CCB Monitoring Plan:

Oddar Meanchey Community Forestry REDD+ Project

Prepared by:

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and

pact building local promise.

for

The Forestry Administration of the Royal Government of Cambodia

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1 Introduction and Overview

This Monitoring Plan outlines the processes and procedures for monitoring the climate, community and biodiversity benefits of the Oddar Meanchey REDD project during the project's first monitoring period of February 28 2008 – February 28 2012. The data required in this document and the results of monitoring will be presented in the Project Implementation Report (PIR) with sensitive information provided to the verification team at every verification period. The monitoring requirements for the Oddar Meanchey project have been established by the CCB Project Design Standards Second Edition, as well as Verified Carbon Standard Methodology VM0006 and validated Oddar Meanchey VCS PD.

Project monitoring must balance demands for project accountability and improvement. Project accountability is addressed through systematic and ongoing monitoring, reporting and verification (MRV) to meet CCB requirements. At the same time as meeting CCB requirements, it is important for the OM CF REDD+ project to manage and use information in a way that contributes to the improvement of project systems, processes and implementation activities. The development of a participatory monitoring system will play a central role in facilitating project ownership among community members and contribute to project sustainability and, thus, better ensure that "communities assume major responsibility".

The Oddar Meanchey REDD project has not as yet achieved verification under the CCB and VCS standards, and as such, the full suite of project activities envisioned by the CCB PD have not yet been implemented. The full suite of activities will be implemented according to the project workplan once revenues from the sale of credits have been received. As such, this monitoring plan describes the methods for assessing the progress and impact of project activities for the first monitoring period only. As additional project activities are implemented over time and the project develops, it is envisioned that this monitoring plan will be adjusted over time to reflect current project conditions.

2 Monitoring Roles and Responsibilities

Monitoring roles and responsibilities are aligned with set implementation roles and responsibilities outlined in the 30 year project work-plan (Pact 2011) and formally outlined in legal agreements (MOUs) between implementing partners. Each of the implementing partners have responsibilities for implementing aspects of the Monitoring Plan. In addition, a biodiversity consultant and an evaluation consultant will periodically be engaged in implementation.

The communication flow for the project is based on governance and operational arrangements established by the implementing partners. To summarize, the CFMCs are the basic operational unit for implementing the project and will collect a range of activity data at the ground level. CFMCs will report information via a range of methods to CDA where data will, upon full implementation of planned activities, be stored in a remote server linked to a centralized database administrated by Pact and TGC.

In addition to activity and result data collection and storage, periodic data collection activities will be coordinated and conducted by TGC (remote sensing), Pact (forest inventory), CDA (social assessment). Meanwhile, routine project activity monitoring will be conducted by the CFMCs, Pact, CDA and TGC. Table 1 illustrates the roles and responsibilities for project monitoring for all implementation partners. It should be noted that as the full suite of project activities and associated monitoring activities have not been implemented during this monitoring period, Table 1. Roles and responsibilities for project monitoring and evaluationalso includes roles and responsibilities for parties that are not yet active.

At each verification event, the Project Implementation Report will be submitted to the CCB and posted on the PACT website for a comment period of 30 days. During the 30 day comment period all stakeholders are welcome to comment on the findings of the report. All revenant comments must be taken into account. Public comments can be sent to PACT as well as the CCB directly. Announcements and messages to community members at the CF level are commonly done through oral communication through direct contact with individuals, as many members cannot read. Specifically during the comment period, the monitoring plan and PIR will be sent to the CFMC Leaders and Community Monitors in each community forest. The CFMC Leaders and Community Monitors are responsible to communicate this information to the community members. Community Monitors will communicate with PACT on the communities' comments, observations and any suggested changes. The project proponent must commit to this monitoring plan within 12 months of the validation.

Table 1. Roles and responsibilities for project monitoring and evaluation

Stakeholder	Monitoring Role	Monitoring Responsibilities
Forestry Administration (national)	Coordination Implementation	• Develop national MRV and SFM-MAR framework/s • Establish national MRV information centre • Review monitoring reports • Develop capacity to become principal monitoring stakeholder after year 5 • Provide assistance in annual field inventory measurements and social assessments
Terra Global Capital	Advisory Design Implementation 7QA/QC	• Verify that VCS requirements are monitored • Oversee or execute all modeling and calculations • Perform second pass QA / QC checks • Project design • Carbon calculations • Develop standard operating procedures for data collection, storage and analysis • Acquire and process remote sensing satellite imagery • Develop data storage and verification systems • Perform QA/QC on biomass inventory and forest carbon stock data • Develop monitoring reports

Pact Cambodia	Implementation
	
	Capacity building
	
	QA/QC
		• Manage, outsource and collect the results of:
		  ○ Biomass inventory
		  ○ Social assessment
		  ○ Project implementation
		  ○ Other data as required
		• Execute first-pass QA/QC checks on all data
		• Maintain records of field inventory and social assessment data-sheets
		• Provide training to the FA and local partners; CDA, CFMCs, Monks CFA to monitor project
		• Assess SMS and communications technology as data collection instruments
		• Facilitate project verification
		• Develop training plan and modules for community monitoring

Forestry Administration	Implementation Coordination	• Provide assistance in annual field inventory measurements and social assessments • Train and refresh community biodiversity monitors

Stakeholder	Monitoring Role	Monitoring Responsibilities
(OM)		• Liaise with CFMCs and CFN to collect and store forest protection and enforcement monitoring data
CDA	Implementation	• Provide capacity building and support to CFMCs and CFN • Assist in field inventories and social assessment (HHS & PRA) • Collect and compile project activity monitoring data from 13 CFMCs
CFN	Capacity Building Coordination	• Facilitate communication and coordination with 13 CFMCs • Provide support and assistance to 13 CFMCs and community monitors • Collect offence incident reports and submit to authorities (local FA, Commune Councils) • Coordinate forest protection activity implementation • Assist CFMCs to share information and learn from project
Monks CFA	Implementation	• Collect and compile monitoring data from Sorng Rokavorn and other sites as identified • Provide ongoing support to CFMCs to conduct monitoring activities
CFMC's / Sub-committees	Implementation	• Appoint community monitors with assistance from Pact • Report 'forest violations' (i.e. illegal activity) • Provide annual operations reports to local FA staff • Report natural disturbances in project area • Undertake biodiversity monitoring in accordance with biodiversity monitoring plan • Project activity reporting and documentation (i.e. patrol logs, labor hours etc.)

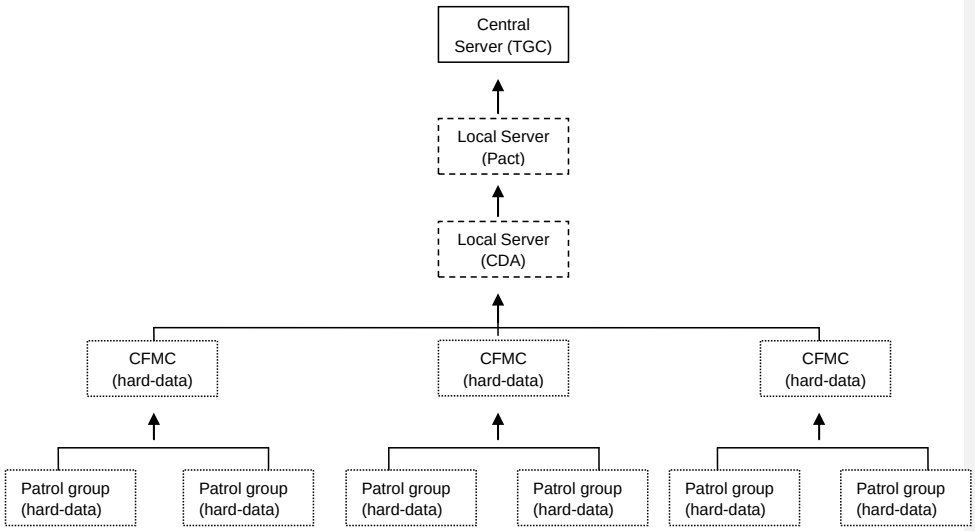
3 Monitoring Data Collection Tools

Standard Operating Procedures (SOP) developed by TGC and Pact will be used to collect all data required for monitoring. There are three levels of data collection tools including:

- Standard operating procedures (SOP)
- Protocols
- Data collection forms

The purpose of SOP's and Protocols is to provide a standardized and consistent basis for data collection, management and reporting. SOP's and protocols are therefore an important aspect of quality control and assurance.

Figure 1. Data management flow



3.1 Standard Operating Procedures

Standard Operating Procedures (SOP) have been developed for periodic data collection activities including:

- Forest Inventory
- Social Assessment: Household Survey
- Social Assessment: Participatory Rural Appraisals
- ANR Field Inventory

- Other as required

SOPs identify sampling, stratification, data collection and management procedures for periodic data collection coinciding with project verification every 2 years.

3.2 Protocols

Protocols are step by step procedures for ongoing routine project activities which need to be monitored. Protocols have a set format based on Pacts indicator protocols which species data collection, management and quality control arrangements. Protocols will be developed for the following routine monitoring activities:

- Forest patrols
- Enforcement
- Case tracking
- Biodiversity monitoring
- Other as required

Additional protocols will be developed in accordance with project implementation requirements using the protocol template. Protocols provide specific guidance on the use of data collection forms (see below).

3.3 Data Collection Forms

Forms will be used to collect data in the field, and will be developed for the specific situation or activity. Data collection tools include:

- Patrol forms
- Enforcement forms
- Biodiversity monitoring forms
- Household survey
- Biomass inventory sheet
- Other as required

3.3.1 Mobile and Web-based Monitoring

Mobile handsets are used as data collection tools to increase efficiency and reduce transaction costs in data collection, storage and processing, while increasing data quality assurance and control measures. The Implementing Partners have chosen to utilize the Frontline SMS monitoring software – an open-source mobile phone SMS communication interface - for mobile collection of monitoring data. Data collected using Frontline SMS is to be collected and stored at a central hub computer, currently located at the Pact Cambodia headquarters office in

Phnom Penh. This data is processed into monthly reports and shared with CF communities, including information on patrol date and time, incidents of illegal activity, biodiversity sightings and fuel used.

Patrol ID	Date	Start time (24 hour)	Patrol leader (name)	Number of people on patrol	Waypoint (start)	Area patrolled	Fuel used (Liter/s)	Time spent patrolling	Incident report		
									Enforcement	Biodiversity	Fire

Figure 2. Sample SMS Patrol Form

3.3.2 Adaptive Management

This document outlines parameters monitored at first verification. As the project develops, new parameters are expected to be monitored, and potentially insignificant parameters will no longer be monitored. The project takes an adaptive management approach where the monitoring techniques will reflect the unique and changing attributes of the project. Potentially new drivers of deforestation could be identified and project actions must reflect ways to effetely address the driver. It will become necessary to monitor the success of the actions, as well as new potential project challenges.

4 Climate Impact Monitoring

4.1 Carbon Pools Monitored

The following carbon pools have been selected for monitoring. Non-CO_2 GHGs have been conservatively excluded from monitoring as they are expected to be less than 5% of total CO_2 equivalent benefits generated by the project.

Carbon Pool	Selected	Justification/ Explanation of Choice
Aboveground tree biomass	yes	Major carbon pool affected by project activities
Aboveground non-tree biomass	no	Can be conservatively omitted because no conversion occurs to a land use with high non-tree biomass occurs
Belowground biomass	yes	Major carbon pool affected by project activities
Deadwood	yes	Included because project activities may lead to a decrease in the dead wood pool when biomass is removed for fire prevention and reducing the fuel-load or sustainable fuelwood collection
Litter	no	Expected to decrease under baseline conditions, is therefore conservatively omitted
Soil organic carbon	no	Expected to decrease under baseline conditions, is therefore conservatively omitted
Wood products	no	No commercial timber operations take place under the project scenario. A decrease in long-lived wood products from reducing illegal timber logging is insignificant.

4.2 Emission Reductions

The Climate Impact Monitoring parameters to be monitored are outlined in below.

Type of Measurement	Sampling Method	Indicator	Frequency
Within the biomass plots the following will be monitored: 1) live trees 2) canopy cover, 3) standing dead trees, 4) lying dead trees, 5) logged tree stumps.	Biomass Inventory. *For more information see the Biomass SOP*	Metrics needed for Chave et al. 2005 and Van Wagener 1968, DBH and density class of snags, % canopy cover, and tree stumps.	Monitored at every verification
Survival rate of planted or regenerating trees as an ANR activity	Biomass Inventory. *For more information see the ANR SOP*	Metrics listed above and/or number of seedlings/saplings. Metric is dependent on the age of the trees.	Monitored at every verification after the implementation of ANR silvicultural activities
Historical LULC and forest strata transition matrix	Remote Sensing	Hectares of each stratum.	Once at validation
Hectares undergoing transition within the project area, under the project scenario	Remote Sensing	Hectares of each stratum.	Monitored at a verification event
Hectares undergoing transition within the leakage area under the project scenario	Remote Sensing	Hectares of each stratum.	Monitored at a verification event
Hectares undergoing transition within the leakage area under the baseline scenario	Remote Sensing	Hectares of each stratum.	Monitored at a verification event

5 Community Impact Monitoring

5.1 Sampling Techniques

Social assessments are shown below in three categories: Household Surveys, Participatory Rural Appraisals, and Periodic Social Evaluations. Periodic social evaluations will be made by using independent, third party, and otherwise outside monitors. The project is dedicated to the incorporation of outsider knowledge to provide valuable insight, potentially overlooked issues, avoid bias, and will help resolve any problems that have arisen during implementation.

Household surveys as well as a series of Participatory Rural Appraisal (PRA) have been designed in order to gather additional data and information from the community level in order to establish a solid baseline by which the impact of project interventions can be measured. Information gathered through community impact monitoring will also help to further define the project strategies. The following parameters are used to quantify and document changes in social, economic and cultural well-being resulting from the project activities, as well as monitor groups untouched by the project. All social assessments are specifically created to address the needs and gain the understanding of underrepresented groups, minorities and women. Though Social Assessments specifically address the impact on the communities, they also address how the communities themselves tackle and plan for a changing climate, identify HCV areas, and appraise biodiversity through use and detection.

Survey techniques are specifically designed to gather a diverse cross section of the community, while understanding the society norms. Each Standard Operating Procedure specifically details how to select individuals to monitor within each community. Communities and other stakeholders monitored by the PRA and Household Survey include 1) communities or individuals located within the 13 Community Forests (i.e. the project zone) and included in the project and 2) reference communities located outside of the project zone which may or may not be affected by project implementation. These reference communities are located in the following communes:

Ou Smach	Tumnob Dach	Pongro	Kouk Kakthen
Kriel	Bansay Reak	Krasang	Phum Thmei
Ou Svay	Thlat	Kumru	Chrouy Neang Nguon
Kouk Khpos	Bak Anlung	Thma Puok	Klang Hay
Ph'av	Lumtong	Nam Tau	Prasat
Preah Pralay	Banteay Chhmar	Cheung Tien	Prei
Trapeang Prei	Samraong	Slaeng Spean	Srae Khvav

Trapeang Tav	Trapeang Prasat	Varin	Svay sa
Kouk Mon	Bos Sbov	Lvea Krang	Moung
Anlong Veaeng	Beng	Srae Nouy	Paoy Char
Ampil	Chong Kal	Kantuot	Ponley

Each parameter is either monitored in a qualitative or quantitative manner. For example specific parameters such as forest related income, employment and wealth will be quantitatively monitored. It is expected that a successful project will show an increase in these parameters. Other parameters such as security of land tenure, access to natural resources, project awareness will be collected. This qualitative information will be reproduced and analyzed in the Project Implementation Reports to assess the socioeconomic well being of relevant stakeholders through the life of the project.

Ideally, social workers conducting the participatory rural appraisal and household survey should be native to the region or at least very familiar with the region and local practices, speak Khmer and any local dialect. It is very important that the social workers be thoroughly trained before going out in the field to ensure consistency in the quality of information that is obtained, and their safety. The training should cover an overview of all site-specific land practices and natural resource uses in the area as well as provisions to ensure safety. All interviewers have a clear understanding of role and responsibilities during the process and follow the step-by-step SOPs. *See the SOPs for Household Survey and Participatory Rural Appraisal for more information on the participant selection process.*

5.1.1 Household Survey

Household surveys are conducted at a household level and are used to gather socioeconomic information regarding the use of natural resources by communities in and around the project areas. This information is essential to quantify leakage and secondary emissions from sources such as methane from fires, nitrous oxide from fertilizer used during agricultural intensification. The mechanics of quantifying these emissions are explained in a methodology that accompanies the REDD project. In order to gather the information required to carry out calculations required by the methodology, it is necessary to undertake household survey with location-specific questions.

Net emissions reductions or removals are quantified by subtracting emissions under a counterfactual business-as-usual, or baseline, scenario from actual emissions with project activities. To quantify carbon emissions and understand common practices under the baseline scenario, information must be collected both within the project areas and in an area outside of

the project area, the reference region. Therefore, household survey for the Oddar Meanchey project was conducted across three separate strata; 1) households participating with Community Forestry (CF), 2) households not participating with CF, but that are located within participating villages, and 3) households not participating in CF and that are outside of participating villages.

The interviews are conducted in a private setting in the interviewee's home, or where the interviewee feels comfortable answering questions. Prior to the beginning of the interview, the interviewee is informed that the propose of the household survey is purely for project information gathering. All answers are kept private and confidential. The interviewer must ask permission to conduct the interview, and once the interviewee has consented then the interview may begin. The data from the household survey is detailed information from a single household.

5.1.2 Participatory Rural Appraisal

In addition to the Household survey, a Participatory Rural Appraisal (PRA) is conducted within the 13 communities involved. Participatory Rural Appraisals are gathered at the community level and help further define the project strategies, success, health, wealth and overall community wellbeing. Goal of the PRA is to get broad information about the community such as identifying key project components like: drivers and agents of deforestation, irrigation and fertilization use, transportation dependence, ways to reduce forest dependence, etc. The methods include semi structured interviews, participatory mapping, brainstorming exercises, group discussions, and are held at each community forest. The participants should represent the diversity of views within the village, and should include approximately 10-25 individuals. It is important that all community members are affected and associated with the project actions and project benefits. For this reason effort must be given to include traditionally underrepresented groups such as the very poor, minorities and women.

Table 2. Community Monitoring Parameters

Type of Measurement	Sampling Method	Indicator	Frequency
Family Information, bio-data, immigrant status	Household Survey or Participatory Rural Appraisal	Age, gender, and number of people per household. Location of where individuals immigrate from.	Once before first verification. After first verification every two years.
Land Information, tenure, and boundary conflict	Household Survey, ~~and~~ or Participatory Rural Appraisal	Qualitative information and area of specific agricultural practices to track agriculture improvements. Number of boundary conflicts.	Once before first verification. After first verification every two years.
Natural resources use and extraction	Household Survey or Participatory Rural Appraisal	Species used and rates of extraction to track harvest rates.	Once before first verification. After first verification every two years.
Effect the project has on the community or community impact. Measured change in 1) forest related income, 2) employment, 3) access to resources, and 3) wealth rank	Household Survey or Participatory Rural Appraisal	Number of people working in significant employment sectors, NTFP income (in riel), reason for land clearing, and wealth rank mentioned above.	Once before first verification. After first verification every two years.
Wealth rank of communities to identify and track poorer and more vulnerable groups.	Participatory Rural Appraisal	Qualitative description on how each community defines wealth and percent of people in each category to track wealth over time.	Once before first verification. After first verification every two years.
Project Awareness, attitudes and behaviors related to the project	Participatory Rural Appraisal	~~Percent of community aware of project activities.~~ Qualitative description of suggested project actions for community observed success.	Once before first verification. After first verification every two years.
Understanding of project boundaries, boundary conflicts, and resolutions	Participatory Rural Appraisal	Qualitative description of any boundary confects and resolution. Estimated hectares disputed.	Once before first verification. After first verification every two years.
Community member knowledge of project	Participatory Rural Appraisal	Percent of informed community to track project understanding.	Once before first verification. After first verification every two years.

Comment [ems1]: This was removed because it is repeated below.

