describe:* • *Whether the project was excluded from the A6.4 PoA voluntarily or due to erroneous inclusion.* • *The UNFCCC registration number of the A6.4 PoA.* • *The CP number and the inclusion date; and* • *The crediting period type (i.e. renewable or fixed) and the end date of the crediting period valid for the CP at the time of the exclusion.*
Other	☐ **The proposed A6.4 project is not currently registered or being pursued for registration, or covered by a programme, under any other international, regional, national, subnational or sector-wide GHG mitigation crediting scheme.** ☐ **The proposed A6.4 project was previously registered under or covered by a programme under any other international, regional, national, or subnational or sector-wide GHG mitigation crediting scheme but deregistered or excluded from the other crediting scheme before fully consuming the crediting period under the other crediting scheme.** ☐ **The proposed A6.4 project is currently registered or covered by other international, regional, national, subnational or sector-wide GHG mitigation crediting scheme.** *Tick only one applicable box.* *If the second box is ticked, obtain a confirmation of the other crediting scheme of the effective date of deregistration or exclusion from the other crediting scheme and remaining crediting period under the other crediting scheme at the time of deregistration or exclusion.* *If the third box is ticked, obtain a confirmation of the other crediting scheme of the effective date of the registration or coverage, the start and end dates of the crediting period, and the monitoring periods for which credits have been issued under the other crediting scheme.*

Appendix 1. Contact information of activity participants

(Copy this table for each activity participant)

Organization name	>>
Country	Choose an item.
Address	>>
Telephone	>>
Mobile	>>
E-mail	>>
Website	>>
Contact person	>>

Appendix 2. Applicability of methodologies and standardized baselines

>>

Provide any further background information on the applicability of the selected methodologies and, where applicable, the selected standardized baselines and the other methodological regulatory documents, and the methodological requirements specified by the host Party in accordance with paragraph 27(a) of the RMPs, if applicable.

Appendix 3. Further background information on ex ante calculation of emission reductions or net removals

>>

Provide any further background information on the ex ante calculation of emission reductions or net removals. This may include data, measurement results, data sources, etc.

Appendix 4. Summary of post-registration changes

>>

Describe the post-registration changes being proposed in this version of the PDD.

If applicable, provide a history of all post-registration changes to the project that have been approved by the Supervisory Body after its registration.

For all post-registration changes, include the following:

- *Reasons for the changes.*
- *Impacts of the changes on the relevant requirements in accordance with the activity standard, and*
- *Any additional information relating to the changes.*

Appendix 5. Further background information on monitoring plan

>>

Provide any further background information used in the development of the monitoring plan. This may include tables with time series data, additional documentation of measurement equipment, procedures, etc.

Appendix 6. A6.4 Environmental and Social Safeguards Risk Assessment Form (A6.4-FORM-AC-015)

>>

Include the 'A6.4 Environmental and Social Safeguards Risk Assessment Form' as per the Article 6.4 sustainable development tool.

Appendix 7. A6.4 Environmental and Social Management Plan Form (A6.4-FORM-AC-016)

>>

Include the 'A6.4 Environmental and Social Management Plan Form' as per the Article 6.4 sustainable development tool.

Appendix 8. A6.4 Sustainable Development Impact Form (A6.4-FORM-AC-017)

>>

Include the 'A6.4 Sustainable Development Impact From' as per the Article 6.4 sustainable development tool.

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Document information

Version	*Date*	*Description*
01.0	11 December 2024	Initial publication of form template.

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