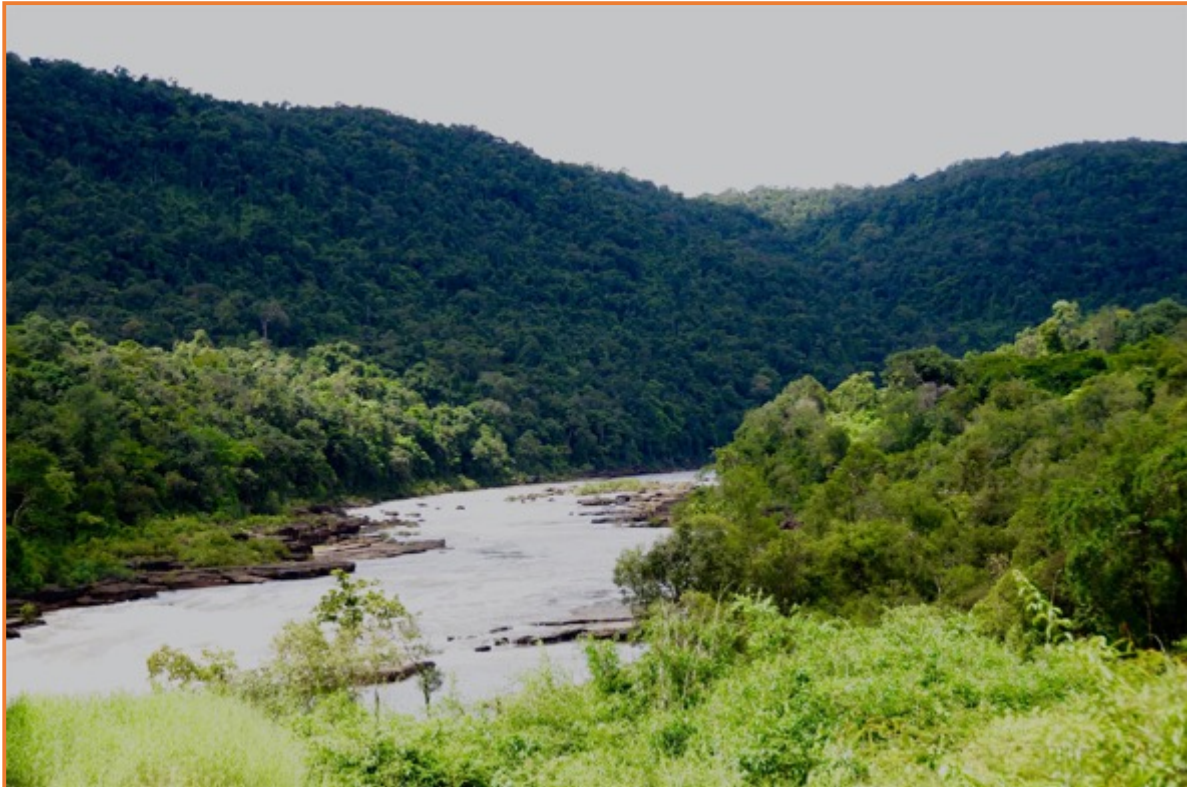


# THE SOUTHERN CARDAMOM REDD+ PROJECT



Document Prepared by Wildlife Works

<b>Project Title</b>	The Southern Cardamom REDD+ Project
<b>Project ID</b>	
<b>Version</b>	2.0
<b>Report ID</b>	1.0
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<b>GHG Accounting/ Crediting Period</b>	01 January 2015 – 31 December 2044; 30-year lifetime
<b>Monitoring Period of this Report</b>	01 January 2015 – 31 December 2017
<b>History of CCB Status</b>	This is the first CCB verification for the Project
<b>Gold Level Criteria</b>	<p>Gold Level Criteria: Climate and Biodiversity.</p> <p>The SCRCP aims to generate exceptional benefits in the areas of climate and biodiversity under both the Verified Carbon Standard (VCS) and Climate, Community and Biodiversity (CCB) standards.</p> <p><b>Climate:</b> The Project prevented the emission of 11,947,133 tCO<sub>2</sub>e during this monitoring period by stopping deforestation and forest degradation. This was achieved with training on improved agricultural methods, creating alternative income sources, creating new jobs and employment opportunities, and supporting improved environmental law enforcement across the landscape. Community members and</p>

project stakeholders were consulted during this period to determine the Project's expected benefits, costs and risks to them, and to identify the indicators to be used to measure these impacts. An initial biodiversity assessment was performed within and a long-term biodiversity monitoring plan was established across the entire Project Area. Project activities include training on improved agricultural methods, eco-tourism programs, direct Project employment and strengthening of community organizations. These activities are focused on providing new income generating opportunities, apart from traditional ones, which resulted in resource extraction from the Project area. With a more diversified local economy, less reliant on small-scale agriculture resulting in extraction of natural resources, communities will be able to better adapt to the probable effects of climate change.

**Biodiversity:** The Project will protect critical habitat for 17 endangered and critically endangered species. This includes the Asian Elephant, the Sun Bear, Pileated gibbon, and the Hairy-nosed Otter. The primary Project activity is the protection of forests within the Project area, which will also serve to protect the native habitat of these species from fragmentation and destruction. With the protection of their habitat, they will be better protected from both anthropogenic and natural threats, such as poaching, human-wildlife conflict and drought. A significant Project activity that is already fully implemented and providing significant biodiversity benefits is a security and law enforcement program. This activity supports a team of 98 rangers and a 25-person community anti-poaching unit that patrol the Project area working to stop illegal activity. Other Project activities include training on improved agricultural methods, support for Eco-Tourism and participatory land use planning. These activities are aimed at reducing the primary drivers of deforestation that threaten the Project area, and therefore the Project's biodiversity. Further detail on climate, community and biodiversity benefits generated by the Project to date can be found in Sections 1, Section 3, Section 4 and Section 5 of this document.

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**1 SUMMARY OF PROJECT BENEFITS**

**1.1 Unique Project Benefits**

<b>Outcome or Impact</b>	<b>Achievements during the Monitoring Period</b>	<b>Section Reference</b>	<b>Achievements during the Project Lifetime</b>
1) Training on Agricultural Methods and Intensification	200 families trained	4.3.1	Same as Monitoring Period
2) Community-based Eco-Tourism Development	9,929 international and domestic tourist visits, generating 396,282 USD for community members and 102,764 USD for the CBET fund	4.3.1	Same as Monitoring Period
3)			
4)			
5)			

## 1.2 Standardized Benefit Metrics

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
GHG emission reductions & removals	Net estimated emission removals in the Project area, measured against the without-Project scenario	0		0
	Net estimated emission reductions in the Project area, measured against the without-Project scenario	11,947,133	3.2.4 .5	11,947,133
Forest <sup>1</sup> cover	For REDD <sup>2</sup> Projects: Number of hectares of reduced forest loss in the Project area measured against the without-Project scenario	Not Applicable – Using national FREL		Not Applicable – Using national FREL
	For ARR <sup>3</sup> Projects: Number of hectares of forest cover increased in the Project area measured against the without-Project scenario	Not Applicable		Not Applicable
Improved land management	Number of hectares of existing production forest land in which IFM <sup>4</sup> practices have occurred as a result of the Project's activities, measured against the without-Project scenario	Not Applicable		Not Applicable

<sup>1</sup> Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (*VCS Program Definitions*)

<sup>2</sup> Reduced emissions from deforestation and forest degradation (REDD) - Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (*VCS Program Definitions*)

<sup>3</sup> Afforestation, reforestation and revegetation (ARR) - Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (*VCS Program Definitions*)

<sup>4</sup> Improved forest management (IFM) - Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood and fuelwood (*VCS Program Definitions*)

	Number of hectares of non-forest land in which improved land management has occurred as a result of the Project's activities, measured against the without-Project scenario	Not Applicable		Not Applicable
Training	Total number of community members who have improved skills and/or knowledge resulting from training provided as part of Project activities	<b>830</b> 500 from Community Based Ecotourism in four communes, 250 from CADP, 25 from Community Anti Poaching Unit in one commune, 31 Provincial Department of Environment Rangers, 24 from Carbon Monitoring Team.	4.3.1	Same as Monitoring Period.
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of Project activities of Project activities	<b>375</b> ~50% of CBET trainees.	4.3.1	Same as Monitoring Period.
Employment	Total number of people employed in of Project activities, <sup>5</sup> expressed as number of full time employees <sup>6</sup>	<b>151</b> 98 law enforcement rangers, 19 CBET staff, 22 Wildlife Alliance law enforcement technical staff, 12 Wildlife Alliance	4.3.1	Same as Monitoring Period.

<sup>5</sup> Employed in Project activities means people directly working on Project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out Project-related work.

<sup>6</sup> Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])

		office technical and administrative staff		
	Number of women employed in Project activities, expressed as number of full time employees	<b>12</b>	4.3.1	Same as Monitoring Period.
Livelihoods	Total number of people with improved livelihoods <sup>7</sup> or income generated as a result of Project activities	<b>15,272</b> 12,282 individuals in communities (21 villages, 9 communes) which have received land tenure; 1,074 from CADP, 1,861 from CBET, 56 from ranger jobs  But note some overlap between these groups (i.e. could be CBET beneficiary and received land tenure)	4.3.1	Same as Monitoring Period.
	Number of women with improved livelihoods or income generated as a result of Project activities	~50% of the above	4.3.1	Same as Monitoring Period.
Health	Total number of people for whom health services were improved as a result of Project activities, measured against the without-Project scenario	Not Implemented Yet	4.3.1	Same as Monitoring Period.
	Number of women for whom health services were improved as a result of Project activities, measured against the without-Project scenario	Not Implemented Yet	4.3.1	Same as Monitoring Period.

<sup>7</sup> Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. *The Sustainable Livelihood Approach to Poverty Reduction*. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

Education	Total number of people for whom access to, or quality of, education was improved as a result of Project activities, measured against the without-Project scenario	Not Implemented Yet	4.3.1	Same as Monitoring Period.
	Number of women and girls for whom access to, or quality of, education was improved as a result of Project activities, measured against the without-Project scenario	Not Implemented Yet	4.3.1	Same as Monitoring Period.
Water	Total number of people who experienced increased water quality and/or improved access to drinking water as a result of Project activities, measured against the without-Project scenario	Assuming entire landscape communities due to maintaining watersheds = <b>82,548</b> .  Important to note that water accessibility inside the Project Zone is far greater than in the rest of the country where rapid deforestation has caused severe droughts since 2010 in at least 13 provinces, with depletion of underground water tables and drying up of surface streams	4.3.1	Same as Monitoring Period.
	Number of women who experienced increased water quality and/or improved access to drinking water as a result of Project activities, measured against the without-Project scenario	~50% above = 41,274	4.3.1	Same as Monitoring Period.

Well-being	Total number of community members whose well-being <sup>8</sup> was improved as a result of Project activities	Assuming entire Project Zone communities = <b>16,319</b>	4.3.1	Same as Monitoring Period.
	Number of women whose well-being was improved as a result of Project activities	~50% of above = <b>8,160</b>	4.3.1	Same as Monitoring Period.
Biodiversity conservation	Change in the number of hectares significantly better managed by the Project for biodiversity conservation, <sup>9</sup> measured against the without-Project scenario	442,870.85	5.1	442,870.85
	Number of globally Critically Endangered or Endangered species <sup>10</sup> benefiting from reduced threats as a result of Project activities, <sup>11</sup> measured against the without-Project scenario	16	5.1.4	Same as Monitoring Period.

<sup>8</sup> Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Health, Education, Water, etc.), but could also include other benefits such as empowerment of community groups, strengthened legal rights to resources, conservation of access to areas of cultural significance, etc.

<sup>9</sup> Biodiversity conservation in this context means areas where specific management measures are being implemented as a part of Project activities with an objective of enhancing biodiversity conservation.

<sup>10</sup> Per IUCN's Red List of Threatened Species

<sup>11</sup> In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit



## 2 GENERAL

### 2.1 Project Description

#### 2.1.1 Implementation Description

The Southern Cardamom REDD+ Project activity has been fully implemented since the Project start date of January 1<sup>st</sup>, 2015. The primary activity is the reduction of carbon emissions from the Project Area by halting deforestation and forest degradation. This is achieved through a variety of measures undertaken by the Project Proponent. Please refer to the SCRPP PD Section 2.1.11 for a complete list of proposed Project Activities as well as their detailed descriptions. Project Activities that have been implemented during this first monitoring period ( $m_1$ ) are listed below, for more detailed on the implementation of each Project Activity see Section 4.3.

1. **Training on Agricultural Methods and Intensification**
2. **Community-based Eco-Tourism Development**
3. **Micro-finance**
4. **Participatory Land Use Planning**
5. **Strengthening Community Organizations**
6. **Enhanced Security and Law Enforcement**
7. **Sensitization and Awareness Raising**
8. **Community Scholarship Fund**
9. **Direct Employment and Training on Income Generating Activities (IGAs)**

These Project Activities are focused on actions that will reduce the surrounding communities dependence on the resources of the Project Area, either by improving agricultural methods, creating new income generating opportunities or otherwise addressing drivers of deforestation. During this monitoring period, these Project Activities all demonstrated good measures of success, with high levels of engagement from the Project communities and positive outcomes observed.

The total GHG reduction achieved by the SCRPP during this  $m_1$  (2015-2017) monitoring period is 11,947,133 tCO<sub>2</sub>e. Non-permanence risk factors are monitored through the Project's climate monitoring and disturbance monitoring procedures, as described in Section 3.1.3. Potential leakage from the Project was monitored through the Project's leakage procedures. Activity-shifting leakage was monitored with the procedures described in Section 3.2.3.2. Potential Market leakage was determined using the procedures in Section 3.2.3.4.

#### 2.1.2 Project Category and Activity Type

The Southern Cardamom REDD+ Project falls under the VCS sectoral scope 14: – Agriculture, Forestry, and Other Land Uses (AFOLU), under the categories Reduced Emissions from Deforestation and Degradation (REDD). Specifically, the Project falls under the REDD+ category Avoided Unplanned Deforestation (AUD). The Project is eligible under these categories by the definitions provided in the VCS AFOLU Requirements version 3.4 published 8 October 2013 by virtue of the fact that it prevents emissions that would have otherwise taken place through unplanned deforestation.

The SCRPs are not a Grouped Project type under the VCS standard and the CCB Programmatic approach.

### 2.1.3 Project Proponent(s)

Organization name	Royal Government of Cambodia, Ministry of Environment
Contact person	HE Dr. Choup Paris
Title	Deputy Secretary General, National Council for Sustainable Development
Address	#48 Samdach Preah Sihanouk Boulevard, Phnom Penh 12301, Cambodia
Telephone	(+855) 17 31 33 66
Email	paris.ncgg@gmail.com

### 2.1.4 Other Entities Involved in the Project

Organization name	Wildlife Alliance  <u>Role:</u> Partner to MOE in the implementation of SCRPs <u>Responsibility:</u> Forest Protection and Community Livelihood Activity Implementation
Contact person	Thomas Gray
Title	Director of Science and Global Development
Address	No. 86, Street 123 Toultompong I Precinct Chamcamon District Phnom Penh, Cambodia
Telephone	+855 23 211 604
Email	gray@wildlifealliance.org

Organization name	Wildlife Works Carbon  <u>Role:</u> Technical Advisor <u>Responsibility:</u> Implementation of VCS and CCB methods.
Contact person	Jeremy T. Freund
Title	Vice President, Carbon Development

Address	242 Redwood Highway Mill Valley, CA 94941
Telephone	+1 415 332 8081
Email	jeremy@wildlifeworks.com

**2.1.5 Project Start Date (G1.9)**

**MR.2 The Project Start Date**

The Project start date for the SCRП is 01 January 2015. Wildlife Alliance had already commenced REDD+ activities prior to this date. However, VCS AFOLU requirements limit historic start dates to 5 years before validation. This date will be used as the start date of the SCRП.

**2.1.6 Project Crediting Period (G1.9)**

**MR.3 The Project crediting period start date, end date and length.**

The Project lifetime is 30 years, commencing from the Project start date of 01 January 2015 and culminating on the Project end date of 31 December 2044. The crediting (GHG accounting) period is the same 30-year period as the Project lifetime.

**2.1.7 Project Location**

Maps containing the VM0009 methodology Monitoring Report requirements (MRR) listed below are provided in the following appendices to this document. Appendix A – Map of the Project Area, Appendix B – Map of Topography (DEM based), Appendix B – Map of Roads and Infrastructure, as well as major rivers and streams, and Appendix B – Map of Land use/Vegetation Cover.

The geographic or physical boundaries of the Project area must be clearly delineated using, at minimum, the following:

- Name of the Project area (compartment or allotment number, local name)
- Digital maps of the area, including geographic coordinates of vertices
- Total land area
- Details of ownership, including user rights and/or land tenure information
- Topography
- Roads
- Major rivers and perennial streams
- Land use/vegetation type classification

**MRR.1 A digital (GIS-based) map of the Project area with at least the above minimum requirements for delineation of the geographic boundaries.**

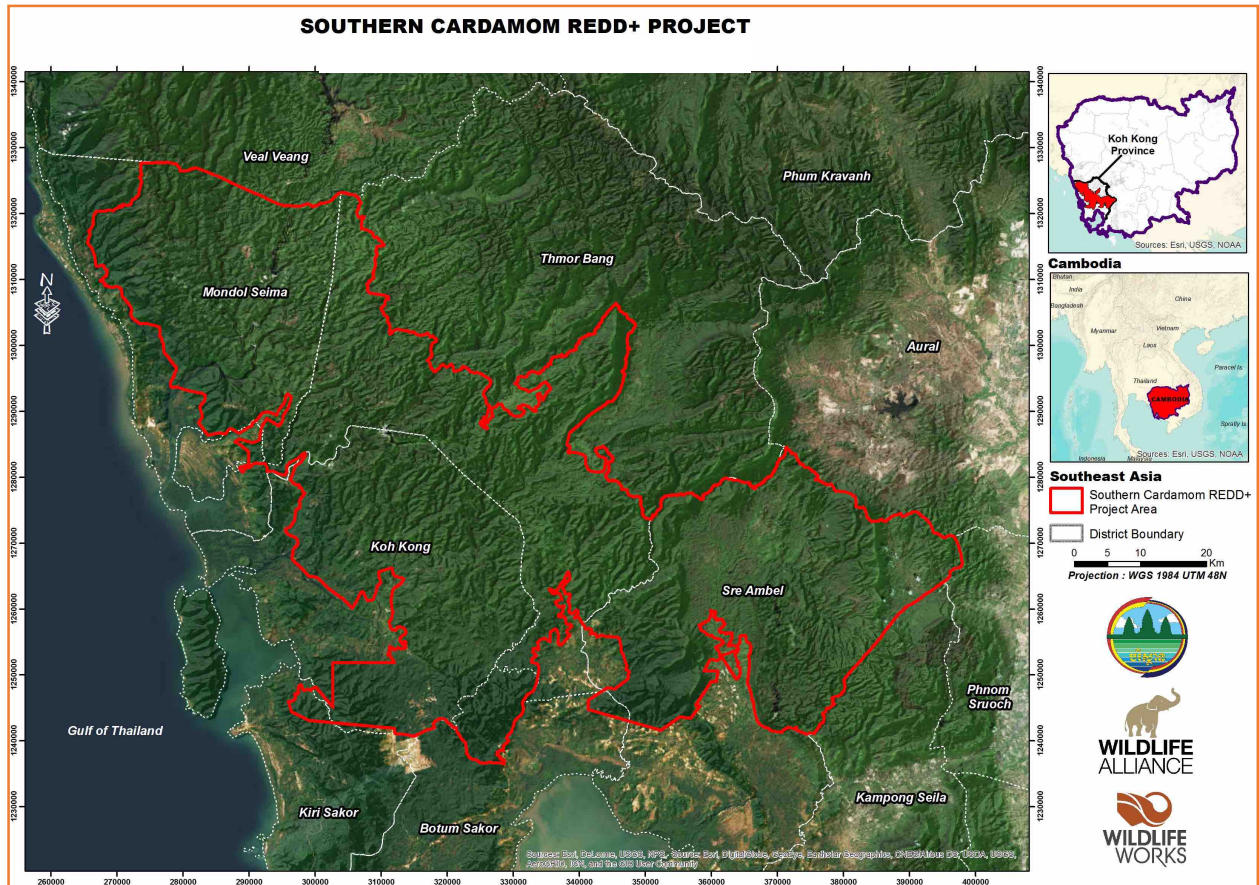


Figure 1: The Project Area of the Southern Cardamom REDD+ Project. See Appendices for maps showing additional geographic / physical delineation requirements per VM0009.



MRR.6 A digital (GIS-based) map of the Project accounting areas with at least the above minimum requirements for delineation of the geographic boundaries.

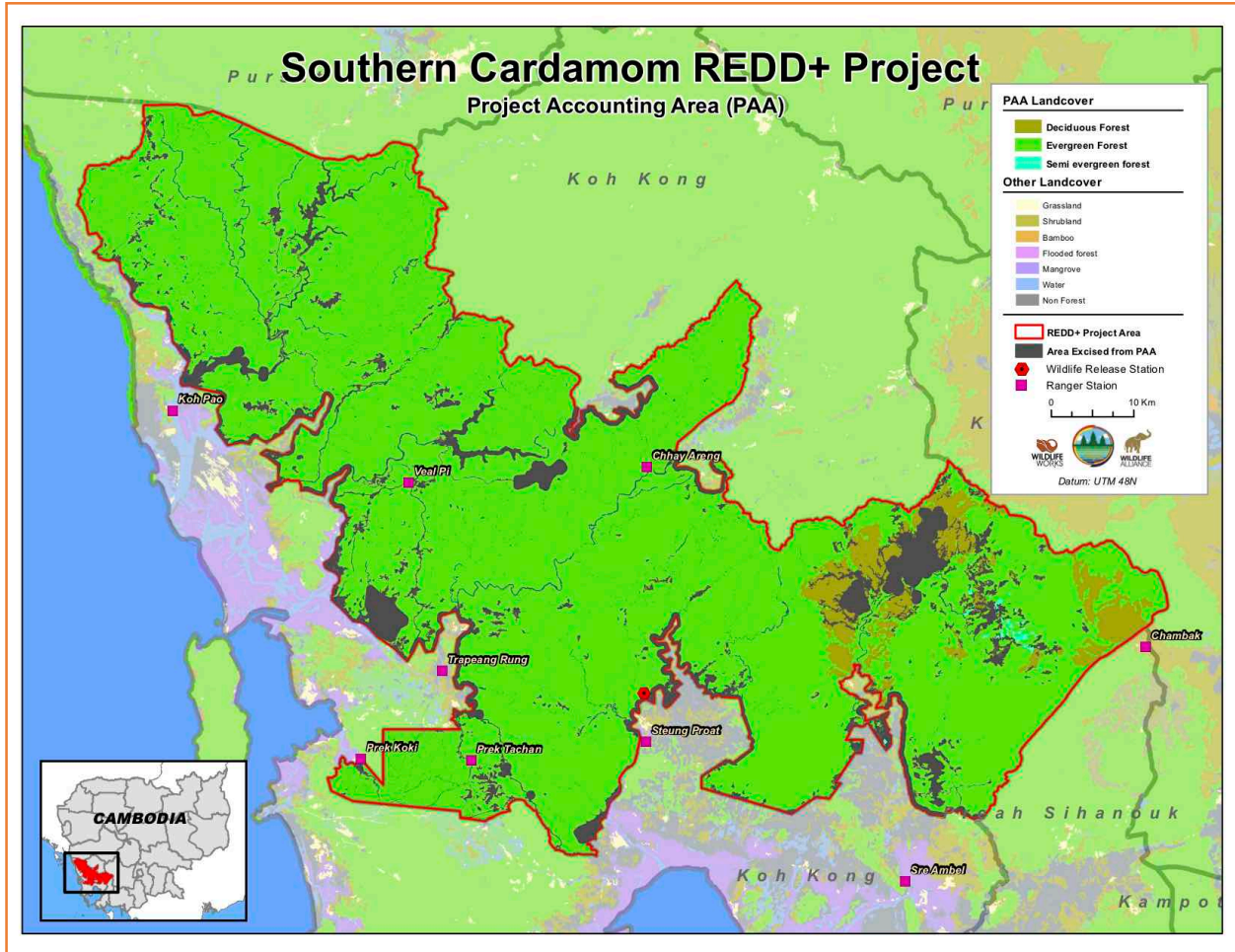


Figure 2: The Project Accounting Area of the Southern Cardamom REDD+ Project. See Appendices for maps showing additional geographic / physical delineation requirements per VM0009.

### 2.1.8 Title and Reference of Methodology

The VCS methodology VM0009 Methodology for Avoided Ecosystem Conversion, v3.0 was applied to the SCRCP. VM0009 quantifies greenhouse gas emission reductions generated from avoiding either planned or unplanned (or both) deforestation as well as protection from native grassland conversion as initiated by a variety of agents and drivers. For the assessment of additionality, the Project utilized the VCS “Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities,” VT0001 Version 3.0. The VCS “AFOLU Non-Permanence Risk Tool,” V3.3 was used to determine the Project’s non-permanence risk and Project buffer withholding rate. In addition, the VCS Tool VMD 0037 Global Commodity Leakage Module: Production Approach (LM-P), V1.0 4 February 2014 was utilized to calculate market leakage resulting from the SCRCP.

### 2.1.9 Other Programs (G5.9)

The SCRCP will also be validated under the Climate, Community, and Biodiversity (CCB) standard, Third Edition, Gold Level. The Project will seek to generate additional environmental or social credits.

### 2.1.10 Sustainable Development

The SCRCP will touch upon seven sustainable development themes that the Royal Government of Cambodia has committed to attaining (Royal Government of Cambodia – Ministry of Environment, 2012). These themes and the provisions for reporting and monitoring are listed below.

#### **Economic Growth and Development**

Project stakeholders benefit from employment in the Project and from livelihood enhancement activities. These activities will work to improve local incomes and create the foundation for a low-carbon economy. The Project will last 30 years and will employ local stakeholders in a variety of ways including forest protection, supporting Project activities, improved agricultural yield from agricultural intensification, and as well as livelihood enhancement from community-based eco-tourism.

#### **Poverty and Equity**

One of the goals of the RGC is to lower poverty levels in rural areas. The SCRCP will support poverty reduction by generating employment and supporting an increase in household incomes. The SCRCP will work with impoverished communities and focus on providing employment and livelihood support to the neediest community members. There is one indigenous community in Chhay Arieng within the Project Zone, where a community-based ecotourism program is under development. In addition, women were consulted and are included in all Project activities.

#### **Education**

A critical component of creating economic development and stopping poverty is improving education. During the SBIA, there were two types of educational support that were requested by local leaders, agricultural education and primary and secondary education. The goal of agricultural education will be to support farmers in increasing yields and conducting more sustainable farming. The SCRCP plans to support primary and secondary education by supplementing teacher salaries and providing bursaries for local students to offset the cost of education to marginalized families.

#### **Sustainable Forest and Land Use**

The SCRCP will support RGC's goal of maintaining forest cover at 60% by protecting 465,000 ha of forest, improving law enforcement, as well as supporting the development and improving management of community protected areas. It will also continue to conduct concerted action to halt illegal logging and deforestation.

#### **Climate Change**

REDD+ represents one the key components of RGC's climate change mitigation strategy. The SCRCP will reduce forest emissions by approximately 3,982,378 tonnes tCO<sub>2</sub>e/yr.

#### **Agriculture and Food Security**

The RGC's focus for developing sustainable agriculture is on increased yields and providing manufacturing facilities to process products so that local farmers can move up the supply chain. The



SCRIP will meet the goal of increased yields by providing local farmers with training in better crop management and improved farming techniques.

All of Cambodia's sustainable development themes mentioned above including economic growth and development, poverty and equity, education, sustainable forest and land-use, climate change, and agriculture and food security, will be monitored and reported through the VCS and CCB monitoring, reporting and verification system at a minimum of every 5 years.

## 2.2 Project Implementation Status

### 2.2.1 Implementation Schedule (G1.9)

Table 1: The Implementation schedule for the Southern Cardamom REDD+ Project, showing key dates and milestones for the Project.

Date	Milestone(s) in the Project's development and implementation
2002 - Present	<u>Forest Protection</u> : WA began supporting law enforcement activities in the Southern Cardamom in 2002. This including working with the RGC on developing a law enforcement strategy for the landscape and providing financial and technical support for all law enforcement operations from initially two fully-equipped ranger stations (in 2002) becoming eight by Jan 2014 and nine in Jan 2017. However, funding support for this will cease in 2018.
2004 - Present	<u>Community Development</u> : WA conducted a participatory rural appraisal of the communities in the Southern Cardamom creating community agricultural programs for 200 families in 2004 and establishing community-based ecotourism in one community (Chi Phat) in 2008 and expanding to a second cluster of 8 villages (Chay Areng) in 2017.
2003 - Present	<u>Land-use Planning</u> : WA worked with RGC and provincial, district, and commune authorities since 2003 to develop clear spatial land-use plans for the Southern Cardamom including securing community land tenure across 11 communities ensuring the rights of communities for managing legal agricultural land.
2010 - 2012	<u>REDD+ Project Exploration</u> : ONFI and WA conduct preliminary carbon stock assessment, draft VCS PD writing.
April 2012 - August 2012	<u>REDD+ Feasibility</u> : WWC conducts a REDD+ feasibility study for the Southern Cardamom REDD+ Project.
1 January 2015	Project start date
2015 – Present	<u>Project Implementation</u> : Attract investors and gain government approval for the Project – continue forest protection and community development activities

January 2017 – May 2017	Project carbon stock measurement
July 2017 – August 2017	Proxy Area carbon stock measurement
December 2017 – January 2018	Leakage Area Assessment
April 2018	Project Validation and Verification
May 2018	Project Registration

### 2.2.2 Methodology Deviations

#### *Activity-Shifting Leakage Area*

The SCRП deviates from VM0009 v3.0, Section 8.3.2.1 “Delineating the Activity-Shifting Leakage Area”. The delineation of the Activity-Shifting Leakage Area utilized the MOE forest cover 2015 map as its primary landcover map. However, the map contained certain areas of “no-data” in areas of non-forest, which were filled in with the MOE 2010 forest cover map. In performing spot checks, we noticed some small areas that were determined to have been converted between 2010 and 2015 that cannot be delineated using said maps. The activity-shifting leakage area therefore does not technically conform to the criteria in the first paragraph of VM0009 v3.0, Section 8.3.2.1, which states “As of the project start date, the activity-shifting leakage area must be entirely unconverted (ie, in a forest or native grassland state) ...”. The activity-shifting leakage area has been delineated to include these small identified areas of conversion, thus deviating from the criteria stated in Section 8.3.2.1 and, by extension, PDR.108, which requires proof that the activity-shifting leakage area is in an “entirely non-converted state”.

The activity-shifting leakage area’s purpose is to provide a boundary for the placement of leakage plots. The plots are required to be in unconverted areas. If a leakage plot is found to fall in a converted area, presumably due to an error in the land cover classification used to delineate the activity-shifting leakage area (errors of omission or commission are common in remote sensing, and no land cover map is 100% accurate), that plot is moved in a spatially random manner to an area that is unconverted. Small errors in land cover identification in the activity-shifting leakage area is therefore inconsequential to the calculation of emissions from activity-shifting leakage and, by extension, the deviation will not negatively impact the conservativeness of the quantification of GHG emission reductions or removals.

The deviation relates only to the activity-shifting leakage area, represented by  $A_{ASL}$ , a variable available at validation. The deviation does not relate to any other part of the methodology, VM0009 v3.0.

#### *Market Leakage Determination*

The SCRП deviates from the VCS module VM0037 “Global Commodity Leakage Module: Production Approach” in several ways. These deviations have no material impact on the market leakage calculation. The first two deviations concern section 5.1.2. Due to limited data availability, a single year of baseline commodity yields have been used in place of an average of the annual commodity yield from each year of the historical reference period. While the single yield value used for each commodity may not be fully representative of the entire historical reference period, it is the best available data source for an accurate

and applicable commodity yield. This is considered conservative, as the commodity yield value both determines the total quantity in tonnes of the commodity displaced by the project and the area of forest elsewhere in the country required to replace the displaced commodity production. Therefore, the actual value used for commodities yield has a negligible effect on the final quantification of market leakage from the Project.

For the commodity yield data on saw-logs, the yield has been presented in units of m<sup>3</sup>/ha, instead of the units of t/ha as required by the module. This is a more standard presentation of a saw-log yield, and there is no quantitative impact on the calculation of leakage by this deviation. Additionally, in the determination of the yield for saw-logs, no growth rate for the yield was used. This was done because the yield for saw logs would not be expected to increase over time, as these are naturally occurring forests with no active management. Therefore, there is no effect of improved methods or technology which would lead to an increase in yields. These deviations have little to no effect on calculation of emissions from market leakage, as the module calculates leakage from commodities. As stated above with the commodity yield data, for the saw-log commodity, the same yield value is used to determine the total quantity of the commodity displaced and to then determine the amount of area required to replace the lost supply. Therefore, despite using these alternative units for the yield, the end calculation is mathematically identical as it would be if yield was converted from m<sup>3</sup>/ha to tonnes/ha.

Lastly, in section 5.4, the module states that where a monitoring period covers multiple years, equation 14 should be employed for each year included in the period. We calculated a single leakage value that encompassed the 3 monitoring period years. This deviation has no quantitative impact, and only deviates from the quantification method, where the parameter t in the market leakage module was set to the full monitoring period, calculating 1 value for market leakage covering the 3-year monitoring period. The module requires calculation of market leakage independently for each year in the monitoring period and then to sum the results. These two methods result in mathematically the same result if the exact same time period is used for each method.

Given the fact that the deviations described above are either immaterial to or have no impact on the quantitative market leakage results, the deviation can by extension be shown to have no effect on the conservativeness of the calculation of emissions from market leakage. The deviation relates only to the criteria and procedures for the monitoring or measurement of market leakage, represented by  $E_{LME}^{[m]}$ , one of the parameters monitored and calculated via equation [F.51]. The deviation does not relate to any other part of the methodology, VM0009 v3.0, or the market leakage module VMD0037.

### **2.2.3 Minor Changes to Project Description (Rules 3.5.6)**

The SCRП does not have any minor changes to the Project Description document.

### **2.2.4 Project Description Deviations (Rules 3.5.7 – 3.5.10)**

The SCRП does not have any deviations to the Project Description document.

### **2.2.5 Grouped Projects**

The SCRП is not a grouped Project.

## 2.2.6 Risks to the Project (G1.10)

### 2.2.6.1 Human induced risks

#### 1. Slash and Burn / Unsustainable Agriculture

The greatest human induced risk to the Project's benefits is continued deforestation. The Project Zone is undergoing large pressures for new agricultural land from both the expanding population and ongoing immigration into the area. Therefore, slash and burn agriculture is a primary risk to the SCRП benefits and thus the Project's sustainability.

Mitigation for this risk is through the Project Activities, mainly in the form of increased protection of the Project Area, creation of new income generating activities and through the promotion of improved agricultural methods as described in the Project Description Section 2.1.11.

#### 2. Charcoal Production and Illegal Logging

Within the Project Area there are extractive activities, including the production of charcoal and illegal logging. These are additional threats of deforestation and degradation in the SCRП Project Area and pose a significant risk to the Project's climate benefits. Law enforcement and community members patrol the Project Area permanently and attempt to halt such activities. It has been recognized, however, that these law enforcement units are limited because of the size of the Project area. The SCRП therefore provides financial, political and human capacity support to maintain and enhance law enforcement. This is achieved by employing more rangers, increasing ranger motivation and providing rangers with more equipment, training and technology

#### 3. Anthropogenic Fires

Another human induced threat is frequent fires; these can occur multiple times a year in the area. Many are set intentionally with the goal of clearing trees and brush for agriculture, or some may be the unintentional result of illegal activity, such as charcoal production. SCRП staff monitor the Project Area for the occurrence of fire, and work to reduce the risk of fire. In addition, the Project aims to reduce illegal incursions of people into the Project Area, thus mitigating anthropogenic fire potential. Furthermore, the Project Proponent will monitor fire events and other potential contributions to reversals as part of their annual monitoring efforts, and is required to report on and account for any major loss of carbon in the Project Area. It is the goal of the Project to work with communities to understand the value of the forest, thus decreasing their willingness to destroy their forest resources, as they begin to realize tangible carbon benefits.

### 2.2.6.2 Natural Risks

The region in which the Project is located is not generally susceptible to severe or destructive natural events. The primary types of natural events that could occur would be geologic events, pests or disease, flooding or fire. The area is not prone to any geologic activity and poses little to no risk to the Project. As the Project Area is a native and biodiverse ecosystem the risk from pests or disease that result in significant emissions reversal is low. The primary mitigation for this risk is to maintain the forest, and ensure through monitoring that the trees and ecosystem remain healthy and intact. There can be minor seasonal flooding from the annual monsoons. However, the species of this area are all adapted to the hydrological cycles and are not liable to monsoonal flooding. The Project Area is mountainous and there

is a medium risk of erosion or landslides. Due to the Project activities that protect forests the risk of erosion or landslides is minimized. The risk of fire has the most potential to cause damage to the forests of the Project Area. However, the risk of significant emissions reversal is low. The evergreen and semi-evergreen forest types are of a dense, evergreen, moist forest type that is not prone to forest fires. There has been no catastrophic fires in forests of this type in this region. Therefore, natural events have low risks to the Project's benefits.

### **2.2.6.3 Political Risks**

In all countries, there exists a slight risk of shifting legislation or the potential of new policies that could potentially affect natural resource management and/or land tenure. There have been cases in Cambodia where the RGC has allowed protected forest lands to be cleared for agricultural or development purposes. That said, the likelihood of such changes occurring is considered to be extremely small, especially given that the Project Area is currently under government ownership and under protective status (It is both a national park and wildlife sanctuary). As a highly visible international REDD+ Project, the likelihood that the RGC would allow the SCRP Project Area to be converted is low. Additionally, as the intent is to nest this Project into a future jurisdictional/national program, the Project's visibility will only increase as well as its importance to the RGC.

### **2.2.6.4 Policy risks**

#### **1. Risk of reversal**

Risk of Project reversal due to community opposition is considered minimal, as they have openly and widely been consulted through numerous outreach and information-sharing meetings throughout Project development. As a Project governance policy, all stakeholders are always able to seek further information or air grievances if desired. The Project will continue to engage the surrounding communities, provide education and support for community social services, and improved livelihood opportunities.

All these factors build and enhance community support for the Project and make them authentic stakeholders, thereby reducing the risk of opposition to the Project and its goals.

#### **2. Insufficient Revenues**

The majority of REDD+ credits are currently sold on the voluntary market, posing a risk to recurring, sustainable income flow. If credits are not sold, there will be no revenue, and thus no monetary support for the Project over its 30-year lifetime, save initial investment. Nevertheless, the Project proponent believes that the Project will be successful in attracting sufficient buyers of carbon credits. The Project has been developed as a cooperative effort between Wildlife Alliance and the Ministry of Environment, it is one of the largest Projects in Southeast Asia, making it an attractive Project to the greater Southeast Asian region. In addition, it is a vital forest resource to Cambodia, and is a critical watershed for the Gulf of Thailand, an important part of Cambodia's economy because of its contributions via hydroelectricity, tourism, and fisheries. The intention of the Project Proponent is to nest the Project into the potential future Cambodian jurisdictional/national REDD+ scheme. In the future, this will allow for the sale of larger credit volumes, on a recurring, sustainable basis, to sovereign nations and large multi-national buyers in the international market created by the Paris Accord. Therefore, the Project proponent believes that the risk of insufficient revenues to the Project's benefits is low

### 2.2.7 Benefit Permanence (G1.11)

The SCRP activities are all designed to enhance the CCB benefits beyond the Project's Lifetime. Community activities are designed to transform local economies over the life of the Project. In this regard, the focus of the SCRP is developing local business and income-generating activities that are critical components of a long-term low carbon economy. Project activities that meet this overarching objective focus on education, sustainable agriculture, community-based ecotourism and sustainable management of natural resources. These activities will reduce the necessity of community members to deforest and degrade the Project Area. During the Project Lifetime, this will be achieved, for example, facilitating better education, through training farmers in sustainable agriculture, and creating long-term eco-tourism programs. These activities are outlined in more detail in the Project Description Section 2.1.11 of this document.

## 2.3 Stakeholder Engagement

### 2.3.1 Stakeholder Access to Project Documents (G3.1)

- The Project Office and Project Sub-Office maintains a full printed version of the PD and monitoring report in English for public viewing.
- The executive summary for the PD and monitoring report has been translated into Khmer is posted in public places in communities throughout the Project Zone.
- The full PD and monitoring report version and the executive summary of the PD and monitoring report in English and Khmer version are made available on the Project webpage (<http://https://www.wildlifealliance.org/>) and official Wildlife Alliance Facebook page.

### 2.3.2 Dissemination of Summary Project Documents (G3.1)

- The executive summary for the PD and monitoring report has been translated into Khmer and is posted in public places in communities throughout the Project Zone.
- The full PD and monitoring report versions and the executive summary of the PD and monitoring report in English and Khmer are made available on the Project webpage (<http://https://www.wildlifealliance.org/>) and official Wildlife Alliance Facebook page. Additionally, other Project information will be relayed through this page.
- In addition to the executive summary, a poster/flyer in Khmer advertising the Project, and providing a contact email address was posted in communities.
- A poster/notice in Khmer advertising the public comment period, and the validation and verification field visit was posted in communities throughout the Project Zone. It included details on how a comment to the CCB can be made.

### 2.3.3 Informational Meetings with Stakeholders (G3.1)

Information regarding the SCRP was communicated through a series of community meetings that took place in a culturally-appropriate setting. Meetings were conducted by appointed FPIC officers, and were called at public locations or usual places of gathering, such as houses of commune chiefs or village chiefs, pagodas and schools. The existing network of WA contacts across the Project Zone, particularly local government officials, were used to publicise the FPIC events and ensure representative community



participation. In addition, two of the FPIC officers were from Project Zone communities and thus used their extensive networks to publicise the events. It is common in Cambodia to provide drinking water and snacks at formal meetings and some sort of support for the costs of travelling to the meeting. These customs were adhered to at all of these community consultations. The FPIC officers used posters to explain the concept of REDD+, climate change, Project activities and conflict resolutions and bring across the Project's anticipated benefits as well as costs and risks. An open discussion and question time followed, which often revolved around land tenure, customary use of timber and non-timber forest products, costs and benefits as well as risks and their concern with regard to implementation of the SCR. All meetings were conducted in Khmer. This ensured that the information was communicated to and understood by the whole audience.

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

The SCR has been designed through engagement of relevant communities and stakeholders, and has involved them in decision-making and implementation from the outset. Collaboration amongst the Project Partners with the goal of initiating a carbon-crediting scheme began in 2012. The role of the Project Partners is central to the SCR, due to their relationship with the communities. These communities are already familiar with the Project Partners and open communication channels were established prior to the start of the Project's design phase. The SCR builds on these structures, which makes it possible to disseminate information to the communities in a quick and timely manner as well as to encourage their involvement in the Project. During the last year, Project Partners have conducted a Social and Biodiversity Impact Assessment (SBIA) and suite of community meetings focused on Free Prior and Informed Consent (FPIC). These meetings were the basis for which Project costs, risks and benefits to communities have been communicated.

A Project Sub-Office was established in the Koh Kong MOE office branch in late 2017, and a REDD+ office was created. This office serves as an information hub of the SCR, and is open to all community members and stakeholders to visit in order to gain information about the Project and/or place comments or grievances. The primary communication method to stakeholders and communities is through the Project Partner's existing channels of communication to the respective communities in their area. Meetings were mainly announced through phone calls or by informing the leader of a specific community group (women's groups, youth groups, etc.) in a timely fashion, who in turn would communicate the information to the members of that group.

Project Partners have been kept up to date with regular communication and dissemination of Project documentation. Community members are encouraged to pay a visit to these headquarters in order to read and have full access to any such material. The Project Office constructed seven sign-boards that were installed at strategic points around the Project Area and Project Zone for Project information and notices to be posted on. The SBIA community meetings took place August 15-17 and August 23-25, 2017 in the MOE offices, Koh Kong province. In addition, community FPIC meetings took place in two phases between August and October 2017 (24 meetings) and December 2017 and March 2018 (27 meetings). In total for the FPIC process 51 meetings were held attended by more than 2,500 community members from the Project Zone. Significant time was given between the initial SBIA stakeholder consultation and the time that any formal decision-making was expected. Details of the SBIA consultation and all FPIC meetings including the dates, locations and number of attendants, are provided in Section 2.3.7.

**2.3.5 Information to Stakeholder on Verification Process (G3.3)**

- The Project's executive summary, including Project information and Project benefits has been translated into Khmer and is posted in public places in communities throughout the Project Zone.
- During community meetings held by Project staff as part of the Project outreach process the validation / verification process was described.
- A poster/notice in Khmer advertising the Project's public comment period and the validation / verification field visit was posted in communities throughout the Project Zone. It included details on how a comment to the CCB can be made.
- In addition to the executive summary and the public comment period advertisement, a poster/flyer in Khmer advertising the Project, and providing a contact email address was posted in communities.
- The full monitoring report and the executive summary of the PD and monitoring report in English and Khmer version are made available on the Project webpage (<http://https://www.wildlifealliance.org/>) and official Wildlife Alliance Facebook page.

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

The Project Proponent has actively communicated to community members and stakeholders about the start of the Public Comment Period and the methods with which they can submit comments on the Project as well as how to view full Project documentation. This was accomplished by communicating the Project - Public Comment Period and Validation field visit dates to previously identified stakeholders, community leaders, leaders of the faith communities and public officials. They were then requested to pass that information onto their communities.

The Project partner will arrange for community meetings with all stakeholders during the validation and verification site visit. During these meetings the auditor will be able to independently ask questions of all stakeholders regarding FPIC and SIA consultations.

**2.3.7 Stakeholder Consultation (G3.4)**

The process of Community and Stakeholder identification was conducted through a series of key informant/Expert interviews, workshop discussions, an analysis of rights and a literature review. Through these methods it was possible to obtain a well-informed and comprehensive understanding of all communities and community groups in the Project Area. Consultations with each group were integral to the Project design, in particular during the SIA training and workshop with the Project Proponent, local government officials and local community decision makers.

The SIA training and workshop utilized the theory of change logic to hypothesize how the SCRP intends to achieve its objectives. In other words, through the SIA training and workshop the Project Proponent, local government officials and key community leaders created a roadmap of how the SCRP plans to get from Point A (Project activities) to Point Z (Project impacts). First the participants created a Project Vision Statement. Secondly, they identified and prioritized the Project's focal issues, from which they created a problem statement and vision statement for each focal issue. With these problem and vision statements they created a problem flow and results chain diagram for each focal issue. Next the participants

conducted a risk analysis and negative impact assessment for each focal issue, and finally a theory of change statement. Once these items were created for each issue, a list of mitigating activities and indicators were created for the life of the Project. This process, described above, demonstrates how key community members and Project stakeholders were involved in every step of the Project’s design process.

**Key informants**

Key informants are of particular value for providing inside information of the area and its communities due to the fact that they have been based in the area for decades, and therefore possess substantial local knowledge and experience. Key informants consulted include:

- Mr. Jeff Silverman: REDD+ Technical Advisor of the Wildlife Conservation Society (WCS) and who has been working in the area of REDD+ for more than 10 years. Jeff has been presented his successful experience in providing technical expert to the successful Seima REDD+ Project in Cambodia.
- Mr. Hort Sokun: Rainforest Technical Manager of the Wildlife Alliance (WA) and who has been working in the Southern Cardamom since 2001. Sokun has conducted community development activities with all Project stakeholders.
- Mr. Chhun Delux: Chief of Forest and Climate Change Office at the Forestry Administration, Mr. Chhun Delux, one of the most experienced REDD+ practitioners in the Royal Government of Cambodia, provides his technical expertise as forest policy and community engagement expert to the SCRCP.

Table 2: This table displays the key informant interviews that conducted during Project development.

Key Informant	Position	Date
Mr. Jeff Silverman	REDD+ Technical Advisor	2/14/17
Mr. Hort Sokun	Southern Cardamom Community Engagement Specialist	2/18/17
Mr. Chhun Delux	Chief Forest and Climate Change Office	2/18/17

**Focus group discussion at SBIA training**

SBIA workshops were held from August 15-17 and August 23-25, 2017 at the MOE district office in Koh Kong. A total number of 73 local government staff and local decision makers from the SCRCP attended. During this workshop, discussion focused on the agents and drivers of deforestation, as well as on the community and community groups. Through the expert knowledge provided by the local government officers and decision makers in these discussions, a comprehensive list of the categories of people expected to be affected by the Project were identified. This provided valuable background information for subsequent investigations and research.

**Analysis of rights**

An analysis of user rights helped provide a straightforward insight into which communities, community groups and stakeholders are present in the area. The analysis focused on customary rights and ownership to the land. The Project Area is comprised of government owned protected area, but communities have rights to communal land are present in the Project Zone. This process aided in identifying communities and stakeholders. This analysis was carried out using expert knowledge and also drew on Wildlife Works’ experience in other REDD+ Project development.

**Literature review**

To provide a listing of all potential stakeholders in the SCRCP a comprehensive review of the literature, including academic papers, published reports and any available open-source Internet resources was completed. This process provided further insight into local dynamics, cultural migration, and historic government land policy. These resources provided both specific information on local stakeholders in the Project and general guidance for identifying and describing stakeholders in REDD+ Projects.

**Identified community groups and other stakeholders**

Through the process listed above community groups and other stakeholders have been identified in the Project. Table 3 outlines their current impact on the land, the effects of the Project on these activities and the relationship with other stakeholders. This allows the Southern Cardamom REDD+ Project to understand the complexities within the social structure and generates insight into potential conflict areas. This in turn informs where special care is needed and helps to target Project activities more directly.

Table 3: The Other Stakeholders in the Southern Cardamom REDD+ Project.

<b>Stakeholder or stakeholder sub-group</b>	<b>Current impact/ activities in landscape</b>	<b>Effect of Project on their activities</b>	<b>Relationship with other stakeholders (Partnership/conflict)</b>
<b>Agriculturalists</b>	Land conversion, cultivation and irrigation	No further land conversion allowed, loss of potential agricultural land	Potential conflict with Landless-migrants due to livestock and land incursions
<b>Charcoal producers</b>	Extraction of wood for charcoal making, often from protected areas	Prohibition of charcoal making in the Project Area, loss of income generating activities, increased law enforcement and potential prosecution	Conflict between charcoal burners and MOE and rangers if illegally trespassing into Protected Forest.
<b>Firewood gatherers</b>	Collection of firewood (sometimes obtained through intrusion into state	Regulated collection of firewood. Prohibition of collection above subsistence use in the Protected Forest	No conflict besides that resulting from over use. MOE does not allow firewood collection in protected forests.

	permanent reserve)		
<b>Subsistence hunters</b>	Intrusion into state permanent reserve forests, killing of wildlife, igniting anthropogenic fires	Greater law enforcement and abatement of hunting activities, persecution.	Potential conflict between hunters and MOE and ranger teams
<b>Women</b>	In charge of firewood collection, increasingly involved in charcoal production	Regulation of firewood collection, stopping of charcoal production potentially leading to some loss of income	Underrepresentation in decision-making, which could lead to conflicts
<b>Youth</b>	Providing assistance for extractive activities, transportation of charcoal bags	Stopping of illegally produced charcoal therefore reducing demand for transportation, preventing intrusion into the state permanent reserve forest	Potential conflict between youth and ranger teams. Underrepresentation in decision-making due to seniority being main precedent for involvement
<b>Landless – Migrants</b>	Living on land without secure land titles, often practicing subsistence agriculture	Cooperation to engage in agricultural training activities, though legal titles needed	Potential conflict between landless and rightful landowners, such as the RGC.
<b>Local authority (district and commune, villages)</b>	Provide intervention and assistance to community forestry	Cooperation with MOE to ensure protection and sustainable use of forest and forestland security	Differences with MOE on the proposed community protected areas in the Project zone.
<b>Police and military</b>	Cooperate with MOE to crack down on forest illegal activities	Secure maintenance of forest resource	Potential conflicts with loggers and land grabbers

## Stakeholder Involvement

### FPIC Activities

Information regarding the SCRCP was communicated through a series of community meetings that took place in a culturally-appropriate setting. Meetings were conducted by appointed FPIC officers, and were called at public locations, such as village public buildings and schools. It is common in Cambodia to provide tea and a snack at formal meetings, and this custom was also adhered to at these community consultations. The FPIC officers used posters to explain the concept of REDD+, climate change, Project activities and conflict resolutions and bring across the Project's anticipated benefits as well as costs and risks. An open discussion and question time followed, which often revolved around costs and benefits as well as risks and their concern with regard to implementation of the SCRCP. FPIC officers presented in Khmer. This ensured that the information was communicated to and understood by the whole audience.

The Initial Round One Community FPIC meetings took place from August to October 2017. 24 meetings were held within the round. During that period, a half day meeting was held in each targeted village. Significant time was given between the initial consultation and the second round of consultations. From December 19, 2017 to March 2, 2018, an additional 27 meetings in Round Two were held in 27 of the 29 targeted villages. At this Second Round, one full day was allotted to each targeted village with a half day meeting and a half day posting and disseminating awareness materials.

Round Three FPIC meetings have been planned for a period from March 5-29, 2018. Meetings will be conducted only at 14 targeted villages that have the lowest number of participants to the first 2 round meetings.

Details of all FPIC meetings of Round 1 and Round 2 including the dates, locations and number of attendants, are provided in Table 4. Significant time was given between the initial consultation and the time that any formal decision-making was expected.

Table 4: Location, date and attendance of FPIC meetings for the Southern Cardamom REDD+ Project.

Location	Commune	District	Date	Place	Participants	
					Total	Female
<b>First Consultation</b>						
Chumnoab	Chumnoab	Thmor Bang	1-Aug-17	Villager's house	21	10
Chrak Russey	Chumnoab	Thmor Bang	1-Aug-17	Public school	30	16
Pralay	Pralay	Thmor Bang	2-Aug-17	Village Chief's house	42	19
Samraong	Pralay	Thmor Bang	2-Aug-17	Village Chief's house	30	13
Toap Khlay	Pralay	Thmor Bang	3-Aug-17	Commune Chief's house	30	13



Location	Commune	District	Date	Place	Participants	
					Total	Female
Chamnar	Pralay	Thmor Bang	3-Aug-17	Public school	33	19
Koh	Thmor Donpov	Thmor Bang	4-Aug-17	Pagoda	55	30
Prek Svay	Thmor Donpov	Thmor Bang	4-Aug-17	Commune Hall	58	31
Kokir Chrum	Ruessey Chrum	Thmor Bang	6-Aug-17	District Hall	128	53
Pur Beung Chhay Reab	Dang Peng	Sre Ambel	7-Sep-17	Public school	131	54
Pur Beung Kamlot	Dang Peng	Sre Ambel	7-Sep-17	Pagoda	95	54
Bakangrout	Dang Peng	Sre Ambel	9-Sep-17	Public school	54	17
Kandoal	Kandoal	Botum Sakor	12-Sep-17	Pagoda	93	46
Chi Meal	Angdoun Teuk	Botum Sakor	13-Sep-17	Commune Hall	36	9
Chi Phat	Chi Phat	Thmor Bang	13-Sep-17	Commune Hall	146	94
Veal Taphou	Trapeng Rung	Koh Kong	14-Sep-17	Community Hall	51	21
Trapeang Rung	Trapeng Rung	Koh Kong	14-Sep-17	Public school	38	26
Anlong Vak	Tatai Krom	Koh Kong	15-Sep-17	Pagoda	90	58
O'som	O'som	Veal Veng	27-Sep-17	Community Hall	75	26
Kien Chongruk	O'som	Veal Veng	27-Sep-17	Public school	40	15
Romiang Sar	Tasal	Aural	3-Oct-17	Community Hall	54	26
Taing Bampong-Roleak	Tasal	Aural	3-Oct-17	Community Hall	44	30
Dei Tumneab	Trapeng Rung	Koh Kong	4-Oct-17	Pagoda	29	16
Krang Chek	Chambak	Phnom Sruoch	5-Oct-17	Pagoda	53	29
<b>First consultation sub-total</b>					<b>1216</b>	<b>603</b>

Location	Commune	District	Date	Place	Participants Total	Female
<b>Second Consultation</b>						
Chamnar	Pralay	Thmor Bang	19-Dec-17	Public school	38	24
Toap Khlay	Pralay	Thmor Bang	20-Dec-17	Commune Chief's house	24	10
Samraong	Pralay	Thmor Bang	21-Dec-17	Public school	36	20
Pralay	Pralay	Thmor Bang	22-Dec-17	Village Chief's house	47	30
Chrak Russey	Chumnoab	Thmor Bang	23-Dec-17	Village Chief's house	28	15
Chumnoab	Chumnoab	Thmor Bang	23-Dec-17	Villager's house	22	10
Koh	Thmor Donpov	Thmor Bang	25-Dec-17	Pagoda	41	20
Prek Svay	Thmor Donpov	Thmor Bang	25-Dec-17	Commune Hall	42	23
Kokir Chrum	Ruessey Chrum	Thmor Bang	27-Dec-17	Pagoda	39	19
O'som	O'som	Veal Veng	17-Jan-18	Community Hall	36	15
Kien Chongruk	O'som	Veal Veng	18-Jan-18	Public school	62	34
Romiang Sar	Tasal	Aural	24-Jan-18	Community Hall	52	30
Taing Bampong-Roleak	Tasal	Aural	25-Jan-18	Community Hall	59	31
Krang Chek	Chambak	Phnom Sruoch	26-Jan-18	Pagoda	64	49
Sovann Baitong	Kandoal	Botum Sakor	30-Jan-18	Public school	126	78
Chi Meal	Angdoug Teuk	Botum Sakor	31-Jan-18	Commune Hall	37	25
Chorm Sla	Chi Phat	Thmor Bang	1-Feb-18	Community Hall	46	32

Location	Commune	District	Date	Place	Participants	
					Total	Female
Kamlot	Chi Phat	Thmor Bang	2-Feb-18	Village Chief's house	57	31
Teuk Laak	Chi Phat	Thmor Bang	2-Feb-18	Pagoda	18	4
Veal Taphou	Trapeng Rung	Koh Kong	7-Feb-18	Community Hall	29	9
Trapeang Rung	Trapeng Rung	Koh Kong	8-Feb-18	Public school	27	17
Dei Tumneab	Trapeng Rung	Koh Kong	9-Feb-18	Pagoda	26	10
Anlong Vak	Tatai Krom	Koh Kong	22-Feb-18	Pagoda	21	14
Kaoh Andaet	Tatai Krom	Koh Kong	23-Feb-18	Pagoda	33	17
Pur Beung	Dang Peng	Sre Ambel	27-Feb-18	Public school	73	39
Kamlot	Dang Peng	Sre Ambel	28-Feb-18	Pagoda	47	22
Bakangrout	Dang Peng	Sre Ambel	2-Mar-18			
<b>Second consultation sub-total</b>					1,130	628
<b>Consultation Grand Total</b>					2,586	1,353

### 2.3.8 Continued Consultation and Adaptive Management (G3.4)

The adaptive management plan for the Southern Cardamom REDD+ Project is outlined in the PD Section 4.4.1. Please refer to this section for a detailed explanation on the iterative processes the SCRП will use throughout the life of the Project.

### 2.3.9 Stakeholder Consultation Channels (G3.5)

The Project has held a significant number of community meetings and workshops during the Project development process. The SCRП PD Sections 2.1.8 and 2.3.3 list the community meetings and workshops that were held for all Project stakeholders. A complete report of the SBIA workshops and community meetings, including pictures and meeting results have been provided to the verifier.

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

In order to ensure effective participation of SCRП communities it was important to hold meetings and workshops during time periods where stakeholders could attend. As such, all meetings and workshops were held during the day and at times when other work did not interfere with full community participation. Invitations were extended to community leaders, local government officials and commune leaders within a respectful timeframe and in such a manner that each stakeholder could respond. This included via written

invitations, and phone calls. All communication was conducted in Khmer, a language every participant speaks, thus enabling participants to fully understand enabling their full participation.

### **2.3.11 Anti-Discrimination Assurance (G3.7)**

The SCRP is committed to fair treatment and equal opportunity for all Project stakeholders, community members and employees. The Project, nor any agent of the Project, will discriminate against any person for any reason, including, but not limited to, gender, religion, nationality, tribe, or sexual identity. The Project has established an equal opportunity policy that ensures that the Project will not engage in or be complicit in any form of discrimination. The SCRP is committed to providing a workplace and programs that are safe and free from all sexual harassment or unwelcome sexual advances. The Project has drafted a document outlining a sexual harassment policy, defining sexual harassment and describing the recourse that any employee who feels that they have suffered sexual harassment should take. Additionally, the Project has established a grievance system that will provide all Project employees, stakeholders, community members and participants to have a recourse method in the event that any discriminatory actions or sexual harassment does occur.

### **2.3.12 Grievances (G3.8)**

There were no grievances raised during this monitoring period.

### **2.3.13 Worker Training (G3.9)**

The SCRP considers local employment a priority and local sourcing is strongly encouraged at all levels of the Project, from casual workers up to management positions. The SCRP recognizes that local hiring, especially women, marginalized and vulnerable community members, is a major benefit to the implementation and operation of the Project due to the knowledge and familiarity local people possess of the landscape, its communities and its biodiversity. Their involvement will also ensure the sustainability and continuity of the Project throughout the Project's Lifetime and beyond. Currently, 471 families have been trained in ecotourism management and hospitality and guiding skills in Chi Phat and Chay Arieng. While 200 families have been trained in sustainable agriculture techniques. In addition, 97 forest rangers have been trained in law enforcement, health and safety, patrolling, and legal skills whilst 24 community members from the Project Zone have been trained in biomass inventory for the Carbon plots.

The Project is designed to focus on the employment and training of local people, with a focus on women as well as marginalized and vulnerable community members, in order to increase local participation in the Project as well as build local capacity, knowledge and a robust skills base. This will include hiring local community members as community rangers to monitor their community forests for illegal activities, with special attention to the hiring of women and/or vulnerable and marginalized community members where appropriate. The SCRP will advertise open positions broadly, with special attention to the recruitment of villagers and youth who live in the Project Zone. Women will also be highly encouraged to apply for the positions. A policy of providing priority in the hiring process will be given to women who are qualified and willing to commit to a period of work with the Project. However, as the tradition and culture of Cambodia may limit women from traveling far away from their home or staying in the field for long periods of time with other men there are some challenges to the recruitment of female employees. In addition, in the Cambodian traditional family structure women are responsible for caring for their children, which may restrict their ability and willingness to travel away from their home villages for work.

MOE/WA will train local community members in the latest monitoring techniques, data collection methods, and laws in order to conduct effective enforcement. Training will be conducted on an ad-hoc basis as turnover happens to the community-rangers in order to maintain a pool of trained local rangers. Local community members will also be hired and trained to support and manage other activities including IGAs, agricultural intensification, and biodiversity monitoring. In all positions, informal training will happen for each position and local community members will have first priority on being hired.

The primary training of the sampling team occurred January 17<sup>th</sup> through 23<sup>rd</sup> 2017. The training was conducted by WWC team members Jeremy Freund, VP of Carbon Development, and Brian Williams, Director of Asia. All members of the plot sampling team and several key Project management staff, including Thomas Grey and Romica Grosu of WA, were present for this training. The training consisted of both classroom and field components and included the training in the biomass sampling and proxy area sampling SOPs, general field procedures, methods for proper equipment use, and field safety procedures. Further training and technical support was provided to the field sampling team specifically on the biomass plot sampling process via email and phone calls. A second field-based training of the plot sampling team by WWC's Brian William on December 2<sup>nd</sup> through 3<sup>rd</sup>, 2017. All members of the plot sampling team and several key Project management staff, including Thomas Grey and Romica Grosu of WA, were present for this training. This training focused on the leakage plot measurement SOPs and field equipment use. Additionally, as with the biomass lot sampling process, with the other field sampling throughout the Project development process WWC provided on-going technical support to the plot sampling team on ad-hoc basis through email and telephone calls when questions arose, or additional expertise was required.

Educating communities and employees in different areas related to the carbon Project will also be on-going. Capacity building on aspects revolving around carbon measurement, accounting, climate change and carbon offsets will continue to take place in the form of meetings, workshops or training days. To date the primary training on REDD+ Project management and carbon measurement has been focused on WA staff and management based in Koh Kong town. It is anticipated that future training will no longer be needed external by experts but will be carried out by locally sourced employees who were trained in the initial stages of the Project.

#### **2.3.14 Community Employment Opportunities (G3.10)**

The SCR PD Section 2.3.15 describes the measures that the Project has implemented to ensure that the communities are provided with equal opportunity for employment with the Project. The auditor was provided with evidence on-site during the verification field visit to demonstrating the Project's hiring process and compliance with this rule.

#### **2.3.15 Relevant Laws and Regulations Related to Worker's Rights (G3.11)**

##### **The Labor Law, 1997, amended 2007**

This law provides regulations on the relationship between employees and employers, and the socio-legal rights and obligations resulting from a labor relationship. All people engaged in work in Cambodia, including Cambodian citizens and foreign nationals, are subject to the regulations of the Labor Law (Peng et al., 2012).

In addition to the Labor Law Cambodia there are several international legal standards that cover labor rights in Cambodia, this includes 13 International Labor Organization conventions that Cambodia has

ratified (Peng et al. 2012). Also there are many government labor regulations, including royal decrees, sub-decrees, prakas, decisions, circulars, and notices that have been issued by the Royal Government of Cambodia, and particularly by the Ministry of Labor and Vocational Training. The Project Proponent will ensure that any relevant international convention or government regulation is fully followed.

### **2.3.16 Occupational Safety Assessment (G3.12)**

The SCRP abides by all relevant Cambodian worker's rights laws and regulations. Workers will be informed about their rights at the point of their employment during the employee orientation. Additionally, as described in the Health and Safety plan, during the employee orientation workers will be informed about the potential safety risks of their job and of methods to mitigate the risks. A hard copy of the relevant laws will be kept at the Project Office and any worker is free to consult these any time during working hours.

The SCRP ensures that workers' health and safety are protected to the best of the Project's ability at all times and across all sites. Risks are identified, mitigation strategies produced and appropriate measures adopted in order to minimize any risks.

Given the nature of the Project and its geographical surroundings, it is recognized that certain occupations inherently present a risk to the health and safety of workers, in particular occupations that require spending long periods walking in difficult environments. These include, though not exclusively, plot samplers and forest protection rangers, who are faced with challenging terrain as well as the risk of encountering illegal logger, illegal forest land clearer, and wildlife hunter. In addition, forest fires may also pose a safety risk if they spread rapidly and unexpectedly. The Project has created a comprehensive Health and Safety Plan that ensures that all workers' health and safety is protected, and that all workers are fully informed about workplace risks and safe practices to mitigate those risks. These include training in safe working practices, first aid training for some staff members as well as the enforcement of requirements for safe handling of equipment and other materials. This Health and Safety Plan additionally provides a comprehensive list of the measures that will be taken to inform employees of their rights, to assign roles and responsibilities to supervisors and workers and provide a safe workplace culture. This document will be revisited regularly and revised as needed to ensure that it contains current information and includes all job categories and potential risks. A copy of the plan has been provided to the verifier and will be kept at the Project Office and be readily available for any consultation. In addition, SCRP will set up Health and Safety Fund, the will be sourced from the contribution from the sale of SCRP credit. The fund will be used to compensate Project workers for an accident during their working hours/work mission. The SCRP will ensure a detailed orientation of newly recruited employees so that they are fully aware of their rights as well as responsibilities. All law enforcement rangers and full-time WA Project staff will be provided with full health and life insurance.

## **2.4 Management Capacity**

### **2.4.1 Required Technical Skills (G4.2)**

The key technical skills required to implement the SCRP are an understanding of the science of remote sensing, biomass sampling, and conservation biology, experience implementing community and livelihood development programs, effective forest protection enforcement and monitoring and overall Project management.



The Royal Government of Cambodia's MOE is the lead agency in protected area management and biodiversity conservation. Its staff is trained in Project management, the science of remote sensing, biomass sampling and conservation biology. They have the human resources to support these areas of the SCRCP.

Wildlife Alliance is a leader in forest and biodiversity protection as well as community development. Its staff is highly trained in Project management, the science of remote sensing, biomass sampling and conservation biology. They have the human resources to support these areas of the SCRCP.

Wildlife Works Carbon is one of the leaders in REDD+ Project development. It has staff experienced in REDD+ Project design and implementation. It created and currently manages the first REDD+ Project under the VCS standard. It has the skills to support all REDD+ activities, remote sensing, biomass sampling, biodiversity sampling, Project management and forest protection.

The team of the MOE, Wildlife Alliance and Wildlife Works Carbon, has the skills and resources to successfully implement the SCRCP.

#### **2.4.2 Management Team Experience (G4.2)**

##### **Dr. Tom Gray – Director of Science – Wildlife Alliance – SCRCP Project Lead**

Dr. Tom Gray is a conservation biologist based in South East Asia since 2005. Graduate of the bird-watching mecca that is the [University of East Anglia](#) he first came to Cambodia to undertake PhD work on the conservation and ecology of [Bengal Florican](#) in the Tonle Sap grasslands. He subsequently led the species and protected area work of [WWF Greater Mekong](#) managing conservation research Projects and mentoring local students in Cambodia, [Laos](#), [Thailand](#), [Vietnam](#), and [Myanmar](#). He joined Wildlife Alliance in June 2016. He has authored more than 40 peer-reviewed publications on the status and conservation needs of the regions threatened mammals and birds and is a member of the IUCN Species Survival Commission.

##### **Mr. Brian Williams – Director of Asia – Wildlife Works Carbon – SCRCP Project Lead**

Mr. Brian Williams is an experienced conservationist that has been working in Asia since 1997. With a master's in Environmental Studies from San José State University, Mr. Williams founded Red Panda Network, an organization dedicated to protecting red panda in the wild. He transferred lessons learned from this experience into the development and management of REDD+ Projects in India, Cambodia, Indonesia, and Nepal.

In addition to these managers there is a strong Project team with a wealth of land management and carbon Project experience that will support Project management and implementation.

#### **Wildlife Alliance**

##### **Mr. Romica Gruso – GIS/Monitoring Manager – Wildlife Alliance – SCRCP Monitoring Manager**

A former French Legioner, Mr. Gruso supports carbon monitoring and forest protection. Mr. Gruso has 14 years' experience working in the Southern Cardamom and understands how to work with local communities. He understands the need for following protocols and how to implement protocols with community members.

**Mr. Sokun Hort – Community Engagement Manager – Wildlife Alliance – SCRP Community Engagement lead**

Having worked in the region for the last 10 years, Mr. Hort understand the nuances of local communities and government officials. He will be supporting all community engagement activities for the SCRP.

**Wildlife Works****Mr. Jeremy Freund – VP Carbon Development – Wildlife Works Carbon – SCRP MRV**

Mr. Freund is a global leader in REDD+ Project and program development with over 10 years' experience in international conservation. He co-wrote VCS methodology VM0009, one of the first and most widely used VCS REDD+ methodologies. He has led Wildlife Works in the most validations and verification under the VCS/CCB standard and will lead SCRP monitoring, reporting and verification efforts. Mr. Freund has a B.S. in Aerospace Engineering from CU Boulder and a Masters in Geography from UC Santa Barbara where he focused on remote sensing for agriculture and food security.

**Mr. Simon Bird – Director of Forest Science – Wildlife Works Carbon - SCRP MRV**

Simon has been working in the forest ecology and environmental conservation industry for over 10 years. Simon has a B.S. in Environmental Science and a M.S. in Soil Science from the University of Vermont. Simon works in the Carbon Development department at Wildlife Works Carbon's San Francisco California office. There, he assists with the development of REDD+ Projects, including validation and verification and monitoring, reporting and verification (MRV) for existing REDD+ Projects. Simon's duties include overseeing biomass sampling methods and protocols, forest modeling, and technical writing and reporting for both the VCS and CCB standards. Simon has additionally participated in the revision process of VCS REDD methodology VM0009.

**2.4.3 Project Management Partnerships/Team Development (G4.2)**

All relevant Project management experience is present in the current SCRP partners.

**2.4.4 Financial Health of Implementing Organization(s) (G4.3)**

The Project Proponent is the Royal Government of Cambodia's Ministry of Environment, which is a government supported administrative unit. The development of the Project has been primarily supported by fundraising from Wildlife Alliance. Additionally, MOE receives an annual budget support from the central government. The Project Proponent is also supported by Wildlife Works in the development of the Project. Wildlife Works is experienced at marketing and sales of REDD+ credits in the global market. It has used this applied experience to make conservative estimates for expected annual credit sales for the SCRP.

Moreover, the Project Proponent, Wildlife Alliance and Wildlife Works' combined REDD+ Project development experience (5 successful prior VCS/CCB validated & verified Projects) contributed to the creation of a detailed financial model for the development and management of the SCRP. Predicted credit sales and an accurate estimated annual budget demonstrate sufficient cash flow from predicted contracted sales to sustain the Project through the end of the crediting period. The Project Proponent has already received grants to fund Project design and start-up costs. Documents supporting these investments will be produced for the Project auditor to review.

#### **2.4.5 Avoidance of Corruption and Other Unethical Behavior (G4.3)**

In order to provide avoidance of corruption, a separate limited liability corporation has been created by MOE and WA to manage the funds of the Project. This company, called the Cardamom Carbon Company (CCC), is based in the United States and under the management authority of Wildlife Alliance. There are two agreements, the CCC Agency of Delegation Agreement and Southern Cardamom Project Agreement, that outline Project benefit sharing and ensure transparent financial transactions of the Project. These documents were shared with the validator.

#### **2.4.6 Commercially Sensitive Information (Rules 3.5.13 – 3.5.14)**

Some information required by the VCS and/or CCB standards is confidential or sensitive in nature, and cannot be released publicly by the Royal Government of Cambodia. This information has been supplied freely to the VVB as annexes to this PD document, but will not be included in the public versions of the PD. All efforts have been made by the Project Proponent to make as much information freely available to the public as conceivably possible. All necessary supporting information shall be provided to the validator, but may not be distributed publicly.

### **2.5 Legal Status and Property Rights**

#### **2.5.1 Recognition of Property Rights (G5.1)**

Under Order 001 all land in the Project Zone has been titled and all property clearly delineated. As such, the Project works with communities to clarify property zones and demarcate boundaries between separate property types. This is an important Project activity that avoid land tenure conflicts.

#### **2.5.2 Free, Prior and Informed Consent (G5.2)**

The Project will not encroach uninvited on private property, community property or government property. Land tenure of the Project Area is outlined in the SCRP PD Section 2.3.7 Furthermore, Section 2.3 of the SCRP PD outlines the comprehensive procedure of FPIC activities which ensures that all stakeholders and communities are consulted.

#### **2.5.3 Property Right Protection (G5.3)**

The Project does not require involuntary removal or relocation of communities or any activities important for their livelihood and culture.

#### **2.5.4 Identification of Illegal Activity (G5.4)**

The PA is comprised of two protected areas under the jurisdiction of the MOE, and as such is protected from deforestation activities. Under the Cambodian Land Law and Forestry Law the forest should be protected from resource extraction or conversion to other land uses. However, these activities are commonly observed to be occurring, including illegal logging, charcoal production, poaching for meat, and conversion of forestland through slash and burn to agricultural land. These activities are all illegal under current law, and despite the MOE's best efforts at controlling them to date, they are still widely and openly occurring.

All of the above listed illegal activities could have negative effects on the SCRP's climate and biodiversity goals. The SCRP has included expanding the ranger force, strengthening community organizations, agricultural intensification, microfinance, strengthening forest land use planning and secure forest land tenure, eco-charcoal and income generating activities, such as the resin enterprise as well as

deforestation-free commodities in the Project design to reduce the occurrence of these illegal activities. This will include firstly, increased protections for the PA, and enforcement of the PA boundary against these illegal incursions. Additionally, increased efforts at confiscations of chainsaws and other logging equipment being used illegally with-in the PA will reduce the illegal activity. The strengthening of community organizations will give local organizations the ability to protect community lands and stop the flow of migrants into the PA. By conducting training on agricultural intensification, providing micro-finance, and supporting local businesses the goal is to generate alternative income to abate illegal activities within the PA. The aim is that the diversification of incomes will overtime shift the local economy from one of unsustainable to sustainable use.

### **2.5.5 Ongoing Disputes (G5.5)**

There are some minor conflicts or disputes in the SCR Project Zone between the communities. Some communities have had minor conflicts or disputes over the land, territory or resources in the Project Area during the last 20 years, all based on uncertain land tenure rights. This has been especially true in the Project community of Teuk Laak. Additionally, illegal land clearing and intrusion by outsiders has, and continues to, occur causing some levels of conflicts between specific local individuals and MOE.

The Project has committed to working with these communities to identify the boundaries of their lands, and to assist them in acquiring official tenure to them. One of the Project Activities (Section 2.2) that has been implemented is specifically targeted at helping these communities do this. These activities are designed to enable communities to gain the evidence needed to prove ownership of their lands and gain tenure, therefore there is no potential for the Project to prejudice any decision or outcome of a dispute through its activities. As the determination of land tenure and resolution of any disputes over tenure is made by the relevant RGC land registry ministry in accordance with national and local laws.

### **2.5.6 National and Local Laws (G5.6)**

The SCR Project meets all local, national and international laws that are relevant to this Project. These laws include the aforementioned Employment laws, as well the additional laws outlined below.

#### **Law on Environmental Protection and Natural Resources Management (1996)**

The Objective of this law is to protect and upgrade the environment quality and public health by means of prevention, reduction and control of pollution; to assess the environmental impacts of all proposed Projects prior to the issuance of decision by the Royal Government; to ensure the rational and sustainable preservation, development, management and the use of the natural resources of the Kingdom of Cambodia; to encourage and provide possibility to public to participate in the protection of environment and the management of the natural resources.

The mechanism for implementing this law is through the National Environmental Plan.

#### **The Land Law (2002)**

The Land Law classifies the different types of property and ownership rights in Cambodia: (1) State Public Property, (2) State Private Property, and (3) Private property:

1. State Public Property: According to the Articles 15 & 16 of this law, State Public Property is land held by the State which carries a public interest use. State Public Property includes properties of a natural origin, such as the Permanent Forest Reserve. State Public Property cannot be sold or

transferred to other legal entities, although it may be subject to rights of occupancy or use that are temporary in nature (such as a logging concession in the Permanent Forest Reserve).

2. **State Private Property:** Under Article 17, State Private Property is land that is owned by the State or public entities that do not have a public interest use (i.e. owned by the state or public entity, but does not fit the definition of State Public Property as mentioned above). In addition, State Private Property can be described as excess or idle land that is held by the State or public entities. State Private Property may actually be sold or transferred to other legal entities, such as use for social or economic land concessions.
3. **Private Property:** Private property is property owned by natural persons or legal entities other than the State or public entities. Private property can be owned by individuals, collectives or business organizations/associations.

### **The Forestry Law (2002)**

The Forestry Law is an important sector-specific law that defines the management framework for harvesting, use, development, conservation, and protection of forests in Cambodia. It aims to ensure sustainable forest management and customary user rights of forest resources for indigenous and local communities. Reaffirming the Constitution, the Forestry Law provides that all forests (referred to as the Permanent Forest Estate), belong to the State, noting that there is currently a lack of proper demarcation of Cambodia's forest estate. The Permanent Forest Estate is divided as follows:

Permanent Forest Reserves are State Public Property and fall under the jurisdiction of the Forestry Administration (FA) which is housed the Ministry of Agriculture, Forestry and Fisheries (MAFF). According to the Forestry Law, the Permanent Forest Estate is defined as all forested land within the Kingdom of Cambodia. Generally, all categories of forests fall within the definition of the Permanent Forest Reserves - including forests that occur on private lands, flooded forests, wetland forests and mangrove forests. However, while all these forests are under the jurisdiction of the FA, wetland and mangrove forests outside the Protected Areas (PA) are under the jurisdiction of the Fisheries Administration (FA) of the MAFF. Permanent Forest Reserves consist of three sub-categories:

1. Production Forests,
2. Protection Forests and
3. Conversion Forests. Production Forests are forests that are managed primarily for the sustainable production of timber and non-timber forest products. In these forests, protection is a secondary objective.

The Production Forests include Forest Concessions and Community Forests. Areas under Production Forests include those forests where harvesting is permitted (e.g. annual bidding coupes for domestic wood supply), degraded forests, forests to be rehabilitated, and forests reserved for regeneration or plantation. The government may grant an area of production forest, not under use, to a forest concession through public bidding consistent with the National Forest Management Plan and after consultation with concerned ministries, local authorities and communities. However, from January 2002, the RGC issued a Declaration on the Suspension of Forest Concession Logging in the country. Community forests are forests owned by the state that have been allocated to communities under a 15-year renewable agreement. The primary goal of community forests is to protect and rehabilitate forests and to enhance the sustainable use of forest resources by local communities.

Private Forests are those that are individually owned and these forests are managed by the owners for a range of benefits. The owners have the free will to utilize these forests the way they deem fit and in addition, forest carbon in private forests belongs to the owners. Land within the Permanent Forest Estate can also be zoned as a Protected Area. Protected Areas fall under the jurisdiction of the Ministry of Environment (MOE); applicable law includes the Protected Area Act 2008 and the Environmental Protection and Natural Resource Management Law 1996.

**Protected Area Law (2008)**

Provides the Ministry of Environment the authority to manage all protected areas in Cambodia. It lists the type of protected areas under MOE's purview as:

1. National Park
2. Wildlife sanctuary
3. Protected landscape
4. Multiple use area
5. Ramsar site
6. Biosphere reserve
7. Natural heritage site
8. Marine park

It also states that protected areas shall be defined by a sub-decree. The law the process why which protected areas can be created or altered.

**The Cambodian Community Forestry Sub-Decree (2003)**

The National Forestry Program aims to register 1000 community forestry groups nationally and cover two million hectares by 2030. To achieve this target the government adopted various guidelines and policies to support the development of community forests such as the community forestry sub-decree, community forestry guideline, and national community forestry program.

**Declaration on Classification and List of Wildlife Species NO: 020 PR.MAFF (2007)**

This declaration lists and classifies all wild species in Cambodia. The decree groups species into three main categories, endangered, rare and common. The decree also declares that all wild species are technically owned by the State and are protected under this provision.

**Code of Criminal Procedure adopted by COM**

The purpose of the criminal code is to define the rule of law in Cambodia. It distinguishes what is a criminal and civil action and set the rule of law in Cambodia. The Project Proponent uses it to enforce protection of forests in the SCRP.



### 3 CLIMATE

#### 3.1 Monitoring GHG Emission Reductions and Removals

##### 3.1.1 Data and Parameters Available at Validation

Data Unit / Parameter:	RL
Data unit:	%
Description:	The annual deforestation rate for Cambodia
Source of data:	Reference area and historic reference period
Value applied:	2.38
Justification of choice of data or description of measurement methods and procedures applied:	Data source is the Royal Government of Cambodia Ministry of Environment submission to the UNFCCC technical committee (Ministry of Environment, 2016)
Purpose of Data:	Determination of baseline scenario
Any comment:	Based on Cambodian national forest reference emission level (FREL) data.

Data Unit / Parameter:	$\alpha$
Data unit:	unitless
Description:	Effect of time on the cumulative proportion of conversion over time for the Project Accounting Area
Source of data:	Reference area and historic reference period
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	Time and place in which the logistic model is fit
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not Used

Data Unit / Parameter:	$\beta$
Data unit:	unitless
Description:	Effect of time on the cumulative proportion of conversion over time for the Project Accounting Area
Source of data:	Reference area and historic reference period
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	Time and place in which the logistic model is fit
Purpose of Data:	Determination of baseline scenario

Any comment:	Parameter not Used
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Data Unit / Parameter:	$\gamma$
Data unit:	days
Description:	Time shift from beginning of historic reference period to Project start date
Source of data:	Historic reference period
Value applied:	
Justification of choice of data or description of measurement methods and procedures applied:	
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not Used

Data Unit / Parameter:	$\theta$
Data unit:	unitless
Description:	Effect of certain covariates on the cumulative proportion of conversion over time
Source of data:	Reference area and historic reference period
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	Time and place in which the logistic model is fit
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used

Data Unit / Parameter:	$\lambda_{soc}$
Data unit:	proportion (unitless)
Description:	Exponential soil carbon decay parameter
Source of data:	Value from the literature. Davidson, E., and Ackerman, I. 1993. Changes in soil carbon inventories following cultivation of previously untilled soils. Biogeochemistry, 20(3), 161-193.
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	Soil carbon is not an included carbon pool.
Purpose of Data:	Determination of baseline emissions

Any comment:	Parameter not Used
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Data Unit / Parameter:	$\hat{\sigma}_{EM}$
Data unit:	standard deviation (unitless)
Description:	The estimated standard deviation of the state observations used to fit the logistic function for the Project Accounting Area BEM
Source of data:	Remote sensing image interpretation
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	As the BEM is not used for the determination of the baseline scenario this parameter cannot be calculated.
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not Used

Data Unit / Parameter:	$\mathcal{B}$
Data unit:	set
Description:	The set of all selected carbon pools in biomass. Is a subset of $\mathcal{C}$
Source of data:	PD
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018.
Purpose of Data:	Determination of baseline scenario
Any comment:	

Data Unit / Parameter:	$\mathcal{C}$
Data unit:	set
Description:	The set of all selected carbon pools
Source of data:	Monitoring records
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure

	Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018.
Purpose of Data:	Calculation of baseline emissions
Any comment:	

Data Unit / Parameter:	<i>J</i>
Data unit:	set
Description:	The set of all observations of conversion. When superscripted with a monitoring period, the conversion observations are taken for leakage analysis.
Source of data:	Remote sensing image interpretation or field observations in the leakage area.
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Calculation of baseline emissions
Any comment:	Parameter not Used as the BEM is not used, and leakage monitoring does not utilize remote sensing methods.

Data Unit / Parameter:	<i>M</i>
Data unit:	set
Description:	The set of all monitoring periods
Source of data:	Monitoring records
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Calculation of baseline emissions
Any comment:	

Data Unit / Parameter:	<i>T</i>
Data unit:	ha
Description:	The set of all species/categories of livestock
Source of data:	Monitoring records
Value applied:	N/A
Justification of choice of data or description of	N/A

measurement methods and procedures applied:	
Purpose of Data:	Determination of baseline emissions
Any comment:	Parameter not used

Data Unit / Parameter:	$A_{PAA}$
Data unit:	ha
Description:	Area of Project Accounting Area
Source of data:	GIS analysis prior to sampling
Value applied:	442,870.85
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018.
Purpose of Data:	Calculation of baseline emissions
Any comment:	

Data Unit / Parameter:	$A_{PX}$
Data unit:	ha
Description:	Area of proxy area for the Project Accounting Area
Source of data:	GIS analysis prior to sampling
Value applied:	27,717.7
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018.
Purpose of Data:	Calculation of baseline emissions
Any comment:	

Data Unit / Parameter:	$A_{ASL}$
Data unit:	ha
Description:	Area of the Activity-Shifting Leakage Area
Source of data:	GIS / remote sensing analysis prior to sampling

Value applied:	43,883
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the SCRPs standard operating procedure “Annex 07 - Standard Operating Procedure_Densimeter Forest Leakage v4_02112016”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018.
Purpose of Data:	Boundary for placement of activity-shifting leakage plots
Any comment:	Immaterial to measurement of emissions from activity-shifting leakage.

Data Unit / Parameter:	$C_{Lp}$
Data unit:	tCO <sub>2</sub> e/ha
Description:	Carbon stocks in Project leakage area
Source of data:	Leakage area sampling
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018.
Purpose of Data:	Calculation of baseline emissions
Any comment:	Parameter not used

Data Unit / Parameter:	$f_{LSi}$
Data unit:	kg CH <sub>4</sub> head <sup>-1</sup> yr <sup>-1</sup>
Description:	Emission factor for the defined livestock population, <i>i</i>
Source of data:	IPCC default values
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	Obtained directly from IPCC default values
Purpose of Data:	Determination of baseline emissions
Any comment:	Parameter not used

Data Unit / Parameter:	<i>m</i>
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Data unit:	tCO <sub>2</sub> e/ha
Description:	Average carbon in merchantable trees cut each year as a result of legally-sanctioned commercial logging
Source of data:	Timber harvest plans or measurement of carbon stocks in merchantable trees in the Project Accounting Area.
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	Should use the most accurate of the two data sources if both are available
Purpose of Data:	Determination of baseline emissions
Any comment:	Parameter not used

Data Unit / Parameter:	$n_d$
Data unit:	unitless
Description:	Number of spatial points in the Forest Project Accounting Area reference area
Source of data:	Remote sensing image interpretation
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used as BEM was not used.

Data Unit / Parameter:	$o_i$
Data unit:	unitless
Description:	State observation for the $i^{th}$ sample point in the Project Accounting Area reference area
Source of data:	Remote sensing image interpretation
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Calculation of baseline emissions
Any comment:	Parameter not used as BEM was not used.

Data Unit / Parameter:	$P_{LME}$
Data unit:	unitless

Description:	Portion of leakage related to market
Source of data:	VCS methodology VM0009 Section 8.3.3
Value applied:	0.74%
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018.
Purpose of Data:	Calculation of leakage
Any comment:	

Data Unit / Parameter:	$q$
Data unit:	days
Description:	Lag between start of degradation and conversion
Source of data:	Expert knowledge, results from the PRA or reports from peer-reviewed literature
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	Commonly accepted methods in the social sciences, choice determined and justified by Project Proponent
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used

Data Unit / Parameter:	$r_{CFb}$
Data unit:	unitless
Description:	Carbon fraction of biomass for burned wood or herbaceous material $b$
Source of data:	Literature estimates or direct measurement
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	No burning of wood or herbaceous material in Project
Purpose of Data:	Calculation of baseline emissions
Any comment:	Parameter not used

Data Unit / Parameter:	$r_{RS}$
Data unit:	unitless

Description:	Expansion factor for above-ground biomass to below-ground biomass (root/shoot ratio)
Source of data:	IPCC Guidelines for National Greenhouse Gas Inventories, 2006, Volume 4: Agriculture, Forestry and Other Land Use, Chapter 4: Forest Land, Table 4.4
Value applied:	0.37
Justification of choice of data or description of measurement methods and procedures applied:	IPCC default value for Tropical rainforest
Purpose of Data:	Calculation of baseline emissions
Any comment:	

Data Unit / Parameter:	$r_U$
Data unit:	unitless
Description:	Onset proportion of conversion immediately adjacent to Project area
Source of data:	GIS analysis and image interpretation
Value applied:	19.06%
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 section 6.17 and the SCRPs standard operating procedures. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018.
Purpose of Data:	Determination of baseline scenario
Any comment:	

Data Unit / Parameter:	$t$
Data unit:	days
Description:	Time since Project start date
Source of data:	Monitoring records
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used

Data Unit / Parameter:	$t_i$
Data unit:	days
Description:	The point in time of the observation made at point $i$

Source of data:	Remote sensing image interpretation
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used

Data Unit / Parameter:	$t_{PA}$
Data unit:	days
Description:	Time prior to the Project Start Date when the primary agent began commercial logging in the Project Accounting Area.
Source of data:	Harvest plans prepared for the Project Accounting Area, or by public record
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used

Data Unit / Parameter:	$t_m$
Data unit:	days
Description:	Length of Project or logging in baseline scenario
Source of data:	PD
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used

Data Unit / Parameter:	$t_{PL}$
Data unit:	days
Description:	Length of Project crediting period
Source of data:	PD
Value applied:	10,957
Justification of choice of data or description of	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 section 6 and the SCRP's

measurement methods and procedures applied:	standard operating procedures. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018.
Purpose of Data:	Determination of baseline scenario
Any comment:	

Data Unit / Parameter:	$t_{PAI}$
Data unit:	days
Description:	Number of days after the Project start date for the start of a Project activity instance in a grouped Project
Source of data:	PD
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used

Data Unit / Parameter:	$w_i$
Data unit:	unitless
Description:	weight applied to the $i^{th}$ sample point in the Project Accounting Area reference area
Source of data:	Remote sensing image interpretation
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Determination of baseline scenario
Any comment:	

Data Unit / Parameter:	$x$
Data unit:	unitless
Description:	Covariate values
Source of data:	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery
Value applied:	N/A
Justification of choice of data or description of	Should use the most accurate of the data sources if both are available

measurement methods and procedures applied:	
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used as BEM not used

Data Unit / Parameter:	$x_i$
Data unit:	geographic coordinates
Description:	Latitude of the $i^{th}$ sample point
Source of data:	Remote sensing image interpretation
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used as BEM not used

Data Unit / Parameter:	$x_o$
Data unit:	unitless
Description:	Covariate values as of the Project start date
Source of data:	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery
Value applied:	
Justification of choice of data or description of measurement methods and procedures applied:	Should use the most accurate of the data sources if both are available
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used as BEM not used

Data Unit / Parameter:	$x_{SA}$
Data unit:	unitless
Description:	Covariate values as of the arrival of the secondary agents
Source of data:	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery
Value applied:	N/A
Justification of choice of data or description of	Should use the most accurate of the data sources if both are available



measurement methods and procedures applied:	
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used as BEM not used

Data Unit / Parameter:	$y_i$
Data unit:	geographic coordinates
Description:	Longitude of the $i^{th}$ sample point
Source of data:	Remote sensing image interpretation
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used as BEM not used

Data Unit / Parameter:	$y_{j,t}$
Data unit:	tonne / ha
Description:	Yield for non-aromatic rice
Source of data:	Literature
Value applied:	3.117
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was calculated using data from the World Bank and Royal Government of Cambodia. Wildlife Works was responsible for gathering this parameter from the literature. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	$y_{j,t}$
Data unit:	tonne / ha
Description:	Yield for maize
Source of data:	Cambodian Agriculture in Transition: Opportunities and Risks. Economic and Sector Work, Report no 96308-KH
Value applied:	4.414
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was calculated using data from the World Bank and Royal Government of Cambodia. Wildlife Works was responsible for gathering this parameter from the literature. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.

Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	$y_{j,t}$
Data unit:	tonne / ha
Description:	Yield for pumpkins (value for vegetables used)
Source of data:	Cambodian Agriculture in Transition: Opportunities and Risks. Economic and Sector Work, Report no 96308-KH
Value applied:	7.597
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was calculated using data from the World Bank and Royal Government of Cambodia. Wildlife Works was responsible for gathering this parameter from the literature. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	$y_{j,t}$
Data unit:	m <sup>3</sup> / ha
Description:	Yield for sawlogs
Source of data:	Forest Degradation in Cambodia: An Assessment of Monitoring Options in the Central Cardamom Protected Forest. Halperin and Turner (2013)
Value applied:	525
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was calculated using data from the World Bank and Royal Government of Cambodia. Wildlife Works was responsible for gathering this parameter from the literature. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	<b>H</b>
Data unit:	Number
Description:	Number of historical reference years
Source of data:	Jurisdictional program description or based on data availability
Value applied:	1
Justification of choice of data or description of	The project's historical reference period is 2006-2014. The commodity yield data sources were limited to that of 2012 and

measurement methods and procedures applied:	2013. Justification of the accuracy and conservativeness of this data has been provided to the auditor.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	$r_j$
Data unit:	%
Description:	Annual percent increase in yield
Source of data:	VCS VMD0037 Global Commodity Leakage Module: Production Approach
Value applied:	2.5
Justification of choice of data or description of measurement methods and procedures applied:	This parameter is the default value for the annual percent increase in yield for a country. Wildlife Works was responsible for gathering this parameter from the literature. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	$PD_j$
Data unit:	%
Description:	Percent of area where deforestation was avoided that would have been used for production of non-aromatic rice
Source of data:	Census of Agriculture in Cambodia 2013, National Institute of Statistics, Ministry of Planning in Collaboration with Ministry of Agriculture, Forestry and Fisheries
Value applied:	95
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was calculated using data from the World Bank and Royal Government of Cambodia. Wildlife Works was responsible for gathering this parameter from the literature. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	$PD_j$
Data unit:	%
Description:	Percent of area where deforestation was avoided that would have been used for production of maize

Source of data:	Census of Agriculture in Cambodia 2013, National Institute of Statistics, Ministry of Planning in Collaboration with Ministry of Agriculture, Forestry and Fisheries
Value applied:	3
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was calculated using data from the World Bank and Royal Government of Cambodia. Wildlife Works was responsible for gathering this parameter from the literature. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	$PD_j$
Data unit:	%
Description:	Percent of area where deforestation was avoided that would have been used for production of pumpkins
Source of data:	Census of Agriculture in Cambodia 2013, National Institute of Statistics, Ministry of Planning in Collaboration with Ministry of Agriculture, Forestry and Fisheries
Value applied:	2
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was calculated using data from the World Bank and Royal Government of Cambodia. Wildlife Works was responsible for gathering this parameter from the literature. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	$PD_j$
Data unit:	%
Description:	Percent of area where deforestation was avoided that would have been used for production of sawlogs
Source of data:	Conservative estimate based on expert knowledge
Value applied:	100
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was calculated using a conservative estimate based on the expert knowledge of the Project partners. Wildlife Works was responsible for gathering this parameter from the literature. All measurements were made during 2017 and 2018.

	Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	<b><i>IS</i></b>
Data unit:	%
Description:	Proportion of leakage resulting in increased supply outside the jurisdiction
Source of data:	VCS Global Leakage Module VMD0037 Default value
Value applied:	75
Justification of choice of data or description of measurement methods and procedures applied:	This parameter is the default value as required by the VCS Global Leakage module VMD0037. For background information on the default value see Appendix 2.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	<b><i>NL</i></b>
Data unit:	%
Description:	Proportion of increased supply coming from new land brought into production
Source of data:	VCS Global Leakage Module VMD0037 Default value
Value applied:	40
Justification of choice of data or description of measurement methods and procedures applied:	This parameter is the default value as required by the VCS Global Leakage module VMD0037. For background information on the default value see Appendix 2.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	<b><i>NLD</i></b>
Data unit:	%
Description:	Proportion of new land brought into agricultural production resulting in deforestation
Source of data:	VCS Global Leakage Module VMD0037 Default value
Value applied:	100
Justification of choice of data or description of measurement methods and procedures applied:	This parameter is the default value as required by the VCS Global Leakage module VMD0037. For background information on the default value see Appendix 2.
Purpose of Data:	Calculation of Leakage

Any comment:	
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Data Unit / Parameter:	$d_a$
Data unit:	ha
Description:	Cambodia area of deforestation 2006-2014
Source of data:	Data source is the Royal Government of Cambodia Ministry of Environment submission to the UNFCCC technical committee (Ministry of Environment, 2016)
Value applied:	2,319,087
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was calculated using data from the Royal Government of Cambodia. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	$g_a$
Data unit:	ha
Description:	Global deforestation 2006-2014
Source of data:	FAOSTAT, Food and Agriculture Organization
Value applied:	93,666,489.50
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was calculated using data from the FAO Stat data service. Wildlife Works was responsible for gathering this parameter from the online database. All measurements were made from the period 1961 to 2018. Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	$d_{cs}$
Data unit:	Tonnes C
Description:	Cambodia at-risk Carbon stock
Source of data:	Data source is the Royal Government of Cambodia Ministry of Environment submission to the UNFCCC technical committee (Ministry of Environment, 2016)
Value applied:	193,796,061.55
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was calculated using data from the Royal Government of Cambodia. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.



Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	$g_{cs}$
Data unit:	Tonnes C
Description:	Global at-risk Carbon stock
Source of data:	FAOSTAT, Food and Agriculture Organization
Value applied:	8,273,299,406.45
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was calculated using data from the FAO Stat data service. Wildlife Works was responsible for gathering this parameter from the online database. All measurements were made from the period 1961 to 2018. Accuracy level achieved is good, and is associated with the quality of the
Purpose of Data:	Calculation of Leakage
Any comment:	

Data Unit / Parameter:	$R_d$
Data unit:	ha
Description:	Cambodia area in other REDD+ Projects
Source of data:	The relevant Project Documents for each REDD+ project
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Calculation of Leakage
Any comment:	Parameter not used. Conservative default value from VMD00037 used.

Data Unit / Parameter:	$R_{cs}$
Data unit:	Tonnes C
Description:	Cambodia carbon stock in other REDD+ Projects
Source of data:	The relevant Project Documents for each REDD+ project
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied:	N/A
Purpose of Data:	Calculation of Leakage
Any comment:	Parameter not used. Conservative default value from VMD00037 used.

3.1.2 Data and Parameters Monitored

MRR.85 List of parameters from Appendix H, their values and the time last measured.

MRR.86 Quality assurance and quality control measures employed for each.

MRR.87 Description of the accuracy of each.

Data Unit / Parameter:	$w^{[m]}$
Data unit:	set
Description:	The set of all burned wood or herbaceous material
Source of data:	Monitoring records
Description of measurement methods and procedures to be applied:	N/A
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of Project emissions
Calculation method:	N/A
Any comment:	Parameter not used

Data Unit / Parameter:	$A_{B \Delta PAA}^{[m]}$
Data unit:	ha
Description:	Area of avoided conversion
Source of data:	Generated from equation
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.3.3.4
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of Project emissions

Calculation method:	Equation [F.52]
Any comment:	Parameter not used as BEM was not used

Data Unit / Parameter:	$A_{P1}^{[m=0]}$
Data unit:	ha
Description:	Area of Project Accounting Area stratum 1 prior to first verification event – Evergreen Forest
Source of data:	GIS analysis prior to sampling
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 section 6.2. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the limits of Arc GIS software and quality of the shapefiles.
Frequency of monitoring/recording:	First monitoring period
Value applied:	425,078
Monitoring equipment:	Computer with ArcGIS software
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 and the VCS standard. This includes a review of the GIS products and visual assessments of the accuracy of the shapefiles.
Purpose of data:	Calculation of baseline emissions
Calculation method:	GIS analysis
Any comment:	

Data Unit / Parameter:	$A_{P2}^{[m=0]}$
Data unit:	ha
Description:	Area of Project Accounting Area stratum 2 prior to first verification event – Deciduous Forest
Source of data:	GIS analysis prior to sampling
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 section 6.2.

	Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the limits of Arc GIS software and quality of the shapefiles.
Frequency of monitoring/recording:	First monitoring period
Value applied:	17,793
Monitoring equipment:	Computer with ArcGIS software
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 and the VCS standard. This includes a review of the GIS products and visual assessments of the accuracy of the shapefiles.
Purpose of data:	Calculation of baseline emissions
Calculation method:	GIS analysis
Any comment:	

Data Unit / Parameter:	$B_b^{[m]}$
Data unit:	tonnes
Description:	Biomass in burned wood or herbaceous material <i>b</i>
Source of data:	Measurements of biomass
Description of measurement methods and procedures to be applied:	Scale
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Summation
Any comment:	Parameter not Used, no biomass burning in Project

Data Unit / Parameter:	$C_B^{[m]}$
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Data unit:	tCO2e/ha
Description:	Baseline carbon stocks at the end of the current monitoring period for the Project Accounting Area
Source of data:	Proxy area sampling
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Section 6.4 and Appendix B.4 and the SCRP's standard operating procedures "Standard Operating Procedure Cardamom - Forest Inventory" and "Standard Operating Procedure Cardamom – Proxy Area". Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	1.61
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [B.33]
Any comment:	

Data Unit / Parameter:	$C_{B\ BGB}^{[m]}$
Data unit:	tCO2e
Description:	Carbon not decayed in BGB at the end of the current monitoring period
Source of data:	Proxy area sampling
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 v3 Section 8.1.7

Frequency of monitoring/recording:	Every monitoring period
Value applied:	
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.32], [F.16]
Any comment:	Parameter omitted due to superseding of BEM by national FREL

Data Unit / Parameter:	$C_{B\ DW}^{[m]}$
Data unit:	tCO2e
Description:	Carbon not decayed in DW at the end of the current monitoring period
Source of data:	Proxy area sampling
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 v3 Section 8.1.6
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.36], [F.16]
Any comment:	Carbon pool not included

Data Unit / Parameter:	$C_{B\ SOC}^{[m]}$
Data unit:	tCO2e
Description:	Carbon not decayed in SOC at the end of the current monitoring period
Source of data:	Proxy area sampling

Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.1.5
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	[F.16]
Any comment:	Carbon pool not included

Data Unit / Parameter:	$C_{BWP}^{[m]}$
Data unit:	tCO <sub>2</sub> e
Description:	Carbon not decayed in WP at the end of the current monitoring period
Source of data:	Proxy area sampling
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Appendix C
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equations [C.1], [F.16]
Any comment:	Carbon pool not included

Data Unit / Parameter:	$C_{BAGMT}^{[m]}$
Data unit:	tCO <sub>2</sub> e/ha
Description:	Baseline carbon stocks in above-ground merchantable trees at the end of the current monitoring period
Source of data:	Proxy area sampling



Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 v3 Appendix B.2.1
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Weighted per ha average
Any comment:	Carbon pool not included

Data Unit / Parameter:	$C_{B\ BGMT}^{[m]}$
Data unit:	tCO <sub>2</sub> e/ha
Description:	Baseline carbon stocks in below-ground merchantable trees at the end of the current monitoring period
Source of data:	Proxy area sampling
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 v3 Appendix B.2.1
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Weighted per ha average
Any comment:	Carbon pool not included

Data Unit / Parameter:	$C_{P\ AGMT}^{[m=0]}$
Data unit:	tCO <sub>2</sub> e
Description:	Project carbon stocks in above-ground merchantable trees at Project start
Source of data:	Project accounting area sampling

Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 v3 Appendix B.2.1
Frequency of monitoring/recording:	At Project start
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Summation across plots
Any comment:	Carbon pool not included

Data Unit / Parameter:	$C_{P\ BGMT}^{[m=0]}$
Data unit:	tCO <sub>2</sub> e
Description:	Project carbon stocks in below-ground merchantable trees at Project start
Source of data:	Project accounting area sampling
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 v3 Appendix B.2.3
Frequency of monitoring/recording:	At Project start
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Summation across plots
Any comment:	Carbon pool not included

Data Unit / Parameter:	$C_{B\ b}^{[m]}$
Data unit:	tCO <sub>2</sub> e / ha
Description:	Baseline scenario average carbon stock in selected carbon pools
Source of data:	Proxy area sampling

Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.1.5 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	See Annex 11 – Carbon Inventory – Proxy Area
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QA/QC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equations [B.33] and [B.34]
Any comment:	

Data Unit / Parameter:	$C_{B\ BM}^{[m]}$
Data unit:	tCO <sub>2</sub> e / ha
Description:	Baseline carbon stocks in biomass at the end of the current monitoring period for the Project Accounting Area
Source of data:	Proxy area sampling
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.1.1.1 and Appendix B.2 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level

	achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	1.61
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.18]
Any comment:	

Data Unit / Parameter:	$c_{B SOC}^{[m]}$
Data unit:	tCO2e/ha
Description:	Baseline soil carbon stocks at the end of the current monitoring period for the Forest Project Accounting Area
Source of data:	Proxy area sampling
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 v3 Appendix B.2.6
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.32]
Any comment:	Carbon pool not included in Project

Data Unit / Parameter:	$c_P^{[m]}$
Data unit:	tCO2e / ha

Description:	Project carbon stocks at the end of the current monitoring period for the Forest Project Accounting Area
Source of data:	Project accounting area sampling
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.1.5 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	425.31
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equations [B.33] and [B.34]
Any comment:	

Data Unit / Parameter:	$c_p^{[m-1]}$
Data unit:	tCO2e / ha
Description:	Project carbon stocks at the beginning of the current monitoring period
Source of data:	Project accounting area sampling
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.1.5 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure

	Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	425.31
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equations [B.33] and [B.34]
Any comment:	

Data Unit / Parameter:	$c_p^{[m=0]}$
Data unit:	tCO2e / ha
Description:	Project carbon stocks prior to first verification event for the Project Accounting Area
Source of data:	Project accounting area sampling
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.1.5 and the SCRP’s standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	425.31

Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equations [B.33] and [B.34]
Any comment:	

Data Unit / Parameter:	$C_{P1BM}^{[m=0]}$
Data unit:	tCO2e / ha
Description:	Project carbon stocks in biomass in Project Accounting Area stratum 1 at Project start – Evergreen Forest
Source of data:	Project accounting area sampling
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.2 and the SCRPs standard operating procedures "Standard Operating Procedure Cardamom - Forest Inventory" and "Standard Operating Procedure Cardamom – Proxy Area". Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Prior to first monitoring event
Value applied:	431.45
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions



Calculation method:	Equation [F.23]
Any comment:	

Data Unit / Parameter:	$C_{P2BM}^{[m=0]}$
Data unit:	tCO <sub>2</sub> e / ha
Description:	Project carbon stocks in biomass in the Project Accounting Area stratum 2 at Project start – Deciduous Forest
Source of data:	Project accounting area sampling
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.2 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Prior to first monitoring event
Value applied:	285.38
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.23]
Any comment:	

Data Unit / Parameter:	$C_{PAGMT}^{[m=0]}$
Data unit:	tCO <sub>2</sub> e / ha

Description:	Project carbon stocks in above-ground merchantable trees prior to first verification event
Source of data:	Project accounting area sampling
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Appendix B.2
Frequency of monitoring/recording:	Prior to first monitoring event
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Average of plot measurements in a given stratum
Any comment:	Carbon pool not included

Data Unit / Parameter:	$C_{PBM}^{[m=0]}$
Data unit:	tCO <sub>2</sub> e
Description:	Project carbon stocks in biomass prior to first verification event
Source of data:	Project accounting area sampling
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.2 and the SCRP's standard operating procedures "Standard Operating Procedure Cardamom - Forest Inventory" and "Standard Operating Procedure Cardamom – Proxy Area". Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Prior to first monitoring event
Value applied:	188,359,161.76
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This

	includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.17]
Any comment:	

Data Unit / Parameter:	$c_{Pb}^{[m]}$
Data unit:	tCO2e / ha
Description:	Average carbon in biomass in the Project accounting area
Source of data:	Project accounting area sampling
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.2 and the SCRP's standard operating procedures "Standard Operating Procedure Cardamom - Forest Inventory" and "Standard Operating Procedure Cardamom – Proxy Area". Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Prior to first monitoring event
Value applied:	425.31
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equations [B.33] and [B.34]
Any comment:	

Data Unit / Parameter:	$c_{P SOC}^{[m=0]}$
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Data unit:	tCO2e/ha
Description:	Project soil carbon stocks prior to first verification event in the Project Accounting Area
Source of data:	Project Accounting Area sampling
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Appendix B.2.6
Frequency of monitoring/recording:	At Project Start
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of Project emissions
Calculation method:	Average of plot measurements in a given stratum
Any comment:	Carbon pool not included in Project

Data Unit / Parameter:	$C_{P \Delta WP}^{[m]}$
Data unit:	tCO2e
Description:	Project carbon stocks in wood products at the end of the current monitoring period
Source of data:	Project accounting area sampling
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Appendix C
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [C.2]
Any comment:	Carbon pool not included in Project

Data Unit / Parameter:	$E_{\Delta GER}^{[m]}$
Data unit:	tCO2e

Description:	GERs for the current monitoring period
Source of data:	Equation [F.53]
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.4.1 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	13,285,613
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of GER calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.53]
Any comment:	

Data Unit / Parameter:	$E_{\Delta GER}^{[i]}$
Data unit:	tCO2e
Description:	GERs for monitoring period $i$
Source of data:	Equation [F.53], measurements in the PAA and Proxy Area
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.4.1 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was

	responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Prior monitoring period
Value applied:	13,285,613
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of GER calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.53]
Any comment:	

Data Unit / Parameter:	$E_{\Delta NER}^{[i]}$
Data unit:	tCO2e
Description:	NERs for monitoring period $i$
Source of data:	Equation [F.55], measurements in the PAA and Proxy Area
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.4.3 and the SCRPs standard operating procedures "Standard Operating Procedure Cardamom - Forest Inventory" and "Standard Operating Procedure Cardamom – Proxy Area". Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	prior monitoring period
Value applied:	11,947,133
Monitoring equipment:	Equipment list in Annex 18

QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of NER calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.55]
Any comment:	

Data Unit / Parameter:	$E_B^{[m]}$
Data unit:	tCO2e
Description:	Cumulative baseline emissions at the end of the current monitoring period
Source of data:	Equation [F.16], measurements in the PAA and Proxy Area
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.1 and the SCRPs standard operating procedures "Standard Operating Procedure Cardamom - Forest Inventory" and "Standard Operating Procedure Cardamom – Proxy Area". Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	13,384,794
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.16]



Any comment:	
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Data Unit / Parameter:	$E_B^{[m-1]}$
Data unit:	tCO2e
Description:	Cumulative baseline emissions at the beginning of the current monitoring period
Source of data:	Equation [F.16], measurements in the PAA and Proxy Area
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.1 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Prior monitoring period
Value applied:	0
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.16]
Any comment:	

Data Unit / Parameter:	$E_{B \Delta}^{[m]}$
Data unit:	tCO2e
Description:	Change in baseline emissions
Source of data:	Equation [F.15], measurements in the PAA and Proxy Area

Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.1 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	13,384,794
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.15]
Any comment:	

Data Unit / Parameter:	$E_{B \Delta BGB}^{[i]}$
Data unit:	tCO2e
Description:	Change in baseline emissions from below-ground biomass during monitoring period
Source of data:	Monitoring the proxy area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Appendix B.2.3
Frequency of monitoring/recording:	Already Monitored
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records

Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.31]
Any comment:	Parameter not used as BGB decay models are not used.

Data Unit / Parameter:	$E_{B \Delta DW}^{[i]}$
Data unit:	tCO2e
Description:	Baseline emissions from dead wood in monitoring period
Source of data:	Measurements in the proxy area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Appendix B.2.4 and B.2.5
Frequency of monitoring/recording:	N/A
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.34]
Any comment:	Parameter not used as carbon pool is not included

Data Unit / Parameter:	$E_{B \Delta SOC}^{[m]}$
Data unit:	tCO2e
Description:	Baseline change in emissions from soil carbon
Source of data:	Measurements in the proxy area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.1.2.1, 8.1.2.2, 8.1.2.3 and Appendix B.2.6
Frequency of monitoring/recording:	N/A
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.26]

Any comment:	Parameter not used as carbon pool is not included
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Data Unit / Parameter:	$E_{B \Delta SOC}^{[i]}$
Data unit:	tCO2e
Description:	Baseline emissions from soil carbon in monitoring period $i$
Source of data:	Measurements in the proxy area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.1.2.1, 8.1.2.2, 8.1.2.3 and Appendix B.2.6
Frequency of monitoring/recording:	N/A
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.26]
Any comment:	Parameter not used as carbon pool is not included

Data Unit / Parameter:	$E_{B AGMT}^{[m]}$
Data unit:	tCO2e
Description:	Cumulative baseline emissions from above-ground commercial trees at the end of the current monitoring period
Source of data:	Measurements in the proxy area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.1.6.1, 8.1.6.2, 8.1.6.3
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.37]
Any comment:	Parameter not used as BEM is not used

Data Unit / Parameter:	$E_{B\ BGB}^{[m]}$
Data unit:	tCO2e
Description:	Cumulative baseline emissions from below-ground biomass at the end of the current monitoring period
Source of data:	Measurements in the proxy area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.1.4
Frequency of monitoring/recording:	N/A
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.30]
Any comment:	Parameter not used as BEM is not used

Data Unit / Parameter:	$E_{B\ BGB}^{[m-1]}$
Data unit:	tCO2e
Description:	Cumulative baseline emissions from below-ground biomass at the beginning of the current monitoring period
Source of data:	Measurements in the proxy area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.1.4
Frequency of monitoring/recording:	N/A
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.30]
Any comment:	Parameter not used as BEM is not used

Data Unit / Parameter:	$E_{B\ BM}^{[m]}$
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Data unit:	tCO2e
Description:	Cumulative baseline emissions from biomass at the end of the current monitoring period
Source of data:	Equation [F.19], measurements in the PAA and Proxy Area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.1.1, 8.1.1.5.1 This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.1.1 and 8.1.1.5.1, and the SCRP's standard operating procedures "Standard Operating Procedure Cardamom - Forest Inventory" and "Standard Operating Procedure Cardamom – Proxy Area". Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018.
Frequency of monitoring/recording:	13,384,794
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.19]
Any comment:	

Data Unit / Parameter:	$E_{BDW}^{[m]}$
Data unit:	tCO2e
Description:	Cumulative baseline emissions from dead wood at the end of the current monitoring period
Source of data:	Measurements in the proxy area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.1.3
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A

Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.34]
Any comment:	Parameter not used as carbon pool is not included

Data Unit / Parameter:	$E_{B\ DW}^{[m-1]}$
Data unit:	tCO <sub>2</sub> e
Description:	Cumulative baseline emissions from dead wood at the beginning of the current monitoring period
Source of data:	Measurements in the proxy area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.1.3
Frequency of monitoring/recording:	N/A
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.34]
Any comment:	Parameter not used as carbon pool is not included

Data Unit / Parameter:	$E_{B\ SOC}^{[m]}$
Data unit:	tCO <sub>2</sub> e
Description:	Cumulative baseline emissions from soil carbon at the end of the current monitoring period
Source of data:	Measurements in the proxy area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.1.2.1, 8.1.2.2, 8.1.2.3
Frequency of monitoring/recording:	N/A
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions



Calculation method:	Equation [F.27]
Any comment:	Parameter not used as carbon pool is not included

Data Unit / Parameter:	$E_{B SOC}^{[m-1]}$
Data unit:	tCO2e
Description:	Cumulative baseline emissions from soil carbon at the end of the current monitoring period
Source of data:	Measurements in the proxy area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.1.2.1, 8.1.2.2, 8.1.2.3
Frequency of monitoring/recording:	N/A
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.27]
Any comment:	Parameter not used as carbon pool is not included

Data Unit / Parameter:	$E_{BA}^{[m]}$
Data unit:	tCO2e
Description:	Cumulative emissions allocated to the buffer account at the end of the current monitoring period
Source of data:	Monitoring records
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.4.4 and the SCRP's standard operating procedures. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	1,338,479
Monitoring equipment:	Equipment list in Annex 18

QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Multiplication
Any comment:	

Data Unit / Parameter:	$E_L^{[m]}$
Data unit:	tCO2e
Description:	Cumulative emissions from leakage at the end of the current monitoring period
Source of data:	Measurements in the leakage area(s) and calculations
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.3, the SCRPs standard operating procedure "Standard Operating Procedure Cardamom – Densimeter Forest Leakage" or the VCS tool Global Commodity Leakage Module: Production Approach VMD0037. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	99,181
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured for comparison to initial sampling.
Purpose of data:	Calculation of leakage
Calculation method:	Equation [F.45]
Any comment:	

Data Unit / Parameter:	$E_L^{[m-1]}$
Data unit:	tCO2e
Description:	Cumulative emissions from leakage at the beginning of the current monitoring period
Source of data:	Measurements in the leakage area(s) and calculations
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.3, the SCRPs standard operating procedure “Standard Operating Procedure Cardamom – Densimeter Forest Leakage” or the VCS tool Global Commodity Leakage Module: Production Approach VMD0037. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Already monitored
Value applied:	0
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured for comparison to initial sampling.
Purpose of data:	Calculation of leakage
Calculation method:	Equation [F.45]
Any comment:	

Data Unit / Parameter:	$E_{L\Delta}^{[m]}$
Data unit:	tCO2e
Description:	Change in emissions due to leakage
Source of data:	Measurements in the leakage area(s) and calculations
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.3, the SCRPs standard operating procedure “Standard Operating Procedure Cardamom

	– Densimeter Forest Leakage” or the VCS tool Global Commodity Leakage Module: Production Approach VMD0037. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	99,181
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured for comparison to initial sampling. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Purpose of data:	Calculation of leakage
Calculation method:	Equation [F.44]
Any comment:	

Data Unit / Parameter:	$E_{LASF}^{[m]}$
Data unit:	tCO2e
Description:	Cumulative emissions from activity-shifting leakage at the end of the current monitoring period
Source of data:	Measurements in the activity-shifting leakage area
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.3 and the SCRPs standard operating procedure “Standard Operating Procedure Cardamom – Densimeter Forest Leakage”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	0

Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.3 and the SCRPs standard operating procedure “Standard Operating Procedure Cardamom – Densimeter Forest Leakage”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018.
Purpose of data:	Calculation of leakage
Calculation method:	Equation [F.46]
Any comment:	

Data Unit / Parameter:	$E_{LME}^{[m]}$
Data unit:	tCO <sub>2</sub> e
Description:	Cumulative emissions from market leakage at the end of the current monitoring period
Source of data:	Global Commodity Leakage Module: Production Approach VMD0037
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.3, the SCRPs standard operating procedure “Standard Operating Procedure Cardamom – Densimeter Forest Leakage” or the VCS tool Global Commodity Leakage Module: Production Approach VMD0037. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	99,181
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of calculations and monitoring records.
Purpose of data:	Calculation of leakage

Calculation method:	Equation [F.51]
Any comment:	

Data Unit / Parameter:	$E_{P\Delta}^{[m]}$
Data unit:	tCO2e
Description:	Change in Project emissions
Source of data:	Monitoring records for Forest Fire, Burning, logging, wood products, and natural disturbance events
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.2 and the SCRP's standard operating procedures "Standard Operating Procedure Cardamom - Forest Inventory" and "Standard Operating Procedure Cardamom – Proxy Area". Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	0
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of calculations monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of Project emissions
Calculation method:	Equation [F.41]
Any comment:	

Data Unit / Parameter:	$E_{P\Delta BRN}^{[m]}$
Data unit:	tCO2e
Description:	Cumulative Project emissions due to burning at the end of the current monitoring period
Source of data:	Monitoring plots in the Project

Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 section 8.2.2 and the SCRP's standard operating procedures "Standard Operating Procedure Cardamom - Forest Inventory" and "Standard Operating Procedure Cardamom – Proxy Area". Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	0
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of Project emissions
Calculation method:	Equation [F.42]
Any comment:	

Data Unit / Parameter:	$E_{PALS}^{[m]}$
Data unit:	tCO2e
Description:	Cumulative Project emissions due to livestock grazing within the Project area.
Source of data:	Monitoring in the Project area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.2.4
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of Project emissions
Calculation method:	Equation [F.43]



Any comment:	No livestock grazing in Project area
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Data Unit / Parameter:	$E_{P\Delta SF}^{[m]}$
Data unit:	tCO2e
Description:	Cumulative Project emissions due to the use of synthetic fertilizers within the Project area.
Source of data:	Monitoring in the Project area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.2.5
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of Project emissions
Calculation method:	CDM A/R methodological tool Estimation of direct and indirect (e.g. leaching and runoff) nitrous oxide emission from nitrogen fertilization
Any comment:	No synthetic fertilizer used in Project area

Data Unit / Parameter:	$E_U^{[m]}$
Data unit:	tCO2e
Description:	Cumulative confidence deduction at the end of the current monitoring period
Source of data:	Equation [F.57]
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Section 8.4.1.1 and the SCRP's standard operating procedures. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	0

Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.57]
Any comment:	

Data Unit / Parameter:	$n_{LSi}$
Data unit:	count
Description:	The number of head of livestock species/ category in the Project area
Source of data:	Monitoring in the Project area
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.2.4
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Use of literature or expert knowledge
Any comment:	Parameter not used, no livestock in Project area

Data Unit / Parameter:	$p_{LDEG}^{[m]}$
Data unit:	proportion (unitless)
Description:	Portion of leakage due to degradation in forest at the end of the current monitoring period
Source of data:	Monitoring in the leakage area
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Section 8.3.2.3 and B2.9, and the SCRPs standard operating procedures "Standard Operating Procedure

	Cardamom – Densimeter Forest Leakage”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	0.94
Monitoring equipment:	Equipment list in Annex 18
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample.
Purpose of data:	Calculation of leakage
Calculation method:	Summation across leakage plots
Any comment:	

Data Unit / Parameter:	$P_{LDEG}^{[m=0]}$
Data unit:	tCO2e
Description:	proportion (unitless)
Source of data:	Portion of leakage due to degradation prior to first verification event
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Section 8.3.2.3 and B2.9, and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom – Densimeter Forest Leakage”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	At Project start
Value applied:	0.94
Monitoring equipment:	Equipment list in Annex 18

QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample.
Purpose of data:	Calculation of leakage
Calculation method:	Summation across leakage plots
Any comment:	

Data Unit / Parameter:	$p_{SL}^{[m]}$
Data unit:	proportion (unitless)
Description:	Proportion of AGMT that is not merchantable and goes into slash estimated from inventory
Source of data:	Estimated from inventory
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 8.1.6.3
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Conservatively used volume of a cone
Any comment:	Parameter not used, no commercial logging in Project area

Data Unit / Parameter:	$t^{[i-1]}$
Data unit:	days
Description:	Time from Project start date to beginning of monitoring period $i$
Source of data:	Monitoring records
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.2 and the SCRP's standard operating procedures. Wildlife Works was responsible for the measurement. All measurements were made during

	2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	0
Monitoring equipment:	N/A
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of calculations, monitoring records for errors.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Subtraction
Any comment:	

Data Unit / Parameter:	$t^{[m]}$
Data unit:	days
Description:	Time from Project start date to end of current monitoring period
Source of data:	Monitoring records
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.2 and the SCRPs standard operating procedures. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	1095
Monitoring equipment:	N/A
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of calculations, monitoring records for errors.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Subtraction

Any comment:	
Data Unit / Parameter:	$t^{[m-1]}$
Data unit:	days
Description:	Time from Project start date to beginning of current monitoring period
Source of data:	Monitoring records
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.2 and the SCRPs standard operating procedures. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	0
Monitoring equipment:	N/A
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, "QA_QC Procedure Cardamom v1.6" This includes a review of calculations, monitoring records for errors.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Subtraction
Any comment:	

Data Unit / Parameter:	$U_B^{[m]}$
Data unit:	tCO <sub>2</sub> e / ha
Description:	Total uncertainty in proxy area carbon stock estimate
Source of data:	Equation [B.34] and field measurements in the Proxy Area
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.1.5 and the SCRPs standard operating procedures "Standard Operating Procedure Cardamom - Forest Inventory" and "Standard Operating Procedure

	Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	1.06
Monitoring equipment:	N/A
QA/QC procedures to be applied:	QA/QC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [B.34]
Any comment:	

Data Unit / Parameter:	$U_{EM}^{[M]}$
Data unit:	tCO <sub>2</sub> e / ha
Description:	Total uncertainty in Baseline Emissions Models for the Project Accounting Area
Source of data:	N/A
Description of measurement methods and procedures to be applied:	VCS Methodology VM0009 Section 6.8.10
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.14]
Any comment:	Parameter not used as BEM not used

Data Unit / Parameter:	$U_P^{[m]}$
Data unit:	tCO <sub>2</sub> e / ha



Description:	Total uncertainty in the Project Accounting Area carbon stock estimate
Source of data:	Equation [B.34] and field measurements in the PAA
Description of measurement methods and procedures to be applied:	This parameter was measured in accordance of the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v3 Appendix B.1.5 and the SCRPs standard operating procedures “Standard Operating Procedure Cardamom - Forest Inventory” and “Standard Operating Procedure Cardamom – Proxy Area”. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Every monitoring period
Value applied:	15.18
Monitoring equipment:	N/A
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 section B.5 and are outlined in the document, “QA_QC Procedure Cardamom v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [B.34]
Any comment:	

Data Unit / Parameter:	$wC_{Pi}^{[m=0]}$
Data unit:	tCO2e
Description:	Weighted average carbon stocks for biomass or SOC in the Project for the set of selected strata
Source of data:	Biomass inventory
Description of measurement methods and procedures to be applied:	Inventory or GIS
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A

Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	N/A
Any comment:	Parameter is not used

Data Unit / Parameter:	$x^{[m]}$
Data unit:	varies
Description:	Covariate values
Source of data:	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery
Description of measurement methods and procedures to be applied:	N/A
Frequency of monitoring/recording:	Every monitoring period
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	N/A
Any comment:	Parameter not used

Data Unit / Parameter:	$d_t$
Data unit:	ha
Description:	Area of avoided deforestation for monitoring period.
Source of data:	Data source is the Royal Government of Cambodia Ministry of Environment submission to the UNFCCC technical committee (Ministry of Environment, 2016)
Description of measurement methods and procedures to be applied:	This parameter was calculated using data from the Royal Government of Cambodia. Wildlife Works was responsible for the measurement. All measurements were made during 2017 and 2018. Accuracy level achieved is good, and is associated with the quality of the underlying data and calculations.
Frequency of monitoring/recording:	Every monitoring period

Value applied:	31,590
Monitoring equipment:	Computer
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 and the VCS standard. This includes a review of the calculations and data used.
Purpose of data:	Calculation of leakage
Calculation method:	equation
Any comment:	

Data Unit / Parameter:	<i>LM</i>
Data unit:	tonnes
Description:	Leakage mitigation achieved by the jurisdictional program in terms of production of a given commodity
Source of data:	Agricultural production data from leakage mitigation projects implemented by the jurisdictional program or data on the reduction in the production demanded as generated by the jurisdictional program.
Description of measurement methods and procedures to be applied:	A jurisdictional program should measure the volume of production through agricultural records.
Frequency of monitoring/recording:	The data may be monitored once at the end of the monitoring period but should be reported on an annual basis.
Value applied:	0
Monitoring equipment:	Computer
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of VM0009 v3 and the VCS standard. This includes a review of the calculations and data used.
Purpose of data:	measurement
Calculation method:	Value from literature
Any comment:	Leakage mitigation is conservatively excluded

### 3.1.3 Monitoring Plan

A plan has been developed to monitor the SCRP's impact on its climate related objectives, namely the reduction in the emissions of tCO<sub>2</sub>e by reducing deforestation in the Project Area. The primary objective of the monitoring plan is to ensure accurate estimates of carbon stocks and carbon emission reductions from the REDD+ Project over the crediting period of the Project. The climate monitoring plan includes

three primary monitoring activities that will be performed throughout the lifetime of the SCRPs. These activities, and their frequency are shown in Table 5.

Table 5: The three primary monitoring activities, the frequency that they will be performed and the method to be used.

Activity	Frequency	Method
<b>Forest Patrols and Perimeter Observation</b>	Annually	Patrol team inspects perimeter of Project area
<b>Plot Measurements</b>	Bi-Annually	Sampling teams visit a portion of plots in Project and proxy areas
<b>Identification of significant disturbance</b>	Once every 2-3 years or after major disturbance event	Periodic inspection of aerial imagery or videography, with ground inspection when necessary

Descriptions of these monitoring activities are described in Annex 3 – Climate Monitoring Plan. In addition to these three primary Project monitoring activities several additional monitoring activities will happen at informal frequencies during the Project Partners’ general operations. This includes regular forest ranger patrols through the Project Area, and outreaches to the communities. These additional monitoring activities will serve to identify many instances of encroachment or tree harvesting that may occur in the Project Area. The monitoring plan is meant as a guide to maintain consistency during monitoring, and also includes training and internal audit procedures for quality control. It is meant as a working document to be revised as needed during the course of the Project. When revisions are necessary they should be noted as monitoring deviations in the subsequent monitoring report prepared for a VCS and CCB verification event.

**MRR.88 Documentation of training for field crews.**

A primary training event for the field crews was held January 16<sup>th</sup> – 23<sup>rd</sup>, 2017 in the Project Area. WWC staff members Jeremy Freund and Brian Williams led this training. During the training all field crew members were instructed in the biomass sample plot SOP, the proper usage of all equipment, and in best practices for the safe and successful field data collection. A secondary on-site training was held December 2-3, 2017 by Brian Williams specifically on the leakage area data collection SOP. In addition to these two on-site trainings, continuous support and training was provided by WWC staff by email and phone calls to answer any questions by the field team and to address any issues that arose.

**MRR.90 Documentation of data quality assessment such as a check cruise and plots of the data such as diameter distributions by strata or plot.**

Please refer to ‘Annex 09 – QA\_QC Procedure Cardamoms’ for the quality control standard operating procedure that the Project uses to assess data measurement quality and thoroughness. In accordance with the QC SOP, 5% of the biomass inventory plots are randomly selected. These QC plots were re-measured by a different plot sample team than originally measured the plot as close in time to the original plots as possible to avoid any errors due to natural regeneration/growth, although it is widely understood that some natural variation will occur between these two measurement events. The team that re-

measures the plot does not have access to the data sheet from the initial plot measurement, nor should have discussed any element of the plot with the team that performed the initial measurement. The plots cover all strata present in the Project Area. Table 6 displays the results of the paired T-Test, which showed no significant difference was found.

Table 6: The QA/QC assessment for this monitoring ( $M_1$ ) period.

Paired T-Test	QC Basis	Inventory Basis
1% of Estimated Mean (tCO <sub>2e</sub> )	4.1836	4.1161
Estimated Mean of Paired Differences (tCO <sub>2e</sub> )	6.7460	6.7460
Standard Error of Paired Differences (tCO <sub>2e</sub> )	11.6027	11.6027
Difference between 1% and Paired Difference (tCO <sub>2e</sub> )	2.5625	2.6299
t Statistic	0.2209	0.2267
Degrees of Freedom	12	12
p Value (1 - alpha)	0.4145	0.4122
H0: No difference between 1% and Paired Difference at 90% Level	TRUE	TRUE
H1: Difference greater than or equal to 1% and Paired Difference at 90% Level	FALSE	FALSE

**MRR.91 Maps of a stratification (if any) and references to plot allocation.**

Please refer to Figure 2 for a map of the Project Accounting Area forest stratification, and to Figure 3 for a map of the biomass sample plot locations.

**MRR.92 List of plot GPS coordinates.**

Please refer to Annex 03 the Climate Monitoring Plan for a comprehensive list of all sample plots and their GPS coordinates.

**MRR.93 Description of plot sizes and layout (such as the use of nests and their sizes) for each carbon pool.**

A permanent circular nested plot design was used for the biomass sample plots. The tree plot radius for this Project is 15 meters, which is a 0.07 ha plot area. The minimum diameter for considering an individual plant as a tree for the Project is 10 cm diameter at 1.3 m above the ground (DBH). All smaller woody plants are considered shrubs. The shrub plot radius for the Project is 5 meters.

Table 7: The radii used for the Southern Cardamom REDD+ Project tree and shrub plots

Area	Plot Radius
<i>Tree Plots</i>	
All Plots	15 meters

<i>Shrub Plots</i>	
All Plots	5 meters

**MRR.94** If applicable, a detailed description of the process used to develop allometric equations, to include:

- a. Sample size
- b. Distribution (e.g. diameter) of the sample
- c. Model fitting procedure
- d. Model selection

This MRR is not applicable to the SCRP. As described in Section 6, new allometric equations were not developed for the Project.

**MRR. 95** The estimated carbon stock, standard error of the total for each stock, and the sample size for each stratum in the area selected.

Table 8: The estimated carbon stock, error and number of plots for each forest strata in the Project Area.

Stratum	Carbon Stock (t CO <sub>2</sub> e / ha)	Error (t CO <sub>2</sub> e / ha)	Number of plots
Evergreen Forest	431.45	15.84	197
Deciduous Forest	285.38	28.62	53
Project Area	425.31	15.18	250

**MRR. 97** Deviations from the measurement methods set out in Appendix B or the monitoring plan, per current VCS requirement.

There were no deviations from the Methodology Appendix B or from the Project Climate Monitoring Plan in Annex 3.

**MRR.98** The frequency of monitoring for each plot for all plots – all plots should be measured for the first verification. All leakage plots should be measured every verification, and all proxy and Project accounting area plots at least every five years, or after a significant event that changes stocks.

All Project biomass, soil carbon, Proxy Area and Leakage Area sample plots were measured for this monitoring period. For the frequency of monitoring for these plots, please refer to the Climate Monitoring Plan in Annex 03.

### 3.1.4 Dissemination of Monitoring Plan and Results (CL4.2)

The Climate Monitoring Plan has been established and accepted by the Project Proponent. The Plan has been made available for public review at the Project Office. The full results of the climate monitoring are included in this Project monitoring report, which is being made publicly available in the Project Area by having a hard copy available for review at the Project Office, and on the Project Proponents website. Additionally, a monitoring report summary has been written and provided to communities throughout the Project Area in Khmer. The monitoring report has additionally been posted to the website of the CCB for public review and comment.

## 3.2 Quantification of GHG Emission Reductions and Removals

### 3.2.1 Baseline Emissions

Table 9 below summarizes without-Project (baseline) carbon emissions and corresponding deductions for leakage and risk of reversal buffer. As the SCRPs opted to use Cambodia’s national FREL submission to the UNFCCC, a summary of equations is provided below. A more complete justification is provided in the Royal Government of Cambodia’s Initial Forest Reference Level under the UNFCCC Framework (MoE, 2016). This document also provides submission information for the reader to reproduce the reference level calculation.

Table 9: Baseline carbon emissions and deductions for the Southern Cardamom REDD+ Project.

Component	First monitoring period (m1) tCO <sub>2</sub> e	Total to date tCO <sub>2</sub> e
<b>Baseline Emissions (tCO<sub>2</sub>e)</b>	13,384,794	13,384,794
<b>10% buffer tonnes to VCS (tCO<sub>2</sub>e)</b>	1,338,479	1,338,479
<b>Activity Shifting Leakage Deduction (tCO<sub>2</sub>e)</b>	0	0
<b>Market Leakage Deduction (tCO<sub>2</sub>e)</b>	99,181	99,181
<b>Net ERs (tCO<sub>2</sub>e)</b>	11,947,133	11,947,133

#### **MRR.10 Calculations of current baseline emissions $EB_{\Delta m}$ as of the current monitoring period.**

As shown above in Table 9, baseline emissions for the current baseline emissions are calculated as a yearly allotment of total emissions pro-rated for the monitoring period length.

#### **MRR.11 Calculations of baseline emissions $EB_{\Delta m-1}$ from prior monitoring periods.**

As this is the first monitoring period, there are no baseline emissions from prior monitoring periods.



**MRR.12 Calculations of cumulative baseline emissions for each selected pool ( $E_B$  BMm and EB SOCm) and undecayed carbon (CB BGB<sub>m</sub>, CB DW<sub>m</sub>, CB SOCm and CB WP<sub>m</sub>), as of the current monitoring period.**

Cumulative baseline emissions for the SCRPs are calculated using equation [F.15]:

$$E_{B \Delta}^{[m]} = E_B^{[m]} - E_B^{[m-1]}$$

Because the current monitoring period is the first (m1), current baseline emissions are identical to cumulative baseline emissions ( $E_{B \Delta}^{[m]} = E_B^{[m]}$ ). [F.16] is employed to calculate cumulative baseline emissions:

$$E_B^{[m]} = E_{B BM}^{[m]} + E_{B SOC}^{[m]} - C_{B SOC}^{[m]} - C_{B BGB}^{[m]} - C_{B DW}^{[m]} - C_{B WP}^{[m]} \quad [F.16]$$

where

$E_{B BM}^{[m]}$  = Cumulative baseline emissions from biomass (tCO<sub>2</sub>e)

$E_{B SOC}^{[m]}$  = Cumulative emissions from soil organic carbon (tCO<sub>2</sub>e)

$C_{B SOC}^{[m]}$  = Carbon not decayed in soil organic carbon (SOC) at the end of the current monitoring period (tCO<sub>2</sub>e)

$C_{B BGB}^{[m]}$  = Carbon not decayed in belowground biomass (BGB) at the end of the current monitoring period (tCO<sub>2</sub>e)

$C_{B DW}^{[m]}$  = Carbon not decayed in deadwood (DW) at the end of the current monitoring period (tCO<sub>2</sub>e)

$C_{B WP}^{[m]}$  = Carbon not decayed in long-lived wood products (WP) at the end of the current monitoring period (tCO<sub>2</sub>e)

Per the communique received from Verra on 27 February 2018, WWC was instructed to omit the 10-year decay model for belowground biomass due to the fact that the national FREL does not observe this decay model. By extension, the additional decay models listed in the AFOLU requirements, including those for soil organic carbon, deadwood and long-lived wood products are also omitted, as these models are applicable to a Project scale, and similarly not employed in Cambodia's national FREL calculation:

Variable	units	Description	Value applied	Comments
$E_{B BM}^{[m]}$	tCO <sub>2</sub> e	Total baseline emissions from biomass (BGB + AGB)	13,384,794	Included in RGC's national FREL. Yearly baseline emissions pro-rated for the current monitoring period (m1)
$E_{B SOC}^{[m]}$	tCO <sub>2</sub> e	Baseline emissions from soil organic carbon	0	Carbon pool not included in RGC's national FREL

$C_{B\ SOG}^{[m]}$	tCO <sub>2</sub> e	Carbon <i>not decayed</i> in soil organic carbon	0	Carbon pool not included in RGC's national FREL
$C_{B\ BGB}^{[m]}$	tCO <sub>2</sub> e	Carbon <i>not decayed</i> in belowground biomass	0	VCS decay model superseded by use of national FREL, which does not employ a decay model for BGB.
$C_{B\ DW}^{[m]}$	tCO <sub>2</sub> e	Carbon <i>not decayed</i> in deadwood	0	VCS decay model superseded by use of national FREL, which does not employ a decay model for dead wood. Pool conservatively omitted from SCRP.
$C_{B\ WWP}^{[m]}$	tCO <sub>2</sub> e	Carbon <i>not decayed</i> in long-lived wood products	0	VCS carbon storage for long-lived wood products model superseded by use of national FREL, which does not employ a carbon storage model for long-lived wood products.

Cumulative baseline emissions are then calculated as follows:

$$E_B^{[m]} = (13,384,794 + 0 - 0 - 0 - 0 - 0) \text{ tCO}_2\text{e} = 13,384,794 \text{ tCO}_2\text{e} \quad [\text{F.16}]$$

$$E_{BA}^{[m]} = E_B^{[m]} = 13,384,794 \text{ tCO}_2\text{e} \quad [\text{F.15}]$$

### 3.2.1.1 Calculating Baseline Emissions from Biomass

Historical emission estimates were developed based on the national FRL activity data from 2006 to 2014. Annual CO<sub>2</sub> Emissions and Removals (tCO<sub>2</sub>e / year) are calculated by the following equation;

$$\Delta C_B = \frac{(C_{t_2} - C_{t_1})}{(t_2 - t_1)}$$

$$\Delta CO_2 = \Delta C_B \times \frac{44}{12}$$

where;

$\Delta C_B$  = annual change in carbon stocks in biomass (the sum of above-ground and below-ground biomass) in land remaining in the same category (e.g., Forest Land Remaining Forest Land), tonnes C yr<sup>-1</sup>

$C_{t_2}$  = total carbon in biomass for each land sub-category at time  $t_2$ ; tonnes C  
 $C_{t_1}$  = total carbon in biomass for each land sub-category at time  $t_1$ ; tonnes C  
 $C t$  (Total Emission) = Activity Data (A) × Emission Factor (EF)

**44/12:** Molecular weight ratio of carbon dioxide to carbon (IPCC, 2006)

**MRR.13 Calculations of cumulative baseline emissions from biomass  $E_{B\ BM}^{[m]}$  for the current monitoring period.**

Cumulative baseline emissions for the current monitoring period are calculated using the following equation from section 3.2.4.3 of the PD:

$$E_{B\ BM}^{[m]} = RL \cdot \left( (c_{p\ BM}^{[m]} - c_{B\ BM}^{[m]}) \cdot A_{PAA} \right) \cdot \left( \frac{t^{[m]} - t^{[m-1]}}{365} \right)$$

where

$RL$  = The national Cambodian deforestation rate per year (%/yr)

$c_{p\ BM}^{[m]}$  = Average Project carbon stock in biomass at the end of the current monitoring period (tCO<sub>2</sub>e/ha)

$c_{B\ BM}^{[m]}$  = Average baseline carbon stock in biomass at the end of the current monitoring period (tCO<sub>2</sub>e/ha)

$A_{PAA}$  = Area of the Project Accounting Area (ha)

$t^{[m]}$  = Current monitoring period end date (days)

$t^{[m-1]}$  = Current monitoring period start date (days)

Cumulative baseline emissions for the current monitoring period are then calculated as follows:

$$E_{B\ BM}^{[m]} = 2.38\%/yr \cdot ((425.31\ tCO_2e/ha - 1.6\ tCO_2e/ha) \cdot 442,871\ ha) \cdot (3\ yrs)$$

$$E_{B\ BM}^{[m]} = 13,384,794\ t\ CO_2e$$

Note that cumulative baseline emissions for the current monitoring period are equal to cumulative emissions as of the current monitoring period, as calculated above for MRR.12.

**MRR.14 Calculations of cumulative baseline emissions from biomass  $E_{B\ BM}^{[m]}$  for all prior monitoring periods.**

As this is the first monitoring period, this MRR is not applicable.

**3.2.1.2 Calculating Carbon Not Decayed in DW**

The SCRП does not include planned forest harvesting in the baseline scenario. Therefore, the deadwood carbon pool has been conservatively excluded from Project carbon accounting. The MRR.21, MRR.22, MRR.23, MRR.24 and MRR.25 are not applicable to the Project.

**3.2.1.3 Calculating Carbon Not Decayed in BGB**

This PDR is not applicable because a jurisdictional reference level has been applied to the SCRП.

**MRR.26 An estimate of carbon stored in non-decayed BGB for the current monitoring period.**

This PDR is not applicable because a jurisdictional reference level has been applied to the SCRП.

**MRR.27 An estimate of cumulative baseline emissions from BGB for the current monitoring period.**

Cumulative emissions for BGB is listed in the MoE, 2016 UNFCCC document, available to the auditor upon request.

**MRR.28 Calculations of cumulative baseline emissions from BGB for all prior monitoring periods.**

As this is the first monitoring period, this MRR does not apply.

**3.2.1.4 Calculating Carbon Not Decayed in SOC**

The SOC pool was not included in the national FREL submission to the UNFCCC (MoE, 2016).

**MRR.29 An estimate of carbon stored in non-decayed SOC for the current monitoring period.**

This PDR is not applicable because the SOC pool was not included in Cambodia's national FREL submission to the UNFCCC.

**3.2.2 Project Emissions**

**3.2.2.1 Calculating Emissions from Changes in Project Stocks (G1.4)**

Carbon stocks have been estimated using the Verified Carbon Standard (VCS) methodology VM0009 'Methodology for Avoided Ecosystem Conversion' v3.0, which was originally validated with VCS in January 2011, with version 2 validated in 2012. A third major revision was conducted to include the AFOLU (Agriculture, Forestry and Other Land Uses) category Avoided Conversion of Grasslands and Shrublands (ACoGS). Version 3.0 of VM0009 was successfully validated in June 2014 under the VCS double approval process.

According to VCS, Project plots must be re-measured at a minimum every five years. As such, 100% of the biomass plots for the SCRCP shall be measured every 5 years. The SCRCP plans to follow a monitoring plan that on average measures 20% of the biomass plots each year. Circumstantial deviations from this schedule may be deemed necessary, while still achieving 100% measurement within 5 years. The Royal Government of Cambodia has not included Soil Organic Carbon (SOC) as a carbon pool for the national FREL submitted to the UNFCCC (MoE, 2016). As such, the SOC pool has been omitted in the calculation of Project stocks.

Biomass plot locations are depicted below in Figure 3. Changes in Project carbon stocks are calculated as the difference in Project stocks in each stratum in the PAA between the current and prior monitoring periods, as determined from in-situ measurement of biomass plots:

$$A_{PAA} \left( c_P^{[m-1]} - c_P^{[m]} \right)$$

Carbon stocks that are lost to burning, wood products, and leakage are accounted for using the procedures and equations listed below.

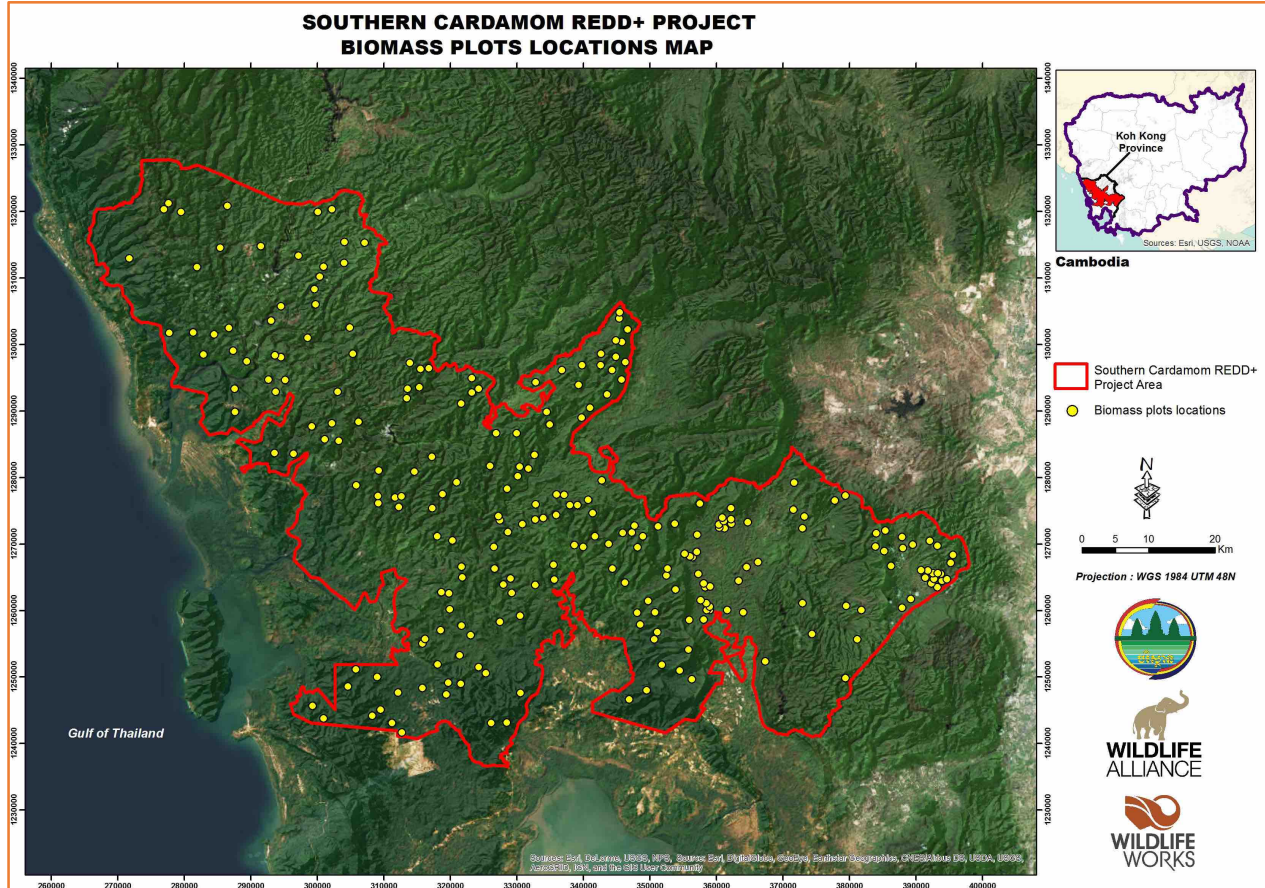


Figure 3: Biomass sample plot locations in the Southern Cardamom REDD+ Project

Table 10: A summary of current carbon stocks within the Project Accounting Area

Stratum	Area (ha)	Mean carbon stock (tCO <sub>2</sub> e / ha)	Standard error (tCO <sub>2</sub> e /ha)	Mean dbh (cm)	Average height (m)
Evergreen Forest	425,078	431.2	15.18	19.39	11.09
Deciduous Forest	17,793	258.4	28.62	18.98	9.28

### 3.2.2.2 Calculating Emissions from Burning

No currently planned Project Activities involve the burning of biomass. Emissions from burning are therefore excluded from Project emissions calculations. If future Project Activities should include this emission type, Project emissions from burning of biomass shall be calculated using equation [F.42] of the VM0009 methodology v3.0.

**MRR. 34 A table of events when woody or herbaceous biomass was burned during the monitoring period, showing the weight of woody or herbaceous biomass in tonnes and the date consumed.**

As noted above there is no planned Project Activities that involve the burning of biomass. Therefore this MRR is not applicable to the Project.

### 3.2.2.3 Calculating Emissions from Disturbances

There were no disturbances within the Project Area that met the criteria of “significant disturbance” as described in the Disturbance Monitoring Standard Operation Procedure (SOP).

**MRR. 32 A map of the boundaries of any significant disturbance in the Project accounting areas during the monitoring period.**

There were no disturbances within the Project Area that met the criteria of “significant disturbance” as described in the Disturbance Monitoring Standard Operation Procedure (SOP). This MRR is not applicable to the Project during this monitoring period.

**MRR. 33 Evidence that plots were installed into these disturbed areas and were measured per section 9.**

There were no disturbances within the Project Area that met the criteria of “significant disturbance” as described in the Disturbance Monitoring Standard Operation Procedure (SOP). This MRR is not applicable to the Project during this monitoring period.

### 3.2.2.4 Determining Carbon Stored in WP

As the SCRIP is utilizing the Cambodian national FREL for the Project’s baseline, the carbon pool of WP is not included so as to ensure consistency between the carbon accounting of the Project and the national FREL. Therefore, MRR.30, MRR. 31, MRR.35, MRR. 36 and MRR.37 are not applicable to the Project.



### 3.2.2.5 Calculating GHG Emissions from Livestock Grazing

There is no grazing of livestock in the Project Area. Therefore MRR.38, MRR.39 and MRR.40 are not applicable to the Project.

### 3.2.2.6 Calculating N<sub>2</sub>O Emissions from the Use of Synthetic Fertilizers

**MRR. 41 A report of record of the quantity of synthetic fertilizer applications in the Project area.**

**MRR. 42 Emissions released due to use of synthetic fertilizer  $E_{p \Delta SF}^{[m]}$**

**MRR.43 Calculations to determine  $E_{p \Delta SF}^{[m]}$**

No inputs such as any fertilizers, chemical pesticides, biological control agents are intended to be used for the Project, or in the Project Area. These MRRs are not applicable to the Project.

### 3.2.3 Leakage

#### 3.2.3.1 Leakage Mitigation Strategies (CL2.2.)

**MRR.44 A description of Project activities that have been implemented since the Project start date and the estimated effects of these activities on leakage mitigation.**

The status of the Project Activities is described in full detail in Section 4.3.1.1. Activities were designed to mitigate deforestation and human-wildlife conflict as well as to enhance livelihoods throughout the Project Zone. They therefore by design serve to mitigate leakage and uphold Project permanence. Please see section 4.3.1.1 for the status of each Project Activity during the current monitoring period and monitored values of the effect of each activity.

**MRR.45 List of mitigation activities to reduce demand for forgone goods and services.**

**MRR.46 Quantities for the reduction or replacement of goods and services if they are used in section 8.3.3.4 of the methodology VM0009.**

**MRR.47 Methods for measuring the reduction or replacement of goods and services**

During this monitoring period no leakage mitigation activities were included that were designed to directly reduce the demand for forgone goods or services from the Project Area. These MRRs are not applicable to the Project at this time.

#### 3.2.3.2 Activity-Shifting Leakage (CL2.1.)

##### 3.2.3.2.1 Change to the Activity-Shifting Leakage Area

Because this is the first monitoring period and the verification is concurrent with Project validation, there were no changes to the activity-shifting leakage area as described in the PD Section 3.2.3.1.1.

Therefore MRR.50-55 are not applicable to the SCRP.

##### 3.2.3.2.2 Estimating emissions from the activity-shifting leakage area.

**MRR.48 Calculated cumulative emissions from activity-shifting leakage for the current monitoring period and supporting calculations.**

As the Project is in the first monitoring period, cumulative emissions from activity-shifting leakage are set to zero and this MRR is not applicable. See VM0009 v3.0, section 8.3.2 for details.



**MRR.49 Calculated cumulative emissions from activity-shifting leakage for the prior monitoring periods .**

The Project is in the first monitoring period. This MRR is therefore not applicable.

**3.2.3.3 The Leakage Emissions Model**

Activity shifting leakage is estimated by empirical, in-situ observation of sample points in the activity shifting leakage areas for evidence of conversion and forest degradation. They are used to estimate the cumulative emissions from activity shifting leakage for each monitoring period per equations [F.46] and [F.47] from VM0009 v3.0 using the Leakage Emissions Model (LEM). The LEM is normally parameterized using equations [F.48] and [F.49], utilizing the ( $\alpha$ ,  $\beta$  and  $\theta$ ) parameters from the BEM (VM0009 section 6.8). This is done when the BEM is applied at the Project level. Because the SCRП uses a nationally submitted FREL, starting at the second monitoring period.  $\alpha$ ,  $\beta$  and  $\theta$  shall be calculated with the nationally determined activity data (deforestation rate) substituted into the BEM model, thus allowing for the calculation of activity-shifting leakage for future monitoring periods.

**3.2.3.3.1 Sampling Conversion and Forest Degradation to Build the Leakage Model**

Conversion and forest degradation is sampled in the activity shifting leakage area by empirical, in-situ observation of sample plots. The sample design utilized is a simple random sample of 36 forest leakage area plots within the activity-shifting leakage area. Please see Annex D for maps delineating the activity-shifting leakage area. The procedures used for locating and sampling the activity shifting leakage Areas are found in the document ‘Standard Operating Procedure Activity-Shifting Leakage Area’. Plot teams visited each leakage plot a priori to confirm that each plot begins in a non-converted state and that its location is appropriate with respect to the agents and drivers in the Project baseline scenario.

**3.2.3.3.2 Fitting the Leakage Model**

The LEM is calculated using VM0009 v3.0 equation [F.48]. The model estimates cumulative carbon emissions from activity-shifting leakage based on the conversion parameters  $\alpha$ , and  $\beta$  and in-situ field measurements in the leakage area.

Where equation [F.48] is:

$$LEM_F(c_P, c_B, p_{L\ DEG}^{[m]}, t, x) = p_{L\ DEG}^{[m]} A_{AS}(c_P - c_B) - \frac{A_{AS}(c_P - c_B)}{1 + e^{\ln\left(\frac{1}{p_{L\ DEG}^{[m=0]}} - 1\right) - \beta t - \theta(x_0 - x)^T}}$$

The parameter  $p_{L\ DEG}^{[m]}$  is estimated at least once every five years from measurements taken in-situ within the PAA. The Standard Operating Procedure (SOP) used for estimating these parameters is depicted in ‘Annex 07 – Standard Operating Procedure\_Densimeter Forest Leakage v4\_02112016’.

**MRR.56 The estimated value for the current monitoring period and supporting calculations.**

As this is the first monitoring period,  $p_{L\ DEG}^{[m]}$  is equivalent to  $p_{L\ DEG}^{[m=0]}$ , shown below in MRR.57.

**MRR.57 The calculated value calculated for the first monitoring period.**

The calculated value of  $p_{L\ DEG}^{[m=0]}$  for the SCRП is **0.94**.

**MRR.58 The estimated value for the current monitoring period and supporting calculations.**

There is no ACoGS (avoided conversion of grassland & shrubland) component for the SCRP. Therefore, this MRR does not apply.

**MRR.59 The calculated value calculated for the first monitoring period.**

There is no ACoGS component for the SCRP. Therefore, this MRR does not apply.

**3.2.3.4 Market Leakage (CL3.1.)**

Market leakage can occur if a Project reduces the supply of market goods, such as timber, relative to the baseline. As described in the PD Section 2.1.11, the most likely baseline scenario is conversion of forest to agriculture. This agriculture is primarily subsistence, with little production remaining beyond household consumption. Food security is a serious issue, discussed in the PD Section 4.1.1, throughout the Project Zone. Without the Project there would be increasing demand for land and continued low productivity of agricultural production, crop failures from droughts, fluctuation of crop price and few alternatives for income generating activities available to local communities. Given that the agents and drivers generally practice commercial farming, the Project may result in a net reduction in agricultural production.

**MRR.60 The selected approach to determining emissions from market leakage.**

The VCS Tool, VMD0037 Global Commodity Leakage Module: Production Approach (LM-P) was used to determine the market effects leakage resulting from the SCRP. This tool estimates the amount of commodity production potentially impacted by the Project and calculates a global commodity leakage deduction expressed as a percentage. The tool uses the area of the Project and common crops grown in the region and the stock of harvestable timber present to estimate a potential forgone commodity production caused by the Project Activity. The Tool achieves this by using the planted area of the primary agricultural crops in the jurisdiction in which the Project Area is located and the timber stock present in the Project Area in relation to the quantity of timber produced nationally to determine the potential of forgone production that may cause an increased supply elsewhere in the country through the deforestation of land. This tool was parameterized using a *variety of data sources*. This includes Project information included in this report for Project Area and carbon stocks. Public data sources were used to determine the total area of forest and agricultural land in Cambodia, primary crops in Koh Kong province, their yield, and the total area in which these crops are planted within Koh Kong province, and nationally. Data on the primary crops grown in Koh Kong province, and the total area planted of these crops Koh Kong province and nationally was obtained from The Census of Agriculture in Cambodia 2013 (NIS, 2015). The crop yield values for the primary crops grown in Koh Kong province were obtained from the report *Cambodian Agriculture in Transition: Opportunities and Risks* (World Bank, 2015). The quantity of timber in the Project Area was determined from the Project's forest inventory. Values for the volume of timber harvested in Cambodia were obtained from the FAO Forest Resource Assessment for Cambodia and FAOSTAT (FAO, 2015 and FAOSTAT, 2018).

**MRR.61 Estimated cumulative emissions from market leakage for the current monitoring period**

**$E_{LME}^{[m]}$  and supporting calculations.**

The calculated market leakage value is **0.74%**. This rate would result in estimated cumulative emissions from market leakage during the current monitoring period of 99,181 tCO<sub>2</sub>e. The market leakage rate has been calculated in the document 'Annex 15 – SCRP Market Leakage Tool v3.xlsx' and the estimated cumulative emissions from market leakage was calculated in the document 'Annex 12 - Cardamoms RL v13.xlsx'. Both of these documents have been provided to the auditor for review.

**MRR.62 Calculated cumulative emissions from market leakage for the prior monitoring periods**

$$E_{LME}^{[m]}$$

This is the first monitoring period for the SCRP. Therefore, this MRR is not applicable to the Project.

**MRR.63 Provide location-by-location evidence that management plans and land-use designations of all areas under the Project proponent’s control within the country have not changed as a result of the Project. For entities with a conservation mission, provide evidence of the organization’s policy not to change the land use of other owned and managed lands, and evidence of compliance with such a policy.**

The Project proponent, the Royal Government of Cambodia’s Ministry of Environment (MOE), is the government entity that is authorized to manage all protected areas in the country (Protected Area Law 2008; Royal Decree on the Establishment and Designation of Protected Areas, 1993). According to the above-mentioned laws, the mandate for MOE is to manage protected areas in the country and to stop deforestation and degradation in protected areas. The implementation of the SCRP has not changed the land-use of other protected areas in the country. MOE’s forest protection policy has not changed since its establishment. In fact, the number of protected areas under MOE’s jurisdiction has increased since the implementation of the Project. In 2016, all protected forests that were under the management of the Ministry of Agriculture, Fisheries, and Forests (MAFF) were transferred to MOE ([Sub-Decree N° 69 RGC – transfer of lands from MAFF to MOE](#);

<https://opendevelopmentcambodia.net/announcements/establishment-of-18-natural-protected-areas-under-the-management-of-ministry-of-environment/> visited September 12, 2018), an example of this is the former Southern Cardamom Protected Forest that in turn became Southern Cardamom National Park (Sub-decree N° 89 RGC – Creation of SC National Park).

**3.2.4 Net GHG Emission Reductions and Removals**

**3.2.4.1 Determining Reversals**

**MRR.72 A description of the reversal including which pools contributed to the reversal and reasons for its occurrence.**

To date, there have been no reversals in the SCRP.

**3.2.4.2 Determining Reversals as a Result of Baseline Re-evaluation**

**MRR.73 A description of the reversal including a summary of new data obtained in the reference area.**

There have been no reversals in the SCRP. The next baseline re-evaluation will be 10 years after the Project Start date, in 2025.

**3.2.4.3 Quantifying Net Emission Reductions for the PAA**

**3.2.4.3.1 Determining Deductions for Uncertainty**

**MRR.68 The confidence deduction and estimated standard errors used to determine the confidence deduction.**

In accordance with VM0009 v3.0, section 8.4.1.1, the confidence deduction is determined by linearly combining weighted uncertainties (standard errors) from the Project accounting area, proxy area and the baseline emission model (BEM). However, because the SCRP uses a nationally submitted FREL, the

total uncertainty in the BEM does not exist and is therefore set to zero in equation [F.57]. Per VCS AFOLU Requirements, if the total combined error is above 15%, a deduction is applied as the difference between the calculated combined error and 15%. Otherwise, the confidence deduction is zero. The calculated uncertainties used for the determination of the confidence deduction were:

- Uncertainty in carbon stock estimates in the Project accounting area, ( $U_P^{[1]}$ ): 6,759,396 tCO<sub>2</sub>e
- Uncertainty in carbon stock estimates in the proxy area, ( $U_B^{[1]}$ ): 30,921 tCO<sub>2</sub>e
- Uncertainty in the baseline emissions model (BEM), ( $U_{EM}^{[1]}$ ): 0

The calculated carbon stocks for the Project accounting area and proxy area are:

- Total measured carbon stock in the project accounting area, ( $c_P^{[1]}$ ): 425.31 tCO<sub>2</sub>e/ha
- Total measured carbon stock in the proxy area, ( $c_B^{[1]}$ ): 1.6 tCO<sub>2</sub>e/ha

Baseline emissions for the current monitoring period are:

- Total baseline emissions, ( $E_{B\Delta}^{[1]}$ ): 13,384,794 tCO<sub>2</sub>e

For the current monitoring period ( $m_1$ ), the confidence deduction, as per VM0009 v3.0 equation [F.57] is:

Cumulative confidence deduction,  $E_U^{[1]}$ : **0 tCO<sub>2</sub>e**

**MRR.69 Reference to calculations used to determine the confidence deduction.**

The cumulative confidence deduction,  $E_U^{[m]}$ , was calculated using VM0009 v3.0 equation [F.57]:

$$E_U^{[m]} = E_{B\Delta}^{[m]} \left[ \frac{1.64}{E_{B\Delta}^{[m]} + A_{PAA}c_P^{[m]} + A_{PX}c_B^{[m]}} \sqrt{(U_{EM}^{[M]})^2 + (U_P^{[m]})^2 + (U_B^{[m]})^2} - 0.15 \right]$$

where:

$c_P^{[m]}$  is total measured carbon stock in the Project accounting area;

$c_B^{[m]}$  is total proxy area carbon stock;

$E_{B\Delta}^{[m]}$  is total baseline emissions;

$U_{EM}^{[M]}$  is the total uncertainty for the baseline emissions model (BEM), set to zero;

$U_B^{[m]}$  is the total uncertainty in the proxy area;

$U_P^{[m]}$  is the total uncertainty in the project accounting area;

$A_{PAA}$  is the area of the project accounting area and

$A_{PX}$  is the area of the proxy area.

**3.2.4.3.2 Quantifying Gross Emission Reductions for a PAA**

**MRR.65 Quantified GERs for the current monitoring period including references to calculations.**

For complete calculations on net emission reductions please see the file in Annex 12 – “ Cardamoms RL v13.xlsx.

Gross emission reductions are calculated for the single PAA in the SCRIP using equation [F.53].

$$E_{\Delta GER}^{[m]} = E_{B\Delta}^{[m]} + E_{P\Delta}^{[m]} - E_{L\Delta}^{[m]} - E_U^{[m]}$$

GERs for the monitoring period were then calculated as:

$$E_{\Delta GER}^{[m]} = 13,384,794 + 0 - 99,181 - 0$$

For:  $E_{\Delta GER}^{[m]} = 13,285,613 \text{ tCO}_2\text{e}$

**MRR.66 Quantified GERs for the prior monitoring period including references to calculations.**

Equation [F.54] is then used to calculate the cumulative GERs to date.

$$E_{GER}^{[m]} = \sum_{i \in M} E_{\Delta GER}^{[i]}$$

As this is the Project's first monitoring, there are not quantified GERs for any prior monitoring periods.

**MRR.67 A graph of GERs by monitoring period for all monitoring periods to date.**

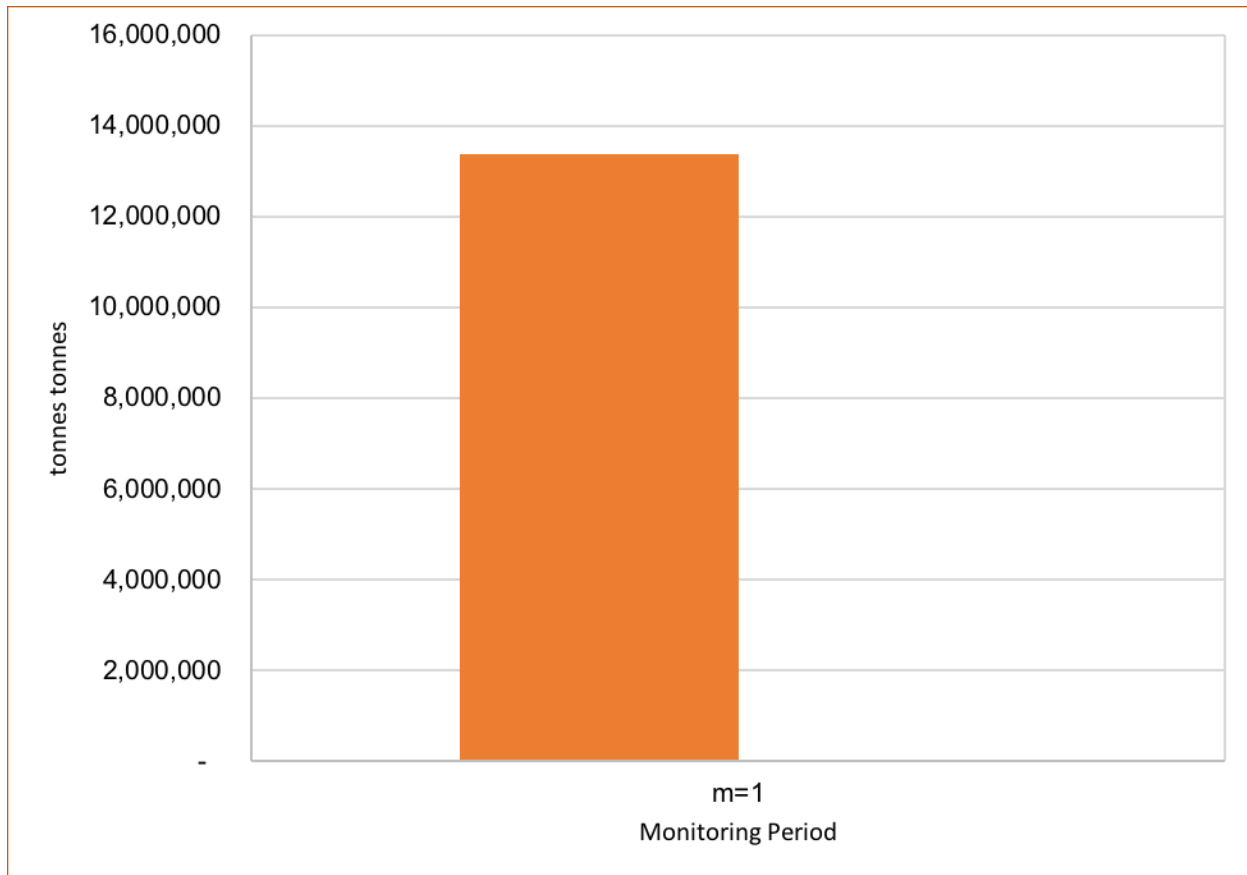


Figure 4: A graph showing the total GERs for this monitoring period (m=1). As this is the first monitoring period there are no prior monitoring periods to show.

3.2.4.3.3 Determining Buffer Account Allocation

**MRR.77 Reference to the VCS requirements used to determine the buffer account allocation.**

The buffer account allocation for the first monitoring period of the Project was calculated according to the VCS requirements as stated in the VCS Standard Version 3.4, VCS Registration and Issuance Process Version 3.4, and the VCS Non-Permanence Risk Tool Version 3.2. Please refer to ‘Annex 16 – Non-Permanence Risk Tool’ for the determination of the buffer allocation amount. Please refer to ‘Annex 12 – NER Model’ for the calculation of the total number of credits to be allocated to the VCS buffer pool.

**MRR.78 Reference to calculations used to determine the buffer account allocation.**

Calculations for the buffer account allocation can be found in ‘Annex 16 – Non-permanence Risk Tool’.

3.2.4.3.4 Net Emission Reductions for the PAA

**MRR.74 Quantified NERs for the current monitoring period including references to calculations.**

Annual net emission reductions (NERs) for the Project are calculated for each PAA by subtracting the VCS buffer pool allocation from GERs using equation [F.55] from the methodology VM0009 v3.0:

$$E_{\Delta NER}^{[m]} = E_{\Delta GER}^{[m]} - E_{BA}^{[m]}$$

NERs were calculated as follows:

$$E_{\Delta NER}^{[m1]} = 13,285,613 \text{ tCO}_2e - 1,338,479 \text{ tCO}_2e = 11,947,133 \text{ tCO}_2e$$

NERs for the current monitoring period (m1) are **11,947,133 tCO<sub>2</sub>e**. Calculations can be found in ‘Annex 12 – Cardamoms RL v11’

**MRR.75 Quantified NERs for the prior monitoring period.**

As this is the first monitoring period, this MRR does not apply.

**MRR. 76 A graph of NERs by monitoring period for all monitoring periods to date.**

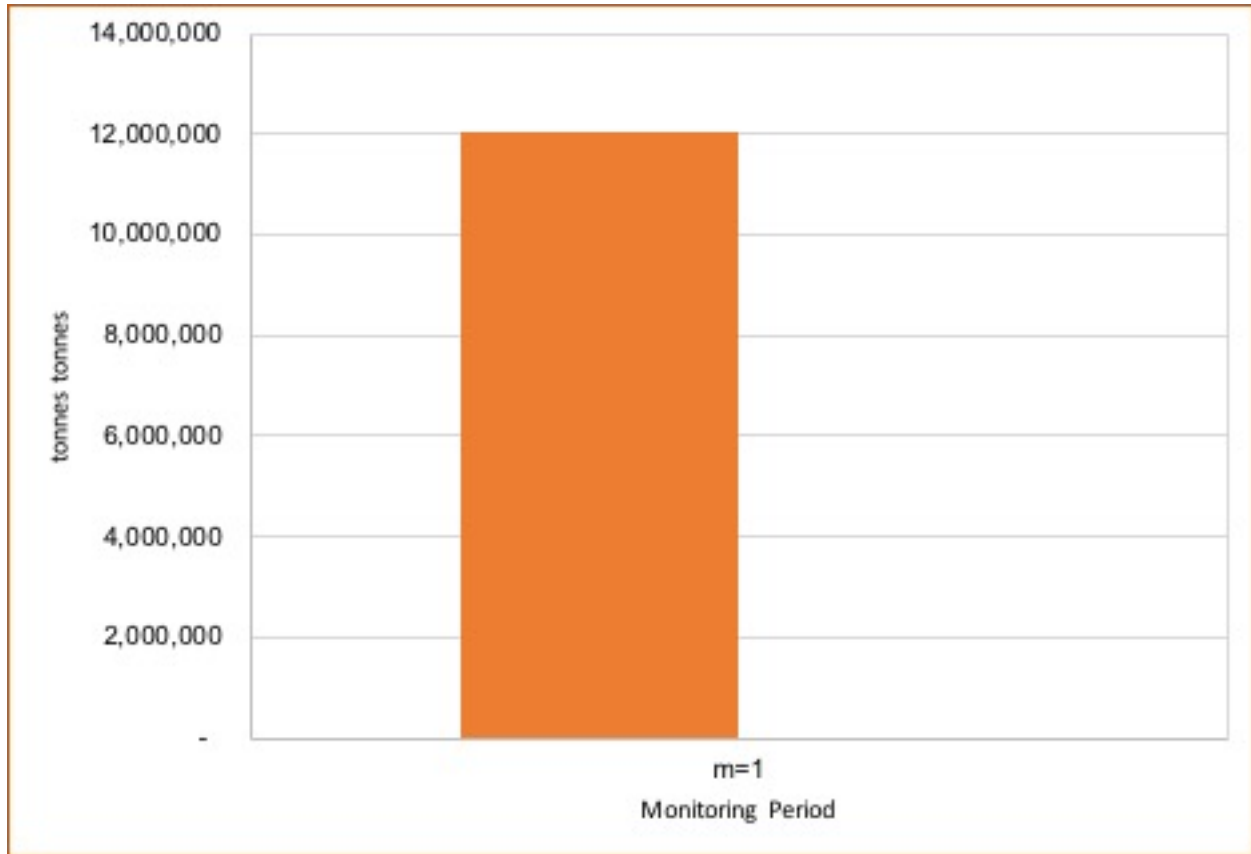


Figure 5: A graph showing the total NERs for this monitoring period (m=1). As this is the first monitoring period there are no prior monitoring periods to show.

#### 3.2.4.4 Quantifying Net Emission Reductions Across PAAs (CL1.1)

##### MRR.79 Quantified NERs for the current monitoring period including references to calculations.

As there is one PAA for the SCRIP, this MRR does not apply.

##### MRR.80 Quantified NERs for the prior monitoring period.

As there is one PAA for the SCRIP, this MRR does not apply.

##### MRR.81 A graph of NERs by monitoring period for all monitoring periods to date.

As there is one PAA for the SCRIP, this MRR does not apply.

#### 3.2.4.5 Ex-Ante Estimation of NERs (CL1.2 & 1.4)

##### MRR.82 Quantified NERs by vintage year for the current monitoring period including references to calculations.

The quantified NERS by vintage were calculated in an external workbook in Annex 12. This workbook was provided to the auditor during the verification. The Cambodian FREL, which the SCRIP is utilizing for the Project's baseline, is presented as an annual value. Therefore, there are no further calculations needed to quantify the NERs as annual vintages from a monitoring period total.



Table 11: The GHG reductions, Project Emissions, Leakage Emissions and Net Emission Reductions (NERs) for the monitoring period, specified by vintage.

Year	Baseline emissions or removals (tCO <sub>2</sub> e)	Project emissions or removals (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Net GHG emission reductions or removals (tCO <sub>2</sub> e)
2015	4,461,598	0	33,060	3,982,378
2016	4,461,598	0	33,060	3,982,378
2017	4,461,598	0	33,060	3,982,378
<b>Total</b>	<b>13,384,794</b>	<b>0</b>	<b>99,181</b>	<b>11,947,133</b>

### 3.2.4.6 Evaluating Project Performance

#### MRR.83 Comparison of NERs presented for verification relative to NERs from ex-ante estimates.

Because the SCRPs are validating and verifying concurrently, ex-ante estimates are identical to the NERs presented for verification.

#### MRR.84 Description of the cause and effect of deviations from ex-ante estimates.

As Ex-ante NER estimates and NERs presented at verification are identical, this MRR does not apply.

## 3.3 Optional Criterion: Climate Change Adaptation Benefits

### 3.3.1 Demonstrate that current or anticipated climate changes are having or are likely to have an impact on the well-being of communities and/or biodiversity in the Project zone (GL1.3.)

As was documented in the PD Section 3.4.2, the anticipated impacts of climate change on the communities and biodiversity of the Project zone are expected to negatively affect their well-being. For the communities of the Project zone these impacts will include increased flood risk and a reduction in agricultural productivity. For biodiversity, the increased flood risk and change in rainfall regimes will result in a reduction in access to food and water sources, and a limitation of suitable habitat.

Due to the limited alternative sources of income and barriers to learning to the implementation of new and improved agricultural methods the communities of the Project zone have limited adaptive capacity. It is expected that these impacts hold true for the communities living in the Project Zone and would therefore severely impact the communities' well-being. This indicates a pressing need to focus on adaptation and climate change mitigation measures.

For the biodiversity in the Project zone, due to the limited extent of remaining forest in Cambodia, and its fragmented nature, there is low resilience in the native communities to either migrate or adapt to changing climates.

**3.3.2 Describe measures needed and taken to assist Communities and/or biodiversity to adapt to the probable impacts of climate change based on the causal model that explains how the Project activities will achieve the Project’s predicted adaptation benefits (GL1.4, V3: GL1.3.).**

Table 10 describes the expected climate changes in the Project zone, their effect on the communities or biodiversity and the Project’s adaptive strategy. The Project is also employing adaptive management; therefore, as new climate change risks and/or effects are identified during the Project’s lifetime new adaptive strategies will be developed and implemented. The Project’s casual model is shown in the PD Sections 2.1.11. These results chains demonstrate the how the Project activities will achieve the Project’s stated adaptation benefits.

Table 12: Project climate change adaptation Benefits

Climate change risks	Potential effects	Potential mitigative/adaptive strategies
<b>More intense and longer droughts</b>	Low land productivity or complete crop failure, less pasture for livestock and wildlife, more severe fires	Reduce dependence on livestock and land through alternative IGAs, promote cultivation of drought resistant crops, improve storage facilities and management of crops, water harvesting and water storage, raise awareness of danger of fires,
<b>Increased flood risk</b>	Destruction of agricultural crops and development	Conservation of the forest in the Project Area will increase water eco-system services, reducing flood risk. Improved agricultural techniques will help crops survive flooding.
<b>Low capacity of local populations to adapt to frequent natural disasters</b>	Increase in periods of food insecurity, potential increase in disease and deaths with continuing very low health standards, potential for increasing inter-community conflict	Increase support of local institutional structures including the norms and rules of governance to help develop adaptive strategies, increase literacy levels, diversification of livelihood activities and income generation Projects, involve women to a greater degree in decision making processes, increase general participation in decision making at the local level
<b>Decreased biodiversity, loss of forest cover to drought, temperature change</b>	Reduction in species, more species at risk	Help to maintain intact and interconnected ecosystems through protection of ecosystems, ensure landscape connectivity to allow migration, regeneration activities using indigenous, drought-resistant trees

**3.3.3 Activities and/or processes implemented for Adaptation (GL1.3)**

Please refer to Section 2.1.1 for a detailed description of the Project’s implementation status. This section will include a brief overview of implemented Project activities and how they specifically assist communities or biodiversity adapt to climate change.

**Communities**

The implemented activities to assist communities with the adaptation to probable impacts of climate change includes the direct employment by the Project and training on new income generating activities and training on new and improved agricultural methods. Both activities will help mitigate for the communities the most probably impacts of climate change, notably reduction in agricultural yield due to climatic changes and loss of income and damage from flooding.

**Biodiversity**

The most primary and most vital Project activity for to assist biodiversity is the protection of the Project area from deforestation and degradation. Through the maintenance of the native forest condition in a unfragmented state, it will provide the forest ecosystem with the greatest resilience against the most probable impacts of climate change. This will provide the biodiversity with continued food and water sources in a sustainable fashion, and a stable habitat.

**4 COMMUNITY**

**4.1 Net Positive Community Impacts**

**4.1.1 Community Impacts (CM2.1)**

Community Group	Community in general – present and future
Impact(s)	Enhanced ecosystem goods and services and improved livelihoods through better education, health and food security
Type of Benefit/Cost/Risk	Actual direct benefit
Change in Well-being	Improvement in livelihoods including education, health and food security. For instance, during 2016-2017, WA undertook a medical mission for 104 Chhay Areng people, facilitating their transportation and food to Phnom Penh (a multi-day expedition with difficult transport on bad roads from this remote valley to the capital) where they were welcomed at the Khmer-Soviet Hospital and received eye and dental surgery from the volunteer doctors of the Cambodia International Sight Association (CISA).

Community Group	Youth and women
Impact(s)	Availability of jobs, alternative IGAs and education including CBET development
Type of Benefit/Cost/Risk	Predicted direct benefit
Change in Well-being	Major impact on communities and households, including youth and women groups. In 2016-2017, CBET was expanded into the Areng Valley, which supports some of Asia’s rarest species, including Siamese crocodile and Asian elephant, but is highly

	<p>threatened with 8 forest dependent communities engaged with illegal logging and wildlife trade. The CBET management committee comprises 15 members (5 female) all of whom are ethnic Chong. 147 ecotourism service providers were selected following fair and democratic selection process to provide services such as homestays, guides, cooks, moto taxi and boats. Additionally, there was improvement of 9 homestays in all eight villages and &gt;200 km of forest trails already developed</p> <p>--The first CBET that was established at Chi Phat, continues to flourish with 3,400 Visitors in 2017 and incomes directly benefiting 51% of the families in the village</p> <p>--Overall, women occupy about 67% of decision-making positions within the various business associations, agriculture associations, and community funds under the REDD+ Project.</p>
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Community Group	General Community
Impact(s)	Capacity building and social capital development
Type of Benefit/Cost/Risk	Actual direct benefit
Change in Well-being	<p>Major impact on communities and households, including youth and women groups. In 2016-2017, a fifteen-member CBET Management Committee – that worked previously as volunteers developing the Project – was chosen in a commune-wide election (in all 8 villages) in August to assume various positions and responsibilities in the Areng Valley CBET structure. This committee has thus far worked on research and identification of 16 potential tourism sites, development of tour packages, and formation of CBET by-laws and legal registration of the community-based ecotourism association as a government-recognized Community-Based Organization (CBO).</p> <p>--Provision of capacity building in English, small business management, financial and computer literacy, accounting, tourist booking</p> <p>--Besides providing start-up funds, there are several types of services to visitors which requires working hand-in-hand with the community members to build their capacities in hospitality skills, housekeeping, cooking, nature guiding, English, and financial and computer literacy.</p>

Community Group	Poachers and illegal loggers
Impact(s)	Alternative sources of income
Type of Benefit/Cost/Risk	Predicted direct or indirect benefit
Change in Well-being	Potential loss of livelihood sources balanced by direct and indirect gains through REDD+ Project activities including sustainable agriculture, or ecotourism, or development of small family-scale businesses

#### 4.1.1.1 Result Chain Diagrams (CM1.1)

Please refer to the section below, 7.1.1.2 for Table 30 displaying the result chains produced by the SBIA Working Groups. Additionally, please refer to SCRPD Section 2.1.11 for detailed result chains utilizing the Theory of Change procedure.

#### Theory of Change Statements

Based on the extensive experience of the Project proponent in working on biodiversity conservation and community Projects in the SCRPD landscape, a literature review, and from information obtained from the SIA workshops held, we applied the theory of change approach to justify our Project rationale and to produce indicators for the CCB monitoring plan. The theory of change is a hypothesis about how a Project intends to achieve its stated objectives, or a roadmap of how it plans to get from Project activities to Project impacts (Richards & Panfil, 2011). As such, we developed a theory of change for each Focal Issue.

The assumptions we make about the cause-and-effect relationships were made explicit in the Result Chain diagrams developed by community members during the SIA workshops, from which the theories of change statements are based. Indicators were developed for key results and assumptions; monitoring of assumptions was included to enable us identify points of deviation early enough. In other words, the indicators outlined in the Monitoring Plan (see Section 4.3) will enable measuring progress towards achieving the desired Project activity outcomes and impacts from Project activities and strategies.

- *Focal Issue 1: Poor Community Livelihoods:* IF there are adequate and functional health facilities, IF education is improved through better facilities and access through bursary schemes, and IF there is improved food security from sustainable intensified agriculture, THEN the communities will have higher incomes and improved livelihoods.
- *Focal Issue 2: Forest Destruction and Land Encroachment:* IF participatory land use planning is conducted and land tenure security strengthened, IF immigration and land allocations are strictly controlled, and IF the Community Protected Area (CPA) is developed following proper processes, THEN land grabbing, illegal logging and NTFP collection will be strictly controlled and the forest well preserved.
- *Focal Issue 3: Wildlife Poaching:* IF community-based eco-tourism is developed, IF the sensitization and awareness-raising is conducted among communities around the Project area, and IF security and law enforcement are strengthened, THEN the both poaching and demand in

wildlife and bush-meat will decline as will habitat loss, thereby leading to improved wildlife populations in the SCRP.

#### **4.1.1.2 Risks and negative impact analysis (CM2.1.)**

Some of the key risks identified included Human-induced risks including logging and charcoal production, fires encroachment for agriculture and settlement. Other were natural, political and policy (including carbon markets-related) risks which were all considered minimal (please refer to the SCRP PD, Section 2.1.18 for a detailed explanation).

During the SIA Community Workshops, the Working Groups were tasked to outline any possible risks and unexpected side effect(s) that might arise because of the Project successfully realizing the desired result. Additionally, they were also required to gauge the likelihood and magnitude of these impacts, and then propose possible mitigation.

#### **Potential Risks**

- Some villagers with legal land tenure sell land to land speculators and become landless again then continue to encroach further beyond agreed land boundaries
- Rich people push and/or pay the poor to clear forest beyond the boundaries so that they can buy land from the them at cheap price for speculative purposes
- Lack of will to provide honest and active participation from stakeholders (local communities, authorities, and NGOs) into land use planning activities
- NGO, relevant stakeholders and villagers do not agree with each other on land boundaries
- Insufficient budget for conducting participatory land use planning or zonation (producing and installing demarcation posts on the ground along land boundaries)
- Immigrants or community members' reluctance to give up their illegal jobs as loggers and or charcoal producers for other jobs due to cultural or financial reasons

#### **Potential negative impacts**

- The land use planning process results in loss of land for local community members
- Only small number of local families get benefit from eco-tourism thus the Project make separation between beneficiaries from non-beneficiaries creating social disharmony
- CBET attraction sites are not sufficiently unique thus not competitive comparing to other eco-tourism Projects in the area
- Waste from CBET-related activities is not well managed and village are not cleaned
- Tourists and tourism are not well managed leading to loss cultural beliefs and social disruption
- The microfinancing scheme leads to community members borrowing more money than they need or can repay, and are not able to pay back their debt

- The scholarship students do not want to come back and teach to their villages of origin after graduation leading to ‘brain drain’
- Agricultural production is not sufficiently diversified and market-driven leading to over production and/or production of low quality of products that do not fit the needs of the markets.

**4.1.1.3 Describe the expected changes in the well-being conditions and other characteristics of Communities under the without-Project land use scenario**

The SIA Community Workshop participants also Projected what would happen to the major direct causes identified for each of the three Focal Issues in the short-to-medium term (5-10 yrs.) in the absence of the REDD+ Project (Table 13) (please refer to the SCR PD Section 4.1.4 for additional details on drivers of the changes).

Table 13: Future without-Project Projections of the key contributing factors to the Focal Issues identified during the SCR PD SIA community workshops

a. Forest destruction and land encroachment

Focal issue aspect	5-10 years	What will drive the change
<b>Forest land grabbing</b>	Worsen	<ul style="list-style-type: none"> <li>• High cost of land; High rate of unemployment; Rich and powerful land speculators; Unclear forest boundaries; Low capacity of land management agencies</li> </ul>
<b>Illegal logging</b>	Worsen	<ul style="list-style-type: none"> <li>• Increased demand in timber making logging more lucrative; Bribery, corruption and no action taken by authorities; No viable alternative products to replace timber</li> </ul>

b. Wildlife poaching

Focal issue aspect	5-10 years	What will drive the change
<b>High demand in wildlife parts and bush-meat</b>	Worsen	<ul style="list-style-type: none"> <li>• High demand in wildlife, parts and bush-meat by local restaurants and for export; Immigration of poachers into the Project area due to growing poacher-middlemen-trader networking</li> </ul>
<b>Illegal easy un-controlled access into protected area forest</b>	Worsen	<ul style="list-style-type: none"> <li>• Forest destruction leading to increased access and more trails through which snares are ferried</li> </ul>
<b>Lack of wildlife habitat</b>	Worsen	<ul style="list-style-type: none"> <li>• Forest land encroachment; Forest fires for hunting; Weak law enforcement</li> </ul>



c. Poor community livelihoods

Focal issue aspect	5-10 years	What will drive the change
High living cost	Remain unchanged	<ul style="list-style-type: none"> <li>No well-functioning health facilities in the Project area; Lack of adequate teachers in schools with the Project area communes</li> </ul>
Low income	Worsen	<ul style="list-style-type: none"> <li>Inadequate development of education and skills to match growing needs; Poor agricultural techniques; and Population growth including immigration.</li> </ul>

**4.1.2 Negative Community Impact Mitigation (CM2.2)**

During the monitoring period, the community-wide activities undertaken including development of CBET activities, employment and deployment of rangers will start accruing benefits to mitigate for economic displacement for poachers and illegal logger, like access to bursary schemes, improved health access and agricultural training to help move them away from illegal activities.

**4.1.3 Net Positive Community Well-Being (CM2.3, GL1.4)**

As shown in Section 4.1.1, most of the activities initiated during the reporting period will have multiple positive impacts on a large segment of the communities under the SCR. The potential costs or negative impacts from implementing the proposed Project activities are minimal and are being mitigated for to some extent through the community Projects (e.g., for poachers). Consequently, the net well-being impacts for the reporting period are overwhelmingly positive given the proportion of the population potentially impacted, the magnitude of the impacts and their long-term nature.

**4.1.4 Protection of High Conservation Values (CM2.4)**

As shown under Section 4.1.1, the Project activities undertaken during the reporting period were all geared towards reducing pressure on the forest by diversifying livelihoods away from direct natural resource exploitation and enhancing forest protection. This inherently provides positive effects on the two high conservation values identified – water catchment protection and fisheries regulation; no negative effects are anticipated because of the Project activities.

**4.2 Other Stakeholder Impacts**

**4.2.1 Mitigation of Negative Impacts on Other Stakeholders (CM3.2)**

The SCR does not result in any negative well-being impacts on other stakeholders. Therefore, there is no mitigation needed.

**4.2.2 Net Impacts on Other Stakeholders (CM3.3)**

The activities undertaken during the reporting period lay crucial ground for the long-term protection of the Southern Cardamom watershed that is important for the fisheries of the Gulf of Thailand as it provides fresh water to the largest contiguous mangrove forest left in the Gulf, Peam Krasop Wildlife Sanctuary, a critical nursery for the region's fisheries. Further, the SCR has 20 major waterways that feed 88 villages

near the SCRП, including those that are not included in the Project Zone as Project Communities. All these communities stand to benefit directly from implementation of the SCRП.

### **4.3 Community Impact Monitoring**

#### **4.3.1 Community Monitoring Plan (CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)**

##### **4.3.1.1 Project Activity Implementation Status**

The Southern Cardamom REDD+ Project activity has been fully implemented since the Project start date of January 1<sup>st</sup>, 2015. The primary activity is the reduction of carbon emissions from the Project Area by halting deforestation and forest degradation. This is achieved through a variety of measures undertaken by the Project Proponent. Please refer to the SCRП PD Section 2.1.11 for a complete list of proposed Project Activities as well as their detailed descriptions. Implementation status for the first monitoring period (m1) is detailed as follows:

**10. Training on Agricultural Methods and Intensification:** Since 2004 Wildlife Alliance has supported a Community Agricultural Development Project (CADP) that initially worked with 187 families who undertook illegal swidden agriculture inside the forest within the Project Area. CADP worked to allocate legal land tenure for communities, provided training on modern agricultural techniques and financial literacy, and developed a community agricultural store and marketplace to link farmers with markets widely across southern Cambodia. CADP has increased the incomes and agricultural yields of members by >300%. Between 2015 and 2017 200 families were involved in CADP receiving technical support as required from Wildlife Alliance including the development of a community orchard.

Under the Southern Cardamom REDD+ Project, additional CADP Projects will be implemented for at least two communities located in the east of the Project Zone (Kamlot/Chay Reap and Romeng Sa) and, if REDD+ generates enough revenue, one other CADP Project will be implemented in the northwest, (O'some).

**11. Community-based Eco-Tourism Development:** The Southern Cardamom REDD+ Project supports Community Based Eco-Tourism in two areas within the Project Zone – Chi Phat (1 commune and 4 villages) and in the Areng Valley (3 communes and 8 villages). **Chi Phat Community-Based Ecotourism (CBET)** was established in 2007 with technical and financial support from Wildlife Alliance in order to provide alternative livelihoods to local people through tourism activities, reduce the threat to local natural resources, and conserve a region of exceptional natural and cultural significance. The CBET Project in Chi Phat currently supports **332 families** in the commune who act as service providers and have received training on a suite of skills required to effectively manage and implement ecotourism.

At present, there are approximately **240 women** participating in the Chi Phat CBET Project: CBET is actively encouraging more women to get involved and diversify their roles, including as forest and mountain bike guides. A large range of ecotourism activities have been developed by the community and marketing linkages with local and international tour operators have been established. Chi Phat CBET has been featured in international travel shows, magazines, including airline in-flight magazines, and the most popular and widely-used guidebooks. CBET Chi Phat has become one of the country's most successful Community Based Ecotourism Projects and is financially sustainable. Between **2015 and 2017 a total of 9,929** international and domestic tourists visited Chi Phat

generating **396,282 USD for community members and 102,764 USD for the CBET fund** to support operations.

Following the success of Chi Phat CBET, Wildlife Alliance began work in 2016 with eight additional communities in the Areng Valley to establish **Stung Areng Community Based Eco-tourism (STAR-CBET)**. STAR-CBET operates within the SCRP Project Zone within the biodiverse Areng Valley. This remote valley has high plant and animal biodiversity and is particularly significant for Asian elephants *Elephas maximus*, forming a key part of the Cardamom Elephant Corridor, and for freshwater biodiversity including the Critically Endangered Siamese crocodile *Crocodylus siamensis* and the Endangered Asian arowana *Scleropages formosus*. The Areng Valley is inhabited by eight forest communities (total population 461 families), the majority of which are ethnic Chong. Currently, the Chong do not have sustainable livelihoods that would enable them to find sufficient revenues from the forest. Consequently, many Chong families rely on a combination of illegal hunting and logging combined with unsustainable swidden agriculture. Social assessments conducted by Wildlife Alliance have identified Community Based Ecotourism and access to micro-finance, as preferred sustainable development activities for promoting economic diversification and forest protection. More than 80% of families requested assistance for CBET development so that their children will have greater opportunities and access to education and capacity building for sustainable jobs in the future.

Wildlife Alliance has coached the villagers in the eight villages of Chhay Areng Valley to prepare for business, by providing skill building in hospitality and small business management, computer and financial literacy, cooking and nature guiding, and provided financial support to upgrade homestays, visitor centers, purchase trekking tents and equipment. 139 families have been identified and initially trained as service-providers, 9 homestays have been developed, three visitor substations have been built (bamboo structures), and 60 tents have been purchased, along with all the trekking equipment. STAR-CBET was officially opened for business by the Provincial Governor of Koh Kong in January 2018, preceded by a soft-opening between June and December 2017 which resulted in a total of 884 tourists visited the area, generating just under 2,000 USD of income.

12. **Micro-finance:** Women's Community Saving Credit Groups are under development in eight villages in the Areng Valley with a 2018 target of at least 200 women participating. The Southern Cardamom REDD+ Project plans to expand this model to an additional 10 villages throughout the Project Zone by 2020.
13. **Participatory Land Use Planning:** Wildlife Alliance has worked with the Royal Government of Cambodia and provincial, district, and commune authorities since 2003 to develop clear spatial land-use plans for the Southern Cardamom, including securing community land tenure across a total of 28 villages in 11 communes. This work has benefited 5,980 families including 3,024 in Project Zone communities. An additional eight Project zone communities have yet to receive clear land zonation and tenure and this is planned for completion during the REDD+ Project implementation period. In addition to confirming community land tenure, the Project will work to demarcate the zones of the three Protected Areas which form the Southern Cardamom REDD+ Project (Tatai Wildlife Sanctuary, Southern Cardamom National Park, Botum Sakor National Park). This demarcation clearly highlights community land and helps mark the boundaries of the strictly protected zones (Core and Conservation) which comprise the Project Area and which are reserved for biodiversity conservation and ecosystem services.

- 14. Strengthening Community Organizations:** Wildlife Alliance has supported the formation of three Community Organizations – the Sovanna Baitong Agriculture Association, the Chi Phat and Stung Areng Community Based Ecotourism (STAR-CBET) Associations which have all been legally registered by the Cambodian Ministry of the Interior. All three associations were established following elections and agreement on precise bylaws and benefit sharing mechanisms. The Sovanna Baitong Agriculture Association comprises 200 members and 6 Service Groups, the management committee for STAR-CBET comprises 15 members all of whom are ethnic Chong, and the Chi-Phat CBET management committee currently has 7 members.

The role of the Sovanna Baitong Agriculture Association is to manage agriculture inputs and outputs at favorable market prices (Marketing Group), to provide Agriculture Support to its members (Agriculture Support Group with Agriculture Store and Community Nursery), to manage the Community Fund (Community Fund Group), to manage the natural resources on which the farmers depend, i.e. forest buffer zone around the village, streams supplying water to the village reservoirs, fish populations in the streams (Natural Resources Group), to manage the community waste (Waste Management Group), and to provide health education to the members (Health Education Group).

The role of the CBET Associations is to manage the ecotourism activities, to provide guest reception and billing, to ensure that benefits are equitably shared between service providers and that rules and regulations, particularly those pertaining to natural resource management, are followed and respected by CBET service providers and tour operators. Wildlife Alliance provides technical support to the CBET Association Committees included providing training, study tours, and support to attend national and regional ecotourism forum and events.

- 15. Enhanced Security and Law Enforcement:** Since 2002 Wildlife Alliance has worked across the Project Area partnering with the Royal Government of Cambodia to implement effective and professional law enforcement patrolling. Currently 98 rangers are employed (31 from the Provincial Department of the Environment and 67 from the Royale Gendarmerie and 14 Wildlife Alliance civilian station managers) operating out of 7 patrol stations and 2 substations. Between 2015 and 2017 8,942 patrols removed 71,510 snares, confiscated 573 vehicles and 1,524 chainsaws whilst initiating 143 judicial cases against offenders who were violating the Protected Area or Forestry Laws. Under the Southern Cardamom REDD+ Project, when carbon sales revenues will be sufficient, there are plans for the construction and operation support of an additional 3 ranger stations in locations where the forest is still at threat and are very far from the existing ranger stations (some areas are as far as 45 km from the nearest patrol station) Projected for 2019, 2020, and 2021. The entire north of the Project Area is particularly vulnerable to illegal logging, forest clearing and wildlife poaching, and it takes days for the rangers to access these areas, rendering patrolling there not as efficient as in the south, which is much closer to the ranger patrol stations. Opening of an additional 3 ranger stations will provide employment of an additional 45 local government rangers and 6 civilian station managers. In addition, the Project supports a 25-man Community Anti-Poaching Unit (CAPU), managed by the Chi Phat Community Based Ecotourism Association, that patrols in the Chi Phat commune, but is regularly underfunded, rendering the Unit ineffective at least 5 months out of the year. Thanks to funds Projected to be earned by REDD+ revenues, there are plans to provide proper funding to the Chi Phat CAPU and establish additional CAPU in the 3 communes of STAR-CBET.

16. **Sensitization and Awareness Raising:** The FPIC outreach activities in the SCRCP were conducted in the last quarter of 2017 and first quarter of 2018 with more than 50 meetings throughout the Project Zone, reaching a total of more than 2,500 individuals.

The Mobile Environmental Education team activities to be conducted during the lifetime of the REDD+ Project, and will follow Wildlife Alliance’s Kouprey Express (KE) model that focuses on communities surrounding Protected Areas, bringing environmental education to school children through interactive curricula and teacher training, and conducting edu-entertainment shows in the evenings for community adults.

Between 2015 and 2017, the KE undertook 30 educational missions around Protected Areas in the southwest of Cambodia, providing targeted environmental outreach to 876 students and 125 teachers. An additional 1,200 community members attended five community night road-shows.

17. **Community Scholarship Fund:** The Southern Cardamom REDD+ Project will create and manage a Community Scholarship Fund. This activity has yet to be implemented and thus there are no results from the 2015-2017 period. Proceeds from the Project will be used to create a fund for middle and tertiary education students from any of the 29 communities in the Project Zone. An independent committee will be formed to ensure fair and equitable distribution of scholarships. This activity will directly address a key driver of poverty in the Project Zone – a lack of accessibility to higher education. The fund is expected to be initiated in 2018, as soon as sufficient REDD+ revenues come in, and to be full-funded and operational by 2021, dispersing >100 grants each of ~5,000 USD annually.

18. **Direct Employment and Training on Income Generating Activities (IGAs):** The SCRCP expects to employ at least 250 full-time staff by 2020 working across all Project components: community-based ecotourism, community agricultural development, law enforcement, education, biomass plot sampling. Priority will be given to members from Project Zone communities.

#### **4.3.1.2 Community Impact Indicators**

The selection of appropriate indicators is invaluable to the impact assessment process, as they respond to the basic question: “*what should be measured to show that the claimed net social benefits are real and additional?*” (Richards & Panfil 2011). An ideal indicator from the perspective of showing attribution is one that measures an ‘intermediate state’ or assumption between an output and outcome or an outcome and an impact, clearly showing progress along a causal chain. Again, our theory of change logic in the Result Chain diagrams for the three Focal Issues – Forest destruction and land encroachment, Wildlife poaching and Poor community livelihoods – identified during the SIA Community Workshops provided us with a good basis for selecting indicators that factored in attribution. We selected a total of **49 indicators** for monitoring the social impacts of the SCRCP, including 19 Output, 26 Outcome and 4 Impact indicators (Table 14). The results from the activities undertaken during this monitoring period are indicated against the indicators below.

Table 14: The results of the Southern Cardamom REDD+ Project community impact assessment monitoring plan.

Key results	Indicator Code	Indicator	Monitoring Frequency	Result
<b>Decrease in illegal logging</b>	SIA001	# of land use planning meetings held with participation and support from local authorities	Monitoring Period	37
	SIA002	# participants in land use planning meetings	Monitoring Period	572
	SIA004	Volume of timber and logs confiscated by SCRCP patrol rangers	Annually	360 (190-1,711) m <sup>3</sup> timber 2,100 (258-4,416) logs
	SIA005	# of chainsaws confiscated by SCRCP patrol rangers	Annually	364 (134-579)
	SIA006	# of illegal kilns and bags of charcoal confiscated by SCRCP patrol rangers	Annually	396 (81-1,055) Kilns 177 (88-334) bags
	SIA007	# of legal cases submitted against forest criminals by SCRCP patrol rangers	Annually	43 (9-69) court cases submitted
	<b>Decrease in encroachment and land-grabbing</b>	SIA008	# of demarcation posts installed zoning forest and community areas	Monitoring Period
SIA009		# of land use maps (including CPAs) created and made available to community	Monitoring Period	11 maps for 11 communities
SIA011		# of forest fires in the SCRCP extinguished by SCRCP rangers	Monitoring Period	53 (44-96)
SIA012		# of illegal fences and signs removed by SCRCP rangers	Annually	720 (30-1,501)



	SIA013	# of illegal settlements (houses) and forest camps built inside the SCRCP Project area and removed by SCRCP rangers	Annually	464 (293-2,321)
	SIA014	# of land encroachment cases stopped by SCRCP rangers	Annually	149 (37-383)
	SIA015	# ha of forest within the SCRCP cleared for cultivation or settlement	Monitoring Period	0
<b>Greater community participation in eco-tourism activities</b>	SIA016	# of families participating in eco-tourism activities (CBET)	Monitoring Period	471 [332 in Chi Phat & 139 in Chay Areng]
	SIA017	# of trained tour guides	Monitoring Period	55 [25 in Chi Phat and 30 in Chay Areng]
	SIA018	# of families providing ecotourism service	Monitoring Period	471 [332 in Chi Phat & 139 in Chay Areng]
	SIA019	# tourism promotion initiatives undertaken	Monitoring Period	5 international exhibitions attended; ~6,000 likes on Facebook Page for CBET
	SIA020	# of tourists visiting the community eco-tourism facilities (CBET)	Monitoring Period	Locl: 1018 Intl.: 2368 Total since 2013 for Chi Phat 21.891 tourists (83% international)



	SIA021	Amount of revenue accruing from eco-tourism activities in the area	Monitoring Period	CBET: USD36,000  Service Providers: USD145,000
<b>Greater appreciation and awareness of wildlife benefits</b>	SIA022	# of awareness and sensitization meetings	Monitoring Period	
	SIA023	# of community members attending awareness and sensitization meetings	Monitoring Period	Greater than 2,000
	SIA024	# households with greater awareness about importance or conservation	Monitoring Period	
<b>Increase in wildlife populations including HCVs</b>	SIA025	# of rangers employed and trained	Annually	98
	SIA026	# and type of equipment provided including ranger outposts	Annually	9 outposts and 100+ ranger fully equipped [WA equipment protocols available on request]
	SIA027	# patrols undertaken, including coverage and distances	Annually	2910 (2,479-3,458)) ≈150,000-200,000km
	SIA028	# of vehicles and home-made guns removed confiscated by SCRPF forest rangers	Annually	34 (4-83) vehicles 33 (22-57) home-made guns

	SIA029	# of snares removed from the SCRП Project Area	Annually	21,564 (13,474-30,139)
	SIA031	# of live animals rescued from illegal wildlife trade by SCRП rangers	Annually	508 (302-713)
<b>Reduced cost of living</b>	SIA032	# schools constructed, repaired or equipped	Monitoring Period	
	SIA033	# teachers employed	Monitoring Period	
	SIA034	Amount of money allocated to bursary schemes	Monitoring Period	
	SIA035	# students benefiting from bursary schemes	Monitoring Period	
	SIA036	% of students not in school due to school fees	Monitoring Period	
	SIA037	# health facilities build or equipped	Monitoring Period	
	SIA038	# health workers employed	Monitoring Period	
	SIA039	% community members benefiting from SCRП-related health schemes	Monitoring Period	
	SIA040	# of functional schools in each Commune	Monitoring Period	
	SIA041	Teacher:student ratio in SCRП supported schools	Monitoring Period	
	SIA042	# of functional health facilities in each Commune	Monitoring Period	
	SIA043	Nurse/Doctor:population ration in Project Zone	Monitoring Period	

Higher income levels	SIA044	# of people directly employed by the SCRCP	Annually	Currently (2017) 150 government, community rangers and full-time CBET and support staff
	SIA045	# community members who have accessed the microfinance scheme	Monitoring Period	
	SIA046	# of people who have established IGAs through SCRCP assistance	Monitoring Period	
	SIA047	# community members who have undergone agricultural training	Monitoring Period	200 families
	SIA048	# agricultural demonstration plots established in the community areas	Monitoring Period	
	SIA049	% increase in yields and sales in local and external markets	Monitoring Period	300%

#### 4.3.2 Monitoring Plan Dissemination (CM4.3)

The Community Monitoring Plan has been established and accepted by the Project Proponent. The Plan has been made available for public review at the SCRCP Project Office, and was made available to each Commune in the Project Zone communities. The full results of the community monitoring are included in this Project Monitoring Report, which is being made publicly available in the Project Area by having a hard copy available for review at the Project Office. Additionally, a monitoring report summary has been written and provided to communities throughout the Project Area in English and Khmer. The monitoring report has additionally been posted to the website of the VCS and CCB for public review and comment.

## 5 BIODIVERSITY

### 5.1 Net Positive Biodiversity Impacts

#### 5.1.1 Biodiversity Changes (B2.1)

Change in Biodiversity	Asian elephant
Monitored Change	Consistent Asian elephant sightings (2011-2017) with zero poaching reported during this period (Figure 6)

Justification of Change	The most likely without-Project scenario would include increasing poaching and fewer sightings across the SCRPs (see Gray et al. 2016)
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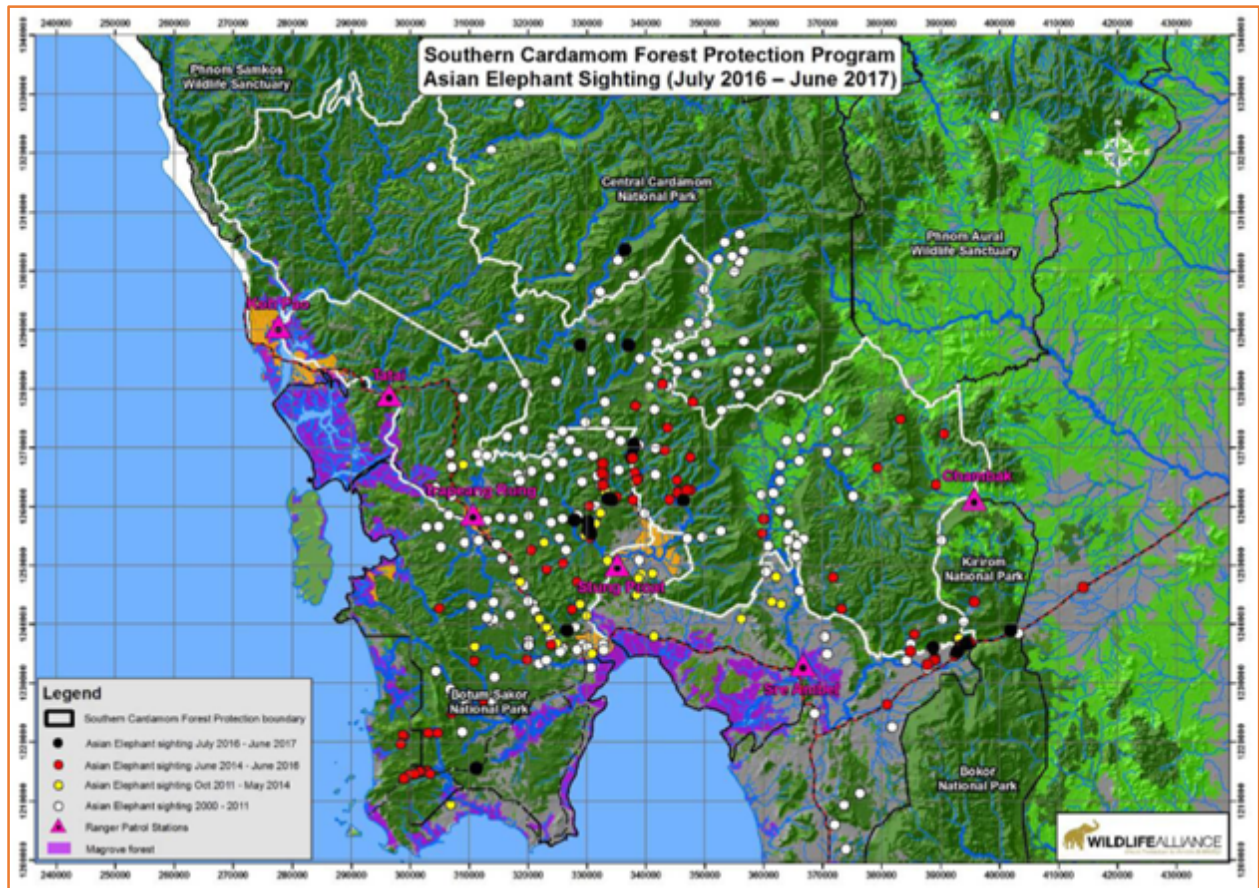


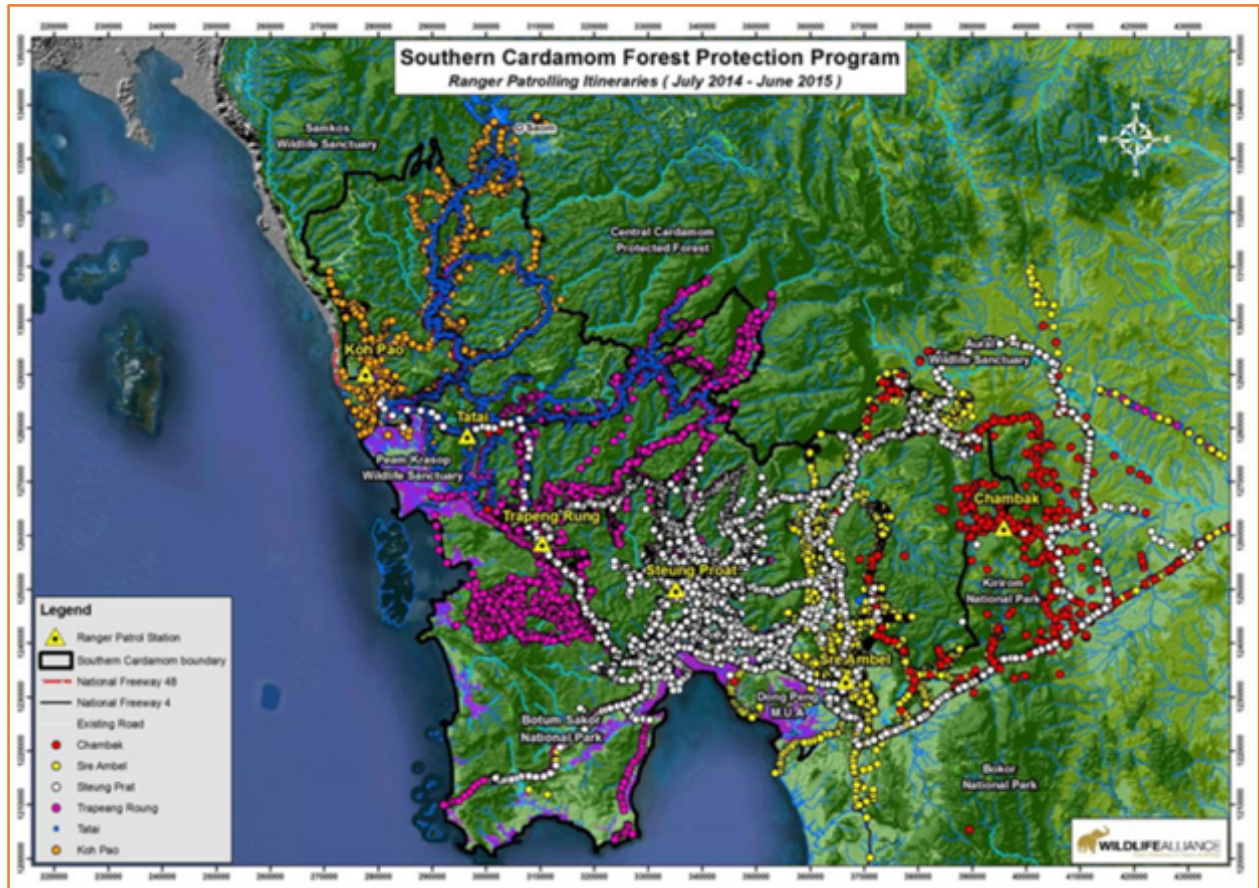
Figure 6: Elephant sightings across the SCRPs as recorded from ranger patrols from 2011 to 2017

Change in Biodiversity	Reduction in pressure (threats)
Monitored Change	Positive direct change
Justification of Change	Security and enforcement: We have set up ranger stations and helped recruit and equip rangers. Rangers were also trained on conducting professional law enforcement, and further supported through strengthening of legal procedures through the judiciary system. In 2014-2015, there were six ranger stations with 14 men each (2 Forestry Administration, 10 Military Police and 2 Wildlife Alliance). Ranger patrol effort has been increasing, from about 182,768 km covered by foot, boat, and car patrols in

	<p>2014-2015 to 202,869 km in 2016-2017 (Fig. FF). The 7<sup>th</sup> station was established in 2017.</p> <p>Demarcation and land-use zoning: During the reporting period, we also initiated activities towards zoning and demarcation of land for local communities, so that they can claim enough land for permanent agriculture or other livelihoods. This is a participatory process that represents the first step in engaging communities in the responsible management of their natural resources</p> <p>Wildlife Rapid Rescue Team: WRRT is a close-knit team of government-led officers who are putting their life on the line to save wild animals from cruel suffering and death. WRRT has the authority to investigate and crack down on wildlife crime in Cambodia. Wildlife Alliance provides animal husbandry (and rehabilitation), technical assistance for investigations, and financial support, with two staff dedicated full time to the unit. In 2014, the team was recognized by TRAFFIC who stated in its Bear Report that the WRRT is “<b>the leading example in anti-wildlife trafficking law enforcement</b>” with “high level of sustained enforcement and efficacious seizure”.</p> <p>These processes lead to positive impacts on biodiversity including reduced (forest) land grabbing</p>
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a) 2014-2015



b) 2016-2017

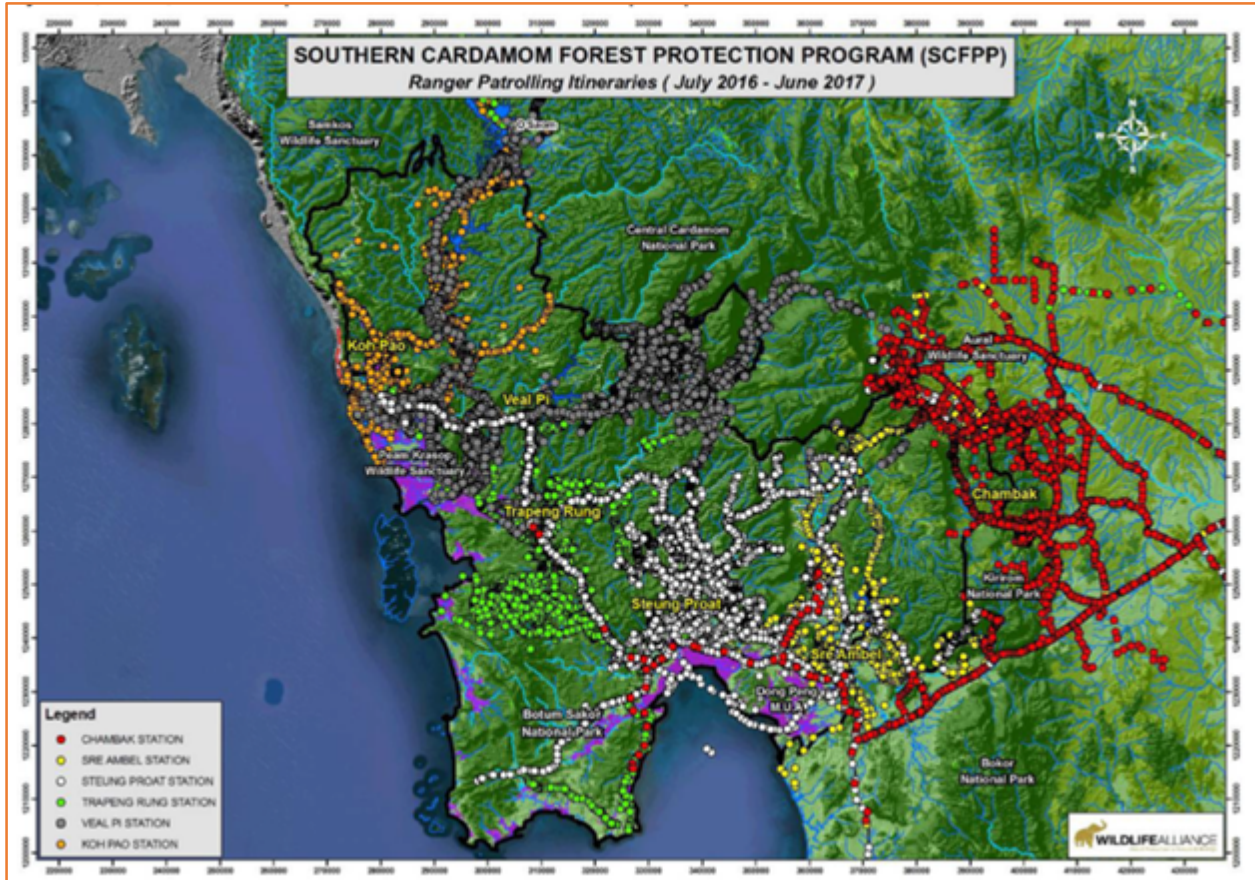


Figure 7: Coverage of the SCRCP by rangers from the six stations

### 5.1.1.1 Estimated Changes in Biodiversity in the Project Zone as a Result of the Project (B1.1.)

#### 5.1.1.1.1 Result Chain Diagrams

The following section describes the summary theory of change process and statements produced by the BIA Expert Workshop. Additionally, please refer to the SCRCP PD Section 5.2.1 for the detailed result chains utilizing the Theory of Change procedure.

#### Theory of Change Statements

Based on the extensive experience of the Project proponent in working on biodiversity conservation and community Projects in the SCRCP landscape, a literature review, and from information obtained from the BIA workshop, we applied the theory of change approach to substantiate our Project rationale and to produce indicators for the CCB monitoring plan. A theory of change is a hypothesis about how a Project intends to achieve its stated objectives, or a roadmap of how it plans to get from Project activities to Project impacts (Richards & Panfil, 2011). As such, we developed a theory of change for each of the three major Project activity areas identified: Security and law enforcement, Alternative livelihoods, and Awareness and sensitization.



The assumptions we make about the cause-and-effect relationships were made explicit in the Result Chain diagrams developed by workshop members during the BIA workshop, from which the theories of change statements are based. Indicators were developed for key results and assumptions; monitoring of assumptions was included to enable us identify points of deviation early enough. In other words, the indicators outlined in the Monitoring Plan (see Section 5.4) will enable measuring progress towards achieving the desired Project activity outcomes and impacts from Project activities and strategies.

- *Activity Area 1: Security and Law Enforcement:* IF budget is increased, IF number of rangers increase and capacity of rangers and managers is improved, IF there more patrols by well-motivated and equipped rangers, and IF relationships with prosecutors and the courts is improved THEN there will be increased numbers of arrests and prosecutions leading to reduced levels of logging, land encroachment, and poaching
- *Activity Area 2: Alternative Livelihoods:* IF community-based ecotourism and community NTFP groups are established, IF the local community is trained on modern agricultural techniques THEN there will be increased income to local communities and fewer people relying on direct access to the forest for their livelihoods, leading to reduced levels of logging, land encroachment, and poaching
- *Activity Area 3: Awareness and Sensitization:* IF there is a change in cultural behaviour of wildlife consumers, and IF there is increased knowledge and appreciation of biodiversity amongst local communities, THEN there will be reduced poaching and more people will be participating in conservation.

### **5.1.2 Mitigation Actions (B2.3)**

None of the Project activities is expected to have any negative impacts on biodiversity, including any of the area's HCVs. On the contrary, they are specifically designed to improve the status of the forest and habitat, as well as reduce any direct threats on wildlife from poaching. The level of uncertainty and risk associated with these activities is very low based on the Project proponent's decade-long experience with biological research and conservation work in this landscape, thus the precautionary principle was not explicitly applied here.

### **5.1.3 Net Positive Biodiversity Impacts (B2.2, GL1.4)**

#### **Comparison of without-Project and with-Project scenarios**

Based on the situation and without-Project analyses (please refer to details in the SCRP PD Section 5.1), most of the key drivers to the three Focal Issues were Projected as being likely to worsen in the absence of the SCRP, including:

1. Limited law enforcement
2. Demand for land and increasing land prices
3. High economic reward for poaching wildlife
4. Minimal risk of being prosecuted for poaching wildlife
5. Lack of understanding or capacity to show appreciation for biodiversity value
6. High demand for timber (both local and international).

Thus, the Project activities undertaken as described under Section 5.1.1.1 above will directly or indirectly result in clear biodiversity benefits compared to a without-Project scenario where all these key factors get worse.

Moreover, Cambodia's forests will also be affected by climate change impacts. The Projected increase in temperature has the potential to change the extent and composition of forests, such as a decrease in wet forests and an increase in moist forests (MRC 2010). Changes to forest composition may lead to changing availability of forest resources for rural livelihoods. Shifting seasons and rainfall patterns may lead to reduced forest productivity and increased risk of forest fires, while mangrove forests in coastal zones may be submerged by rising sea levels. Collectively, these effects could lead to the degradation and/or loss of forests, leading to diminishing wildlife habitats and decreased income security for forest-dependent communities.

Consequently, wildlife dependent on these forest and aquatic habitats would be adversely affected by these changes, both through habitat loss or increased poaching due to decreased income security. Thus, the Project directly helps the biodiversity both by reducing emissions hence mitigating climate change, and also as an adaptation strategy to these anticipated changes by maintaining critical habitats in good condition for these species. Additionally, corridors will make it possible for the wide-ranging species to move in case of drastic changes.

#### **5.1.4 High Conservation Values Protected (B2.4)**

In the SCRPD, three forms of biodiversity-related HCVs were identified (please refer to the SCRPD Section 5.2.4 of the PD).

- Wildlife under threat, i.e., on the IUCN Red List
- Threatened ecosystems – both forests and wetlands
- Critical ecological functions – mainly corridor and watershed services.

By protecting the Southern Cardamom Forest Landscape, the SCRPD will be directly protecting vital wildlife habitats, safeguarding critical water resources and maintaining landscape connectivity by keeping the corridor intact and unfragmented. As such, all the high conservation values (at the species, ecosystem or functional levels) will be much better in the 'With Project' versus 'Without Project' scenario for the reasons noted above (SCRPD Section 5.2.3).

#### **5.1.5 Invasive Species (B2.5)**

All Project Activities that include any planting or reforestation within the Project Zone shall utilize native or naturalized tree/plant species that will be nurtured in nurseries on-site. No non-native species will be used in the Project Accounting Area. All agricultural areas in the SCRPD landscape were excised from the Project Accounting Area *a priori*.

#### **5.1.6 Impacts of Non-native Species (B2.6)**

There are no invasive species in the SCRPD. Please refer to Section 5.1.5.

#### **5.1.7 GMO Exclusion (B2.7)**

No GMOs will be used to generate GHG reductions or removals.

### **5.1.8 Inputs Justification (B2.8)**

No inputs such as any fertilizers, chemical pesticides, biological control agents are intended to be used for the Project.

Proposed improvement of agricultural techniques for higher yields and better sustainability under the SCRCP will be based on climate-smart methods. The communities in this landscape are likely to face seasonal challenges of potential droughts in the dry season and floods due to heavy rains in the wet season. Furthermore, rainfall patterns have been shifting, with longer droughts, short rainy seasons and occasional flash floods. The adverse impacts of these climatic changes include increased risk of poor yields or even crop failure, and potentially greater incidence of pest and diseases.

Wildlife Alliance has developed sustainable income generating models for poor farmers living in the SCRCP landscape. Our farming approach considers the extreme swings of tropical weather and has developed adaptation methods so that farmers can bring produce to markets every two weeks, instead of just one harvest a year, as before. In Sovanna Baitong village for example, our approach has resulted in farmers earning 300 percent more income than before, as compared to when they were living in the forest from slash and burn cultivation.

## **5.2 Offsite Biodiversity Impacts**

### **5.2.1 Negative Offsite Biodiversity Impacts (B3.1) and Mitigation Actions (B3.2)**

There is little chance of the Project having significant negative biodiversity impacts outside the Project Zone which would not have occurred in the absence of the Project. All protected areas in Cambodia, even those receiving international donor support, face extensive threats currently particularly due to illegal wildlife trade and deforestation driven by many of the same factors as in the SCRCP. As such, the without-Project scenario for most the country's protected areas is dire and does not differ from the with-Project scenario. In addition, the robust law enforcement and community livelihood focus of this Project means that many of the local drivers of deforestation and biodiversity loss (which could be displaced to nearby protected areas) will be directly targeted by our Project through livelihood interventions or, in extreme cases, judicial action, prosecution, and custodial sentencing.

### **5.2.2 Net Offsite Biodiversity Benefits (B3.3)**

As there are no anticipated negative offsite impacts to biodiversity, evaluation of unmitigated offsite impacts is not applicable.

## **5.3 Biodiversity Impact Monitoring**

### **5.3.1 Biodiversity Monitoring Plan (B4.1, B4.2, GL1.4, GL3.4)**

An ideal indicator from the perspective of showing attribution is one that measures an 'intermediate state' or assumption between an output and outcome or an outcome and an impact, clearly showing progress along a causal chain (Richards & Panfil, 2011). For the SCRCP, we used our theory of change logic in the Result Chain diagrams (please refer to the SCRCP PD Section 5.2.1) as the basis for selecting indicators that factor in attribution. We then decided on the best sampling methods to use to collect these data to acceptable levels accuracy, precision and cost effectiveness whilst retaining transparency and simplicity. From this, a Monitoring Plan was developed to guide data collection.

The indicators could also be evaluated based on the Pressure-State-Response framework, which also relies on a causal-chain logic, where threats negatively impact the status/condition of biodiversity, while responses or Project interventions reduce pressure. Most Response indicators can be grouped under: Habitat improvement; Security enhancement; and Improvement of community livelihoods efforts. Pressure indicators fall under: Human population size and dynamics; Human-wildlife conflict (HWC); and Incidences including poaching, grazing, encroachment, charcoal and firewood collection amongst others. Finally, State indicators are grouped into three categories: wildlife (including species presence, diversity, distribution and movement); vegetation and land-use (including changes in various vegetation/habitat types, encroachment and fire). Most of the response and pressure indicators correspond to the social indicators developed in the Community Monitoring Plan (Section 4.3.1), and so the respective metrics are as described there.

On top, we determined 12 indicators not part of the social indicator set, also classified into three categories: Output 4; Outcome 4; and Impact 4 (Table 15). For these new indicators, two main strategies will be used to obtain the data: In-house reporting and Government records, mostly for output and outcome indicators, and surveys for most impact indicators. We envision two main aspects of state indicators to measure, each with a distinct set of monitoring protocols:

- Wildlife: wildlife surveys and monitoring for all species – with a focus on HCVs – will be done using several methods, ranger patrols, camera traps, faecal-DNA analysis (Gray et al. 2016), and information from any independent research Projects in the area
  - Ranger patrols – daily and continuous during the Monitoring reporting period
  - Elephant faecal DNA analysis: once-off due to costs of implementation
  - Six camera traps were installed from December 19, 2014 to March 13, 2015 with the aim of consolidating and confirming the findings of the rapid survey around the Chi Phat area (Figure 8). The camera traps aimed to further determine as much as possible the number and size of the different Asian elephant herds as well as the frequency of their passage in the area (e.g., see Figure 9).
- Vegetation and land-use: carbon plot monitoring plots and remote sensing (based on LANDSAT imagery) and GIS techniques (see Section 3.2.1).



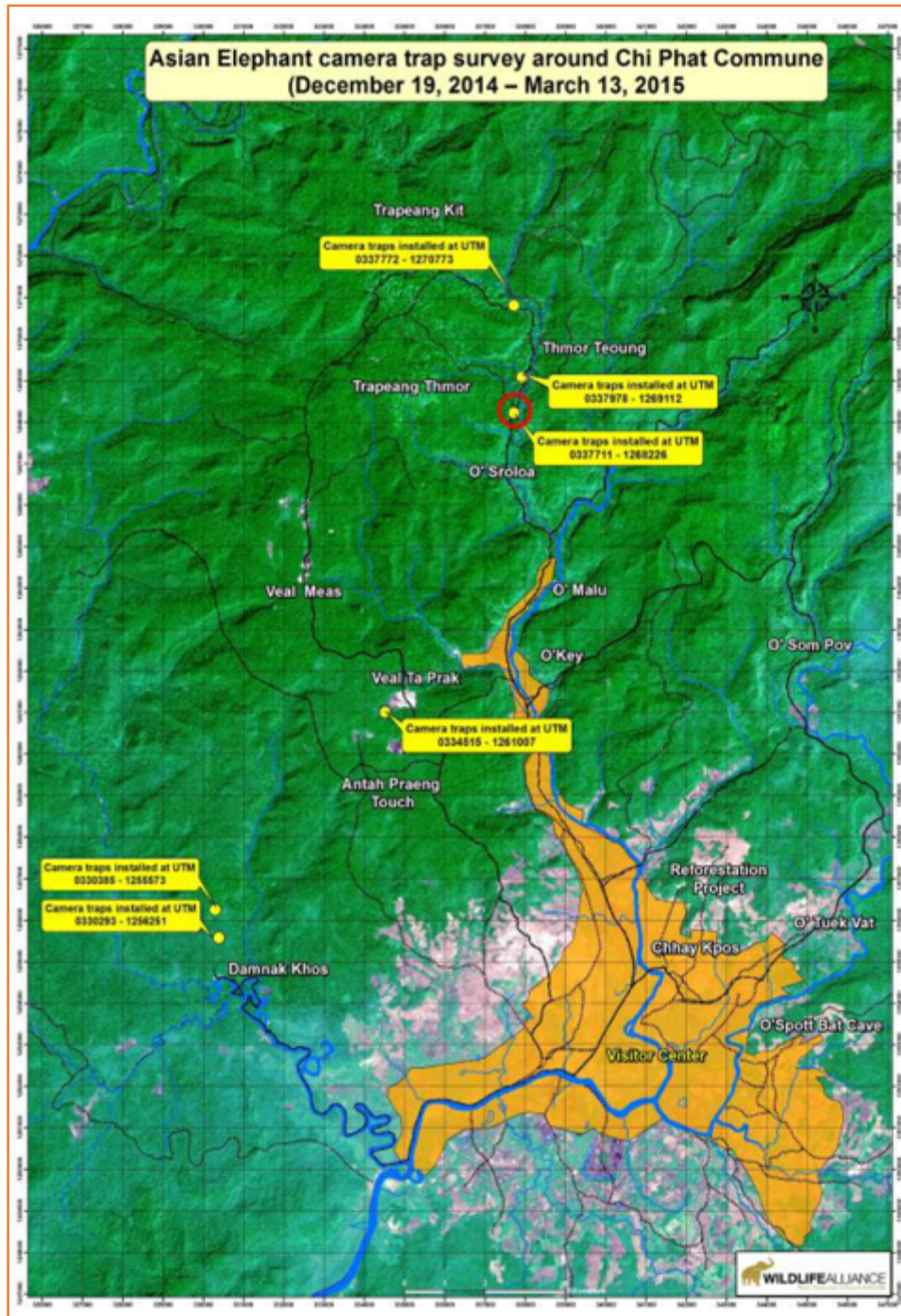


Figure 8: Points where the six camera traps were installed around Chi Phat Commune within the SCRP



Figure 9: An example of the data captured from one of the camera traps in the Chi Phat area of the SCRPP

Table 15: Results of the Southern Cardamom REDD+ Project biodiversity impact assessment monitoring plan.

Key results	SMART Objective	Indicator Code	Indicator	Monitoring Frequency	m <sub>1</sub> Result
<b>Decrease in illegal logging</b>	By 2027, reduce the number of illegal logging incidents by half in the SCRPP		Seven indicators included in the SIA Monitoring Plan	Monitoring period	
<b>Decrease in encroachment</b>	By 2022, two CPA are created,		Eight related indicators included	Monitoring period	

<b>and land-grabbing</b>	registered at MoE and their NTFPs can access markets		in the SIA Monitoring Plan		
		BIA003	# and types of NTFPs sold in markets	Monitoring period	
		BIA004	Amount of revenue accruing from NTFP sales from the area	Monitoring period	
<b>Greater community participation in eco-tourism activities</b>	By 2022 >2000 tourists visit CBET sites established and registered by MOE and MOT		Six indicators included in the SIA Monitoring Plan	Monitoring period	
<b>Greater appreciation and awareness of wildlife benefits</b>	By 2022, 25% more community members demonstrate greater appreciation for wildlife and conservation		Three related indicators included in the SIA Monitoring Plan	Monitoring period	
		BIA005	# conservation-friendly groups or curricula created or developed	Monitoring period	
		BIA006	% families engaging in illegal wildlife trade through selling wildlife meat products	Monitoring period	
<b>Increase in wildlife</b>	By 2027, reduce the number of wildlife poaching		Seven related indicators included	Monitoring period	



populations including HCVs	incidents by half in the SCRPs		in the SIA Monitoring Plan		
		BIA007	# ranger training sessions undertaken	Monitoring period	30
		BIA008	# ranger exchange programs undertaken	Monitoring period	
		BIA009	# rangers trained or involved in exchange programs	Monitoring period	
		BIA010	# poacher cases resulting in convictions	Monitoring period	
		BIA011	Presence, Abundance and Distribution of key HCVs	Monitoring period	<p>Northern Pig Tailed Macaque – naïve camera-trap occupancy from 3 studies (Gray et al. 2017) 36-51%</p> <p>Sunda pangolin – 0-17%</p> <p>Dhole 0-23%</p> <p>Sun bear 11-29%</p> <p>Greater hog badger 0-44%</p> <p>Mainland clouded leopard 7-9%</p> <p>Asian elephant 0-29%</p>

					Sambar 0-14%
<b>Reduced cost of living</b>	By 2027, 25% of community members with direct livelihood benefits from the SCRП		12 indicators included in the SIA Monitoring Plan	Monitoring period	
<b>Higher income levels</b>	By 2027, 10% of community members earning income directly from the SCRП and associated activities		Six related indicators included in the SIA Monitoring Plan	Monitoring period	
		BIA012	Amount of investment leveraged from external sources including Government and private sector for financing community ventures	Monitoring period	

### 5.3.2 Biodiversity Monitoring Plan Dissemination (B4.3)

Key outcomes from various monitoring aspects and metrics have been communicated widely via the Wildlife Alliance website. Additionally, there have been several peer-reviewed publications and donor reports written that are available online that contain key biodiversity data from the SCRП focusing on some of these indicators.

This monitoring report, in addition to an executive summary that has been translated in khmer, was additionally posted on the WA website and Facebook page.

### 5.4 Optional Criterion: Exceptional Biodiversity Benefits

This Project is seeking Exceptional Biodiversity Benefits based on the presence of IUCN Red Listed species and critical ecological functions.

**5.4.1 Trigger Species Population Trends (GL3.3)**

Thirty-five species (9 birds, 18 mammals and 8 reptiles) listed as globally Critically Endangered, Endangered, or Vulnerable by the IUCN occur (i.e., confirmed presence records since 2014) in the proposed Southern Cardamom REDD+ Project Area (see details in the SCR PD Section 5.5.1). The species and general activities related to threat reduction and habitat improvement listed under the positive impacts description (Section 5.1.1) are relevant to all these trigger species. In addition, the tiger re-introduction program which is in the pipeline demonstrates that the actions taken to improve habitat or reduce threat are working and promise to restore safe habitat and prey base for this iconic species (see details in table below).

Trigger Species	Tiger
With-Project Scenario	<p>Tiger Reintroduction: The last record of tiger from Cambodia was in November 2007 from Srepok Wildlife Sanctuary, Mondulkiri. The extirpation of tiger from Cambodia was largely due to poaching, of tigers and tiger prey, for the illegal wildlife trade.</p> <p>Acknowledging the species' functional extinction from Cambodia tiger reintroduction was identified as a critical action in the Cambodia Tiger Action Plan (CTAP): the Cardamom Rainforest Landscape, Koh Kong was one of two potential tiger reintroduction locations identified, mainly due to Wildlife Alliance's commitment to direct protection of forests and wildlife. In 2018 Wildlife Alliance will be working with all stakeholders – government, communities, and global conservation experts – to move tiger reintroduction plans forward including: Creating an inviolate Core Zone &gt;2,000-km<sup>2</sup> within the SCR PD for tiger recovery, Increasing the number of professionally equipped, trained, and supervised law enforcement rangers, Recovering populations of ungulate tiger prey base including sambar, Eld's deer, wild pig, and banteng, Developing safeguards for preventing Human-wildlife conflict and Strengthening legislation protecting tiger, tiger prey, and protected areas.</p>

## 6 ADDITIONAL PROJECT IMPLEMENTATION INFORMATION

### Development of Allometry: Southern Cardamom REDD+ Project

VM0009, version 3, section 9.3.3.1 specifies how to validate allometric equations used to estimate biomass for the Project. The methodology has several requirements with respect to validation of allometric equations.

#### **MRR.99 A list of all selected allometric equations used to estimate biomass for trees and non-trees**

The SCRП uses a single allometric equation to estimate the biomass of all trees in the Project area. The selected biomass equation is model II.2, from Chave et al. (2005):

$$AGB = EXP[-1.602 + (2.266 \times LN(DBH)) + (0.136 \times LN(DBH)^2) + (-0.0206 \times LN(DBH)^3) + (0.809 \times LN(sg))]$$

where: AGB is aboveground biomass in kg, DBH is diameter at breast height in cm, and sg is wood density in g/cm<sup>3</sup>

Non-tree, standing dead and lying dead biomass are not included as a carbon pool in the SCRП.

#### **MRR.100 For each selected allometric equation, a list of species to which it is being applied and the proportion of the total carbon stocks predicted by the equation.**

As documented in MRR.99, the SCRП uses a single allometric model for all trees in the Project area. Therefore, the Chave et al. (2005) model II.2 listed above is applied to all tree species included in the inventory. The Chave et al. (2005) equation is applied to 100% of the carbon stock. 'Annex 10 - Cardamom REDD Carbon Inventory v8.xlsm,' tab 'Parameters' in the table 'Tree Species Information' contains a list of all species for which the allometry was applied.

#### **MRR.101 For each selected allometric equation, indication of when it was first employed to estimate carbon stocks in the Project Area (monitoring period number and year of monitoring event).**

As this is the Project's first monitoring event (m<sub>1</sub>), this is the period where the selected allometric equation has been applied. As discussed in the MRR.100 and MRR.101, the Project uses a single allometric equation for all species in the biomass inventory. This equation is being applied for the first time in the current m<sub>1</sub> monitoring period, covering the dates of 2015 to 2017.

#### **MRR.102 For each selected allometric equation, indication of whether it was validated per section 9.3.3.1 or 9.3.3.2.**

The methodology states that if the allometric equation, or equations used were not developed in an area similar to the Project area or are from a biome-wide database, then it/they must be verified utilizing field measurements from the Project area, or an area similar to it. The selected model was previously developed in existing peer-reviewed literature and is therefore validated under section 9.3.3.1 of the methodology VM0009 v3.

#### **MR.103 Documentation of the source of each selected allometric equation and justification for their applicability to the project area considering climatic, edaphic, geographical and taxonomic similarities between the project location and the location in which the equation was derived.**

Model II.2 from Chave et al.2005 was selected for application to 100% of the trees for the SCRCP forest inventory. This model was specifically developed to be used in tropical forests. The appropriateness of this model to be used in Cambodia is demonstrated by the fact that the Chave et al.2005 models have become common and generally accepted for use in Cambodia throughout the scientific and forestry community. The Government of Cambodia is proposing to use these models to estimate above-ground biomass for the national forest inventory, ultimately contributing to the calculation of the Cambodian national FREL (RGC, 2017). Additionally, the VCS Keo-Siema REDD+ Project, located in eastern-Cambodia in a similar evergreen forest type, applied allometric equations from the Chave et al. (2005). Lastly, FAO performed a study on best methods with which to estimate biomass in Cambodia (Sola et al. 2014). They identified Chave et al. (2005) as the best fit and most conservative approach for the estimation of above-ground biomass in Cambodia, utilizing data from several Cambodian field sites, including the SCRCP Project area.

Through validation and a corresponding derivative test required in VM0009 section 9.3.3.1, the selected model was deemed accurate to the SCRCP Project area. The selected equation, Chave Model II.2, was found to predict biomass at - 6.4% of the measured biomass using the ratio of sums method from section 9.3.3.1, which falls within +/-15% specified requirement. Cumulative measured biomass is greater than the total biomass predicted by the allometric equation. However, because the largest tree in the destructive harvest sample is 4 cm smaller at DBH than the largest tree in the inventory (133.2cm vs 137.5cm), the methodology requires demonstration of additional criteria. In Table 16, we note that the measured biomass for the largest tree in the sample (DBH 133.2 cm) is higher than the predicted biomass by the selected equation Chave model II.2. As required by VM0009 Section 9.3.3.1, a calculation of the derivative of the model was performed. Derivative values for the largest tree in the sample and the largest tree in the inventory were then determined and compared. The derivative for the largest tree in the inventory was 3% higher than the derivative for the largest tree in the sample (312.8 kg/cm vs. 303.5 kg/cm). We therefore elected to conservatively cap DBH for the carbon inventory at the value of the largest tree in the validation sample set (133.2 cm). It should be noted that only a single tree from the inventory had a DBH larger than the largest tree in the validation sample set, so that tree's DBH (137.5 cm) was conservatively changed to 133.2 cm. The allometry validation worksheet containing the abovementioned calculations have been provided to the auditor.

**MR.104 A list of allometric equations validated by destructive sampling.**

Model II.2 from Chave et al.2005 was validated by use of destructive sample data from existing literature.

**MR.105 For each, the number of trees (or non-trees) destructively sampled and the location where the measurement were made relative to the Project area.**

For the single allometric model applied to the Project, two separate published studies employing destructive harvesting of trees in Cambodia were used for the validation, with a total sample size of 46 trees. The majority of the destructive harvest data (34 trees) was from a site approximately 30 km from the SCRCP, and of the same forest type and climatic conditions as the Project Area (Chave et al. 2014). The UTM coordinates of the site are 325147.51 m E, 1208702.52 m N. The second set of destructive harvest data (12 trees) came from a site approximately 385 km from the Project Area. The coordinates of the site are 699326 m E, 1366949 m N. The forest type and species composition at this site are very similar to that of the Project Area. This study site has a slightly drier climate than the Project area, with a reported average rainfall of 2200 - 3000 mm/yr compared to 2500-4000 mm/yr for the SCRCP. However, the range of elevations in this study site (60 - 750 m) are very similar to the Project Area, (10 - 980 m), and the general topography of the study site and the Project Area, being comprised of a combination of mountainous slopes, valleys and plateaus, show good similarity.

**MR.106 A field protocol used to measure destructively sampled trees (or non-trees).**

Two destructive harvest studies from literature were utilized, including a destructive harvest dataset from Hozumi et al. (1969) (per Chave et al. 2014) and from the Keo-Seima REDD+ Project. The Keo-Seima REDD+ Project included the report that the destructive harvest field protocol from Walker et al. (2009) was followed. Hozumi et al (1969) describes the field protocol starting on page 11 in the section “Methods of Field Survey” used to measure biomass in the Cheko, Cambodia dataset and the manuscript has been provided to the auditors for reference. Therefore, the quality of the data is demonstrated.

**MR.107 Justification that the field protocol for the destructive measurement method conservatively estimates biomass.**

The two literature sources used to complete the destructive harvest are well known and have undergone independent assessments. The Keo-Seima REDD+ Project utilized a generally accepted destructive harvest method (Walker et al. 2009) and underwent independent validation and verification as part of that Project’s VCS certification. The Cheko study, performed by Hozumi et al in 1969 and referenced by Chave et al (2014) shows good correlation between total biomass in the Cheko region and similar forests in Kao Chong and moist tropical forest in Ghana, indicating that the protocol accurately estimates biomass.

**MR.108 For each allometric equation in the list, a figure showing all the destructive measurements of biomass compared to predicted values from its selected allometric equation.**

Table 16: The destructive biomass measurements from the Cheko study and the Keo-Seima REDD+ Project are shown compared to the predicted biomass values from the 3 different forms of the Chave et al. (2005) allometric models. The Chave model II. Was shown to be the best fit and was selected for use in the SCRP.

Study	Species	Specific Gravity (g/cm <sup>3</sup> )	DBH (cm)	Height (m)	Measured Biomass (kg)	Chave II (kg)	Chave No Height (kg)	Chave With Height (kg)
Cheko	Unknown	0.74	5	8.2	8.58	7.907	7.973	7.722
Cheko	Unknown	0.56	5.2	7.7	5.84	6.974	6.681	5.935
Cheko	Unknown	0.77	5.2	6.3	5.28	9.023	9.186	6.677
Cheko	Unknown	0.47	5.3	8.3	7.8	6.353	5.892	5.578
Cheko	Unknown	0.74	5.5	8.9	8.98	10.080	10.217	10.141
Cheko	Unknown	0.54	5.5	8.3	5.22	7.812	7.456	6.901
Cheko	Unknown	0.56	5.7	9.3	9.31	8.813	8.488	8.613
Cheko	Unknown	0.54	5.7	6.9	6.58	8.557	8.184	6.162
Cheko	Unknown	0.54	5.8	7.3	7.5	8.946	8.565	6.750
Cheko	Unknown	0.54	5.9	10.3	7.83	9.345	8.957	9.855
Cheko	Unknown	0.54	5.9	10.2	9.23	9.345	8.957	9.759
Cheko	Unknown	0.54	6	11.5	10.69	9.755	9.360	11.379
Cheko	Unknown	0.54	6.3	8	10.61	11.050	10.637	8.727
Cheko	Unknown	0.56	6.4	10.9	12.13	11.848	11.497	12.726
Cheko	Unknown	0.54	6.5	6.1	8.72	11.970	11.547	7.084
Cheko	Unknown	0.74	6.6	9.3	17.17	16.061	16.471	15.259
Cheko	Unknown	0.74	6.7	8.8	14.54	16.691	17.136	14.879
Cheko	Unknown	0.68	6.8	10.3	15.31	16.190	16.372	16.485
Cheko	Unknown	0.56	7.2	12.7	16.53	16.018	15.674	18.766
Cheko	Unknown	0.68	7.5	10.3	20.77	20.809	21.197	20.053
Cheko	Unknown	0.56	7.6	12.7	19.07	18.399	18.078	20.909
Cheko	Unknown	0.77	7.6	8.3	19.25	23.805	24.857	18.789
Cheko	Unknown	0.56	8.2	8.4	15.97	22.356	22.100	16.100

<b>Cheko</b>	Unknown	0.68	8.7	7.2	19.32	30.448	31.388	18.862
<b>Cheko</b>	Unknown	0.56	9.2	11.3	28.88	30.033	29.975	27.262
<b>Cheko</b>	Unknown	0.54	9.4	11.3	26.63	30.816	30.601	27.444
<b>Cheko</b>	Unknown	0.56	9.9	11.9	40.62	36.248	36.412	33.245
<b>Cheko</b>	Unknown	0.56	11.8	15.4	68.09	56.848	58.040	61.121
<b>Cheko</b>	Unknown	0.74	11.8	11.5	57.43	71.226	76.696	60.313
<b>Seima</b>	Chhlik / Terminalia alata Roth	0.75	13	10.7	63	92.255	100.534	69.032
<b>Seima</b>	Trach / Dipterocarpus intricatus Dyer	0.64	14	10.65	81	98.064	104.439	67.999
<b>Cheko</b>	Unknown	0.48	16.6	17.2	115.57	119.936	123.019	115.799
<b>Seima</b>	Onsoy / [unidentified species]	0.72	19	9.13	98	233.742	262.522	120.292
<b>Seima</b>	Rang Phnom / Shorea siamensis Miq.	0.86	22	14.75	220	392.021	462.958	312.503
<b>Seima</b>	Troseak / Peltophorum sp.	0.72	22	12.8	257	338.401	385.996	226.106
<b>Seima</b>	Pchek / Shorea obtusa Wall.	0.72	24	16.6	390	421.048	484.718	348.970
<b>Cheko</b>	Unknown	0.55	25.5	25.5	373.7	395.405	435.503	464.196
<b>Seima</b>	Koki/Hopea sp.	0.72	34	25	986	1006.731	1204.095	1063.893
<b>Cheko</b>	Unknown	0.46	37	24	660.66	858.778	950.266	769.290
<b>Cheko</b>	Unknown	0.55	41.3	24.7	1214.57	1296.622	1501.006	1179.445
<b>Seima</b>	Sokrom / Xylia dolabriformis Benth.	0.72	44	19.12	1865	1872.621	2294.635	1350.986
<b>Seima</b>	Chambok / Irvingia malayana Oliver ex A. Benn.	0.99	49	18.85	1396	3147.385	4144.174	2280.639
<b>Seima</b>	Khlong / Dipterocarpus tuberculatus Roxb.	0.72	52	23.8	3489	2793.137	3477.106	2348.774
<b>Seima</b>	Sralao / Lagerstroemia	0.72	89	34.25	9765	9674.700	12572.94 <sub>5</sub>	9901.437



	calyculata Kurz							
<b>Seima</b>	Chheuteal / Dipterocarpus alatus Roxb.	0.72	93	44	14016	10673.825	13910.906	13889.168
<b>Cheko</b>	Unknown	0.56	133.2	44.2	20578.48	19089.104	24172.270	22353.037
	<b>Total Biomass</b>				<b>56072.86</b>	<b>53047.497</b>	<b>67135.684</b>	<b>57355.060</b>

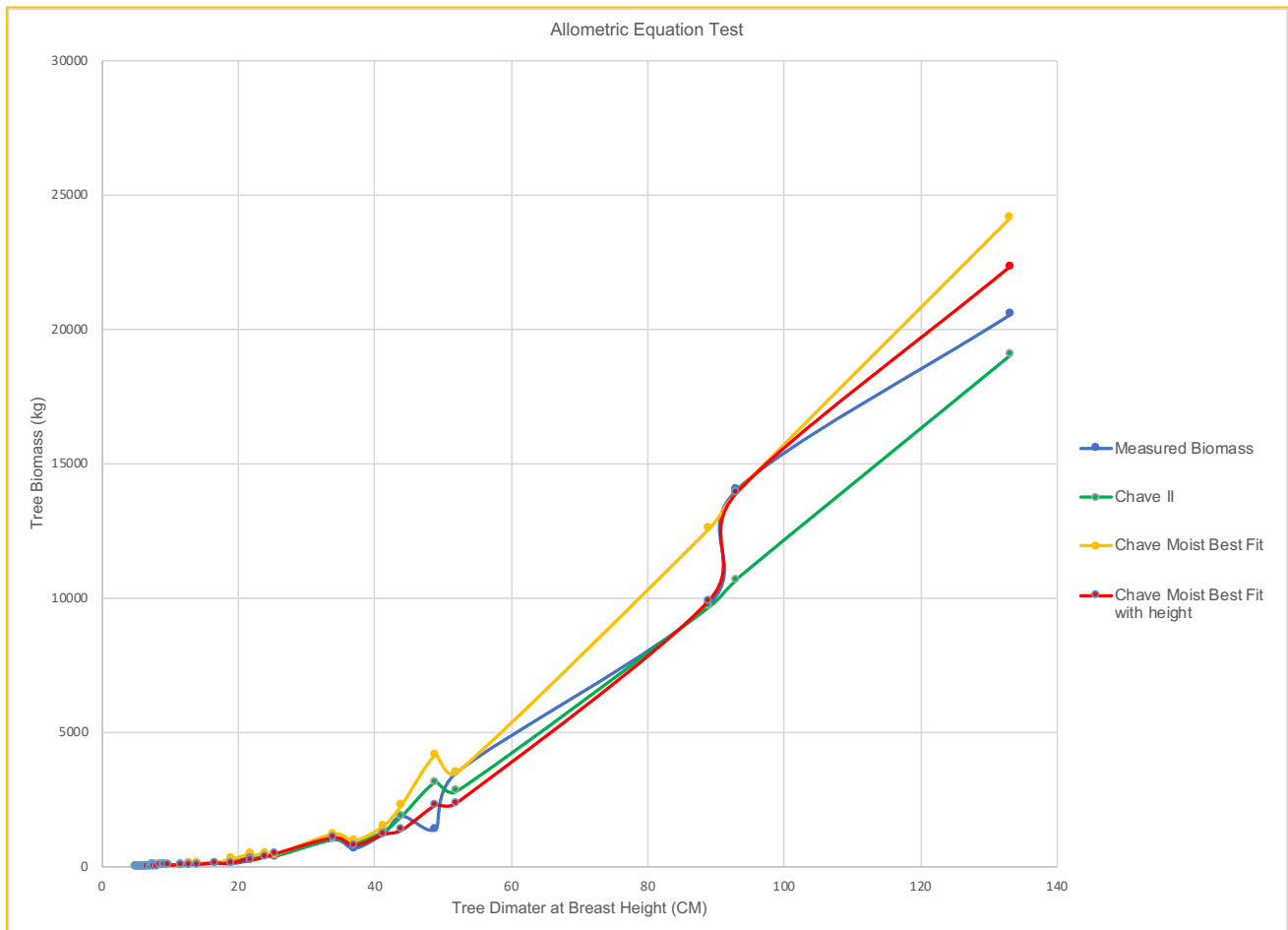


Figure 10: Destructive biomass measurements from the Cheko study and the Keo-Seima REDD+ Project compared to the predicted biomass values from 3 models from Chave et al. (2005) that were evaluated for best fit. The Chave model II.2 was shown to be the best fit and was selected for validation and use in the SCRP.

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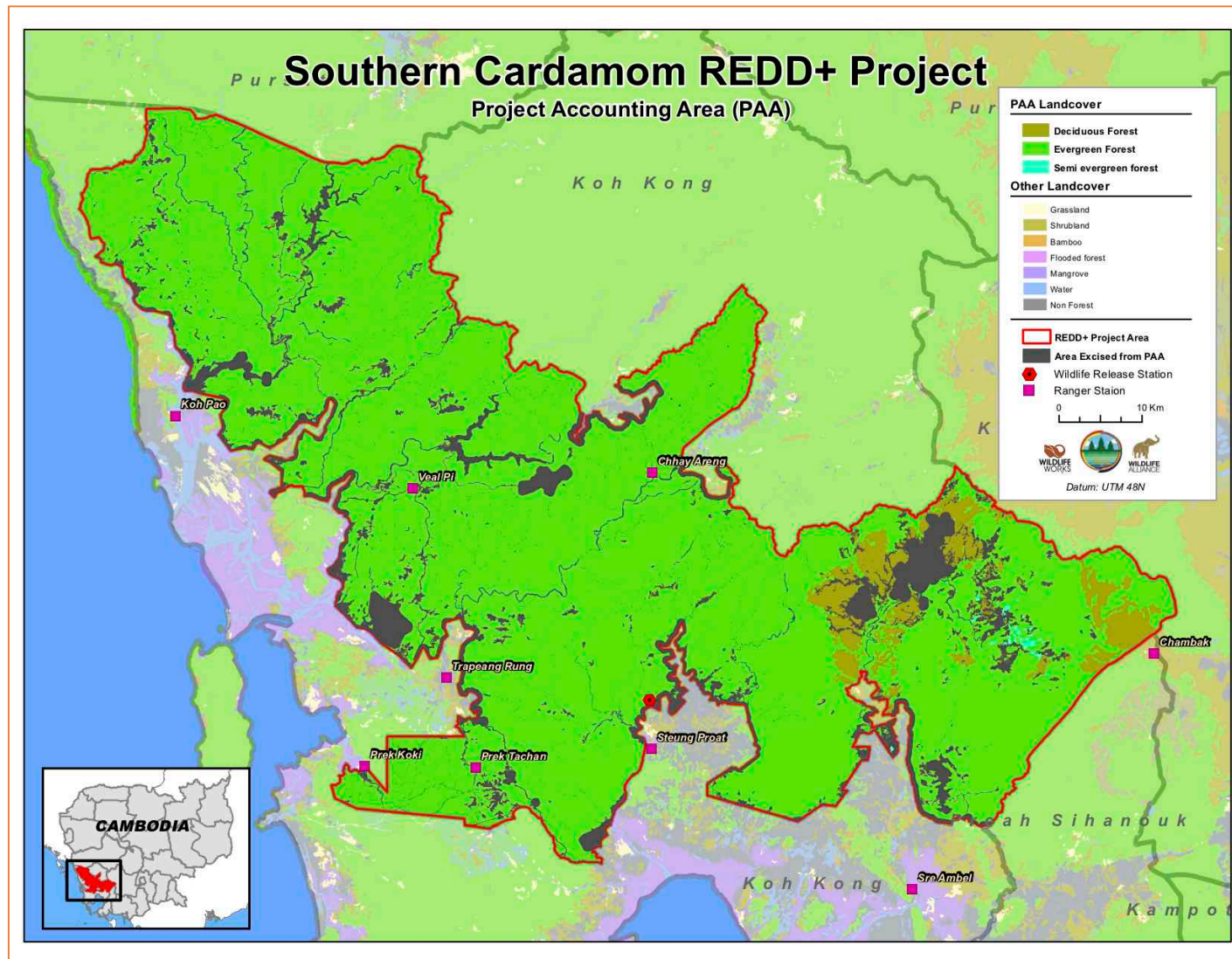
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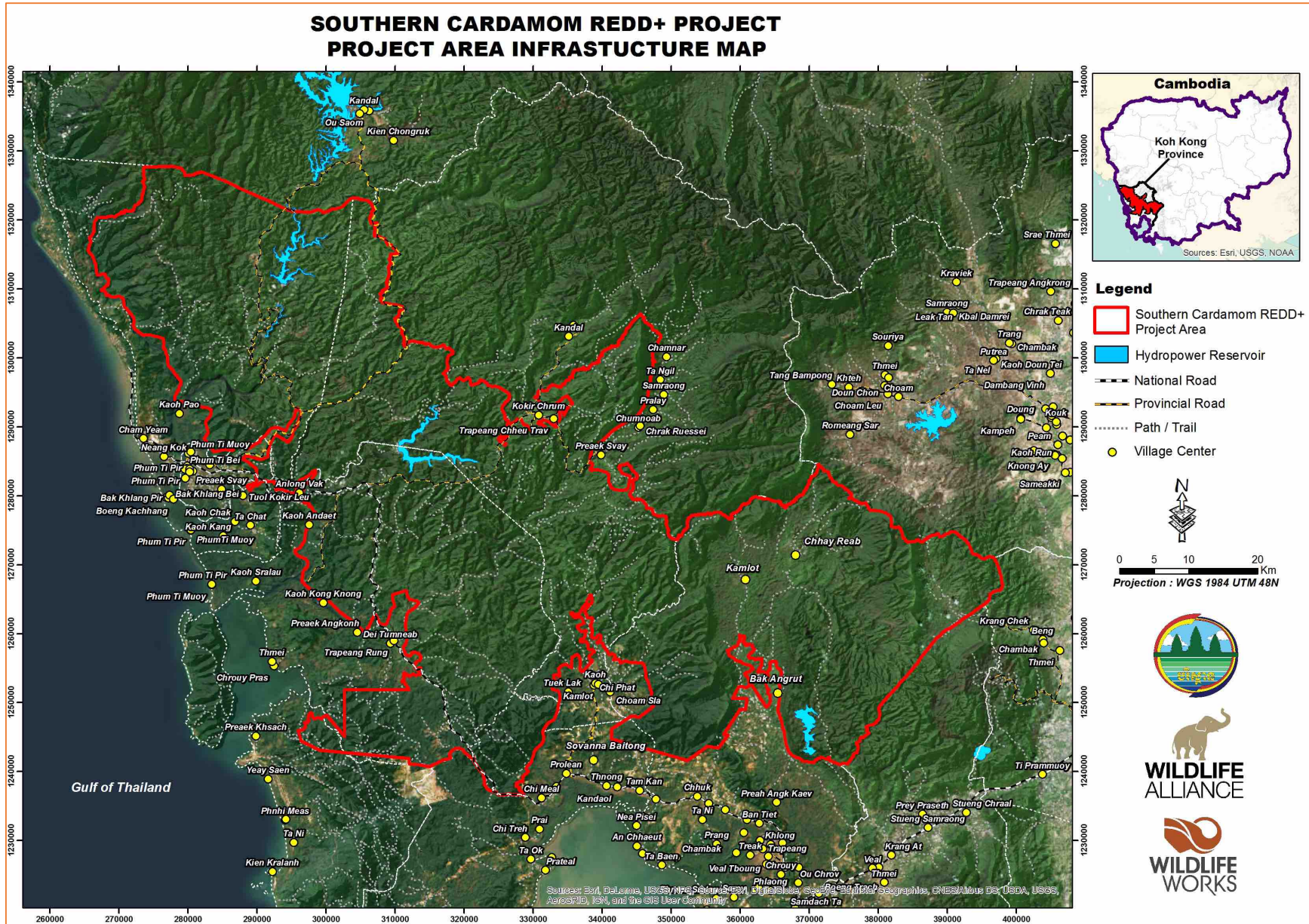
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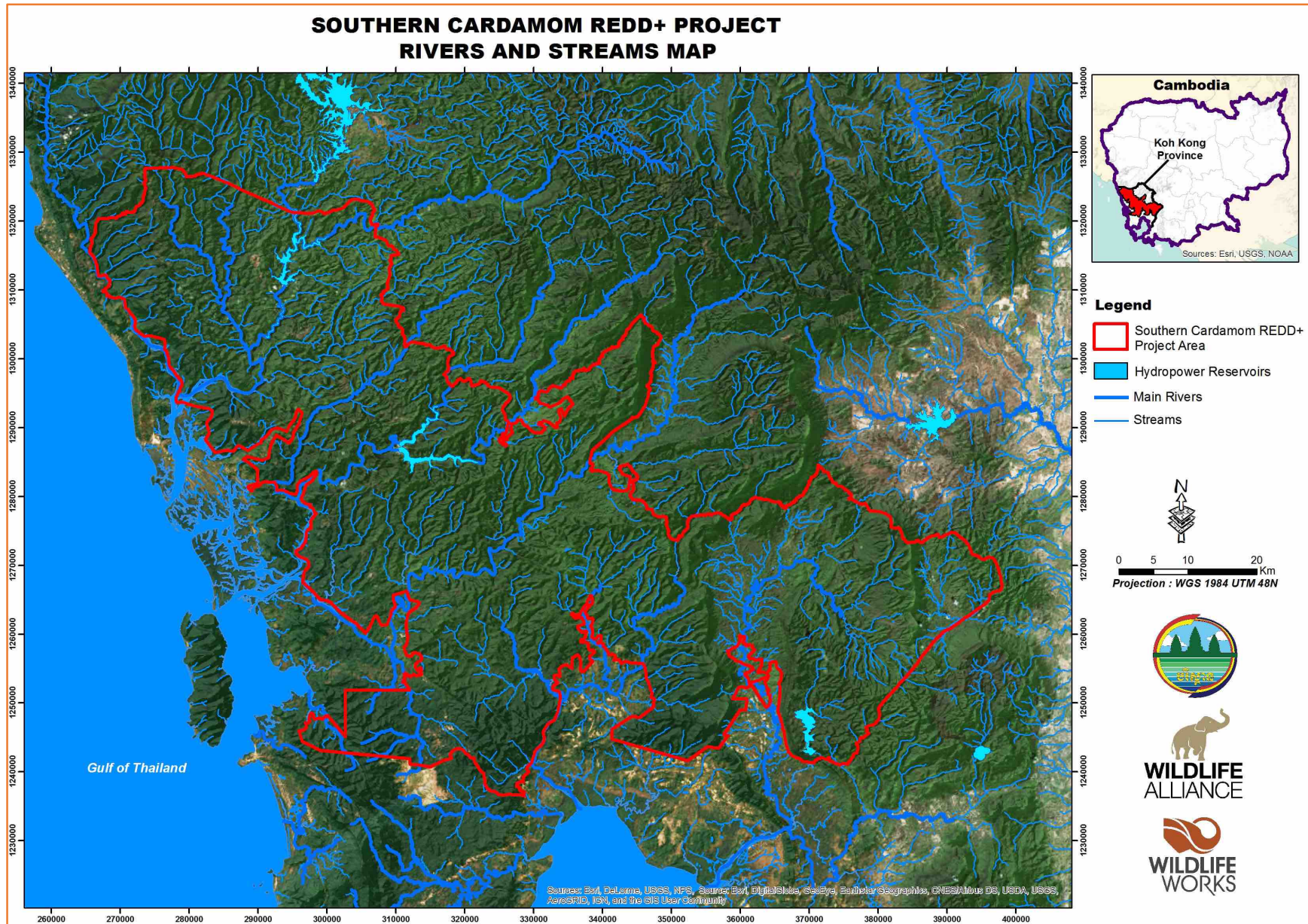
Appendix A: Project Area Maps



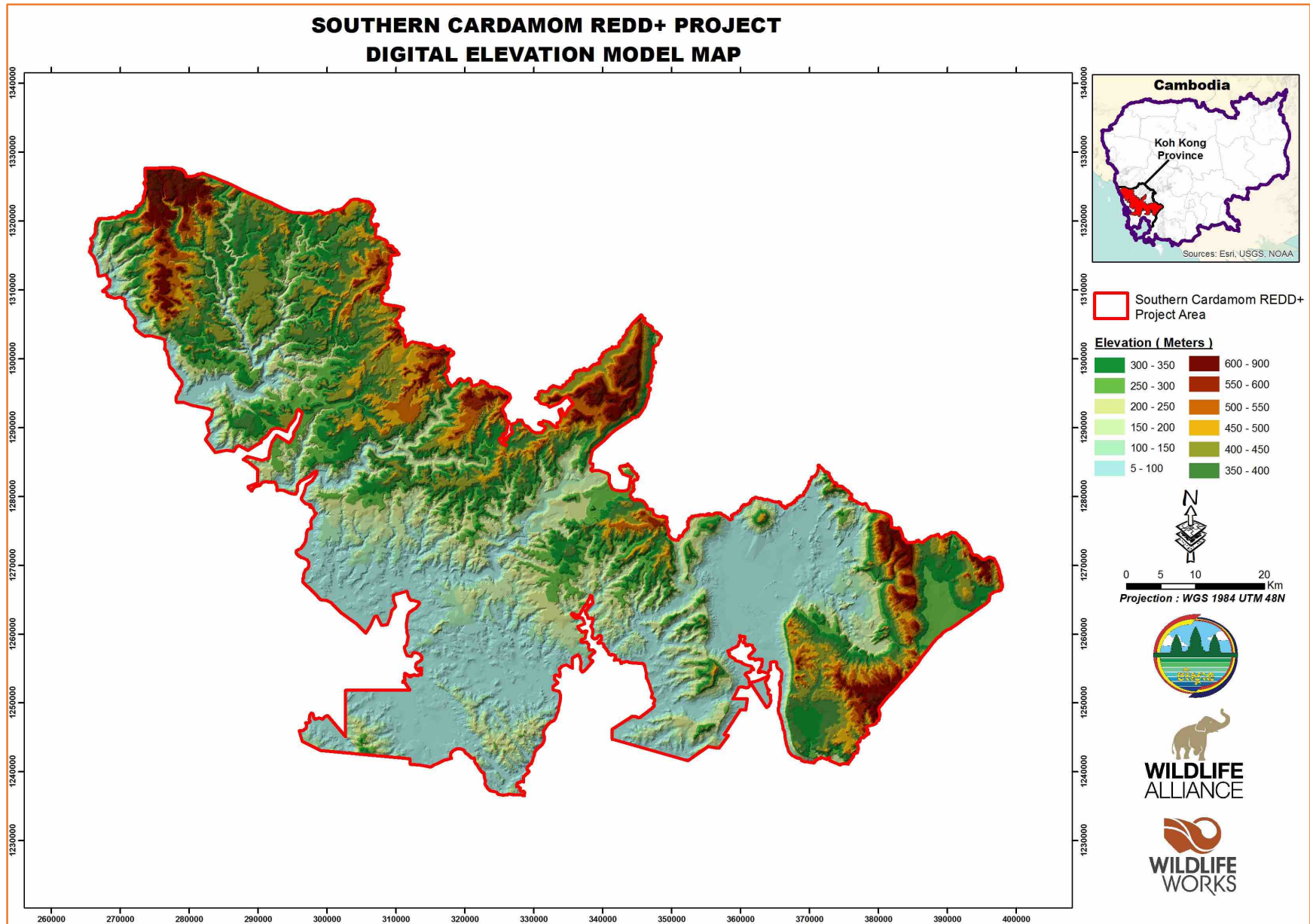


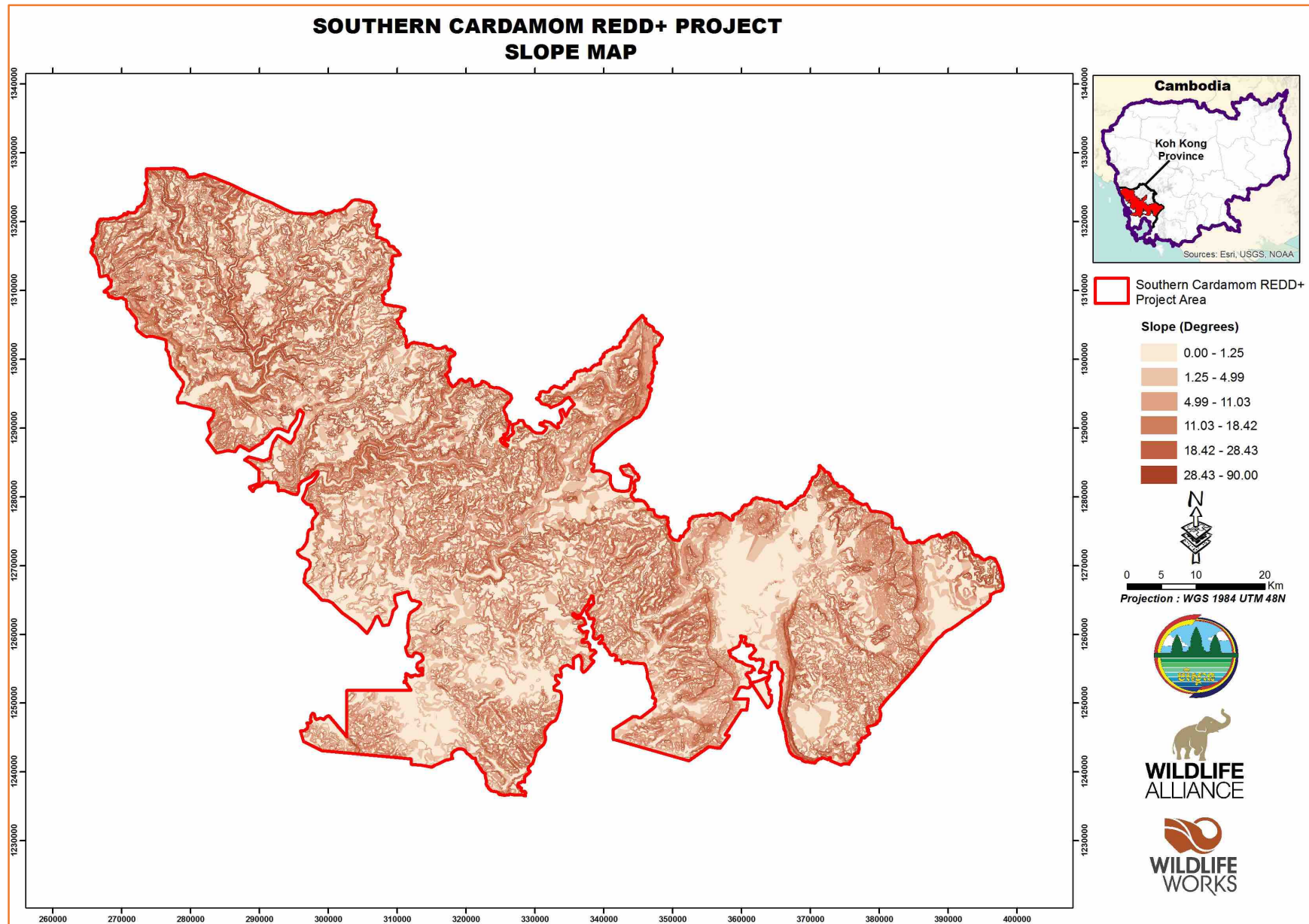




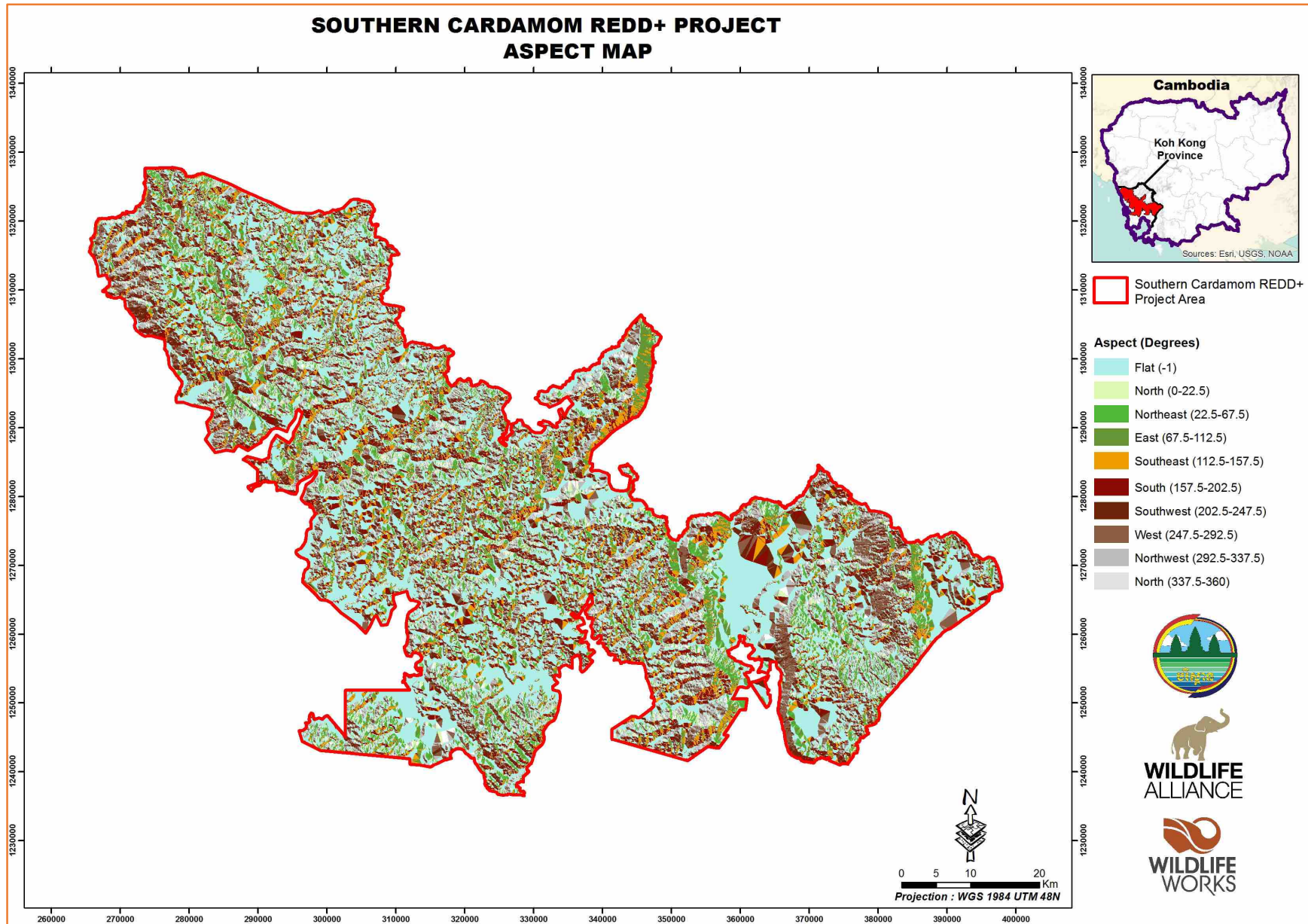


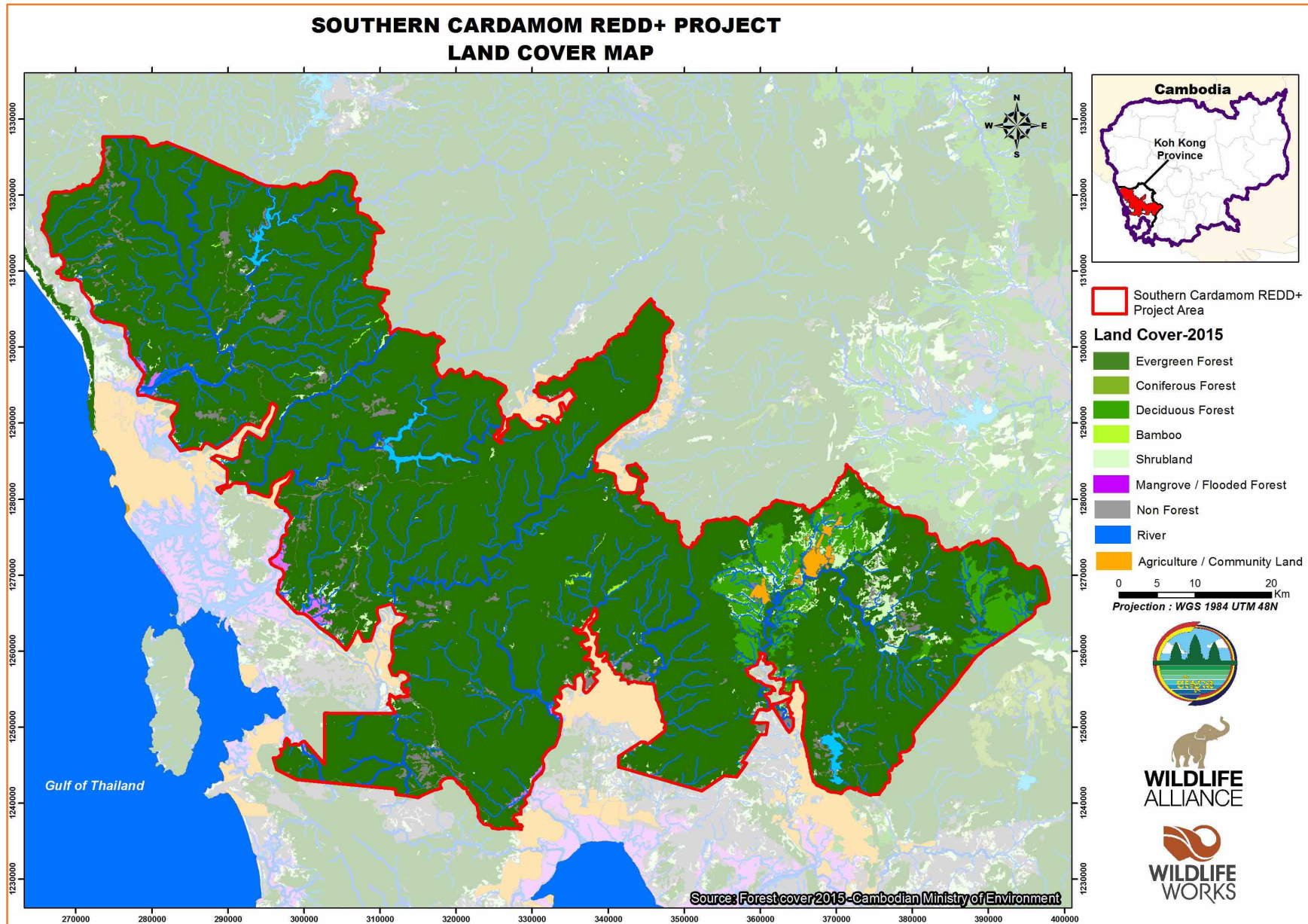