Type of Measurement	Sampling Method	Indicator	Frequency
~~Health~~Location, description and perceived negative effects of culturally significant High Conservation Value Areas in and near the project areas	Participatory Rural Appraisal	Description of cultural significance. List of potential/current ways HCV areas could be harmed. Strategize new ways to protect HCV areas if project actions are affecting the HCV area.	Once before first verification. After first verification every two years.
Significant natural disasters, damage and loss, and management	Participatory Rural Appraisal	Presence of significant disasters and estimate of ~~hectares of~~ forest lost.	Once before first verification. After first verification every two years.
Agricultural Practices, adoption of Improved practices, and community suggested improved practices	Participatory Rural Appraisal	Number of hectares in agriculture, number of hectares with improved agriculture. List of new practices. Number of hectares with chemical and organic fertilizer use.	Once before first verification. After first verification every two years.
Changes or additions to pre-identified Drivers and Agents of Deforestation and Degradation	Participatory Rural Appraisal	List of specific drivers and their relevant rank to track an increase/decrease or new driver.	Once before first verification. After first verification every two years.
Changes in number of people living in the surrounding area	Social Assessments or national statistics	Population count from National Statistics database.	Prior to verification
Activities to reduce Drivers and Agents of Deforestation, and adaptation ~~rates~~ of predefined activities	Participatory Rural Appraisal	List of specific actions mapped each driver to track new or otherwise more effective project actions.	Once before first verification. After first verification every two years.
Distance ~~for~~ walked for fuelwood collection	Household Survey or Participatory Rural Appraisal	Distance traveled as an indicator of wood scarcity.	Once before first verification. After first verification every two years.
Forest fire management	Participatory Rural Appraisal	Description of fire management that took place.	Once before first verification. After first verification every two years.
~~Natural resources use and extraction~~	~~Participatory Rural Appraisal~~	~~Species used and rates of extraction to track harvest rates.~~	~~Once before first verification. After first verification every two years.~~

Comment [ems2]: This line was removed because it is repeated above.

Type of Measurement	Sampling Method	Indicator	Frequency
Assisted Natural Regeneration, activities, locations, and suggested species planted or otherwise improved.	Participatory Rural Appraisal	Spatially explicit location of project activities and description of actions taken to track the success of ANR	Once before first verification. After first verification every two years.

6 Biodiversity Impact Monitoring

~~Baseline biodiversity monitoring for the project was carried out by Birdlife International in December 2010.~~ Ongoing biodiversity impact monitoring will be carried out with Frontline SMS monitoring by local communities. The following table outlines the biodiversity impact parameters that will be monitored. Additionality forest biodiversity will be measured through biomass inventories and LULC analysis covered in section 4 Climate Impact Monitoring. Special attention will be given to the IUCN species found in the project area at validation. As the project further develops, additional attention will be given to non-invasive techniques to monitor IUCN listed species such as additional camera traps and track identification cards given to community patrols.

On-ground monitoring parameters such as biomass inventories and the frontline monitoring SMS system are focused on the project areas, but some will also take place outside. For example some permanent monitoring plots are outside the project areas, but within the reference region. The survey teams of the SMS monitoring system usually start their patrols at their village, and walk into the project area and special biodiversity sightings are reported whenever they are identified. LULC is monitored both inside and outside the project area through remote sensing. This qualitative information will be reproduced and analyzed in the Project Implementation Reports to assess changes in biodiversity through the life of the project

Table 3. Biodiversity Monitoring

Type of Measurement	Sampling Method	Indicator	Frequency
Presence of key indicator species	Biodiversity assessment (field surveys, camera trapping)	~~Number, s~~Species and location of individuals identified	At validation, and again every 5 years.
Identification of ecological HCV areas	Biodiversity assessment, or Social Assessments	General location and list of known species in HCV areas.	At validation.
~~Health~~Location~~,~~ and perceived negative effects of ecologically significant High Conservation Value Areas in and near the project areas	Participatory Rural Appraisal	List of potential species in HCV areas. List of potential/current ways HCV areas could be harmed. Strategize new ways to protect HCV areas if project actions are affecting the HCV area.	Once before first verification. After first verification every two years.
Significant n~~N~~atural disturbances and related events within CF areas	SMS reporting, Social Assessments	Presence of significant disasters and estimate of forest lost.~~Number of hectares affected or lost.~~	Ongoing
Total area of class or stratum during time period	Remote Sensing	Area in hectares.	At each verification event
Area of transition from LULC class or forest stratum 1 to 2	Remote Sensing	Area in hectares.	At each verification event
Total area of LULC class or forest stratum	Remote Sensing	Area in hectares.	At each verification event
Invasive species assessment	Social Assessments, Community Monitors	Area in hectares affected by invasive species. Quantification of loss in hectares. Mitigation procedures.	As necessary
Changes in abundance of key NTFPs	Social Assessments	List of key NTFP. If the NTFP is increasing or decreasing in number, reason for change in abundance.	At verification, and again every 5 years

Type of Measurement	Sampling Method	Indicator	Frequency
Biodiversity sightings	SMS reporting, and/ or camera trapping.	Presence/ absence surveys of species present in CFs. Photos of sightings.	Ongoing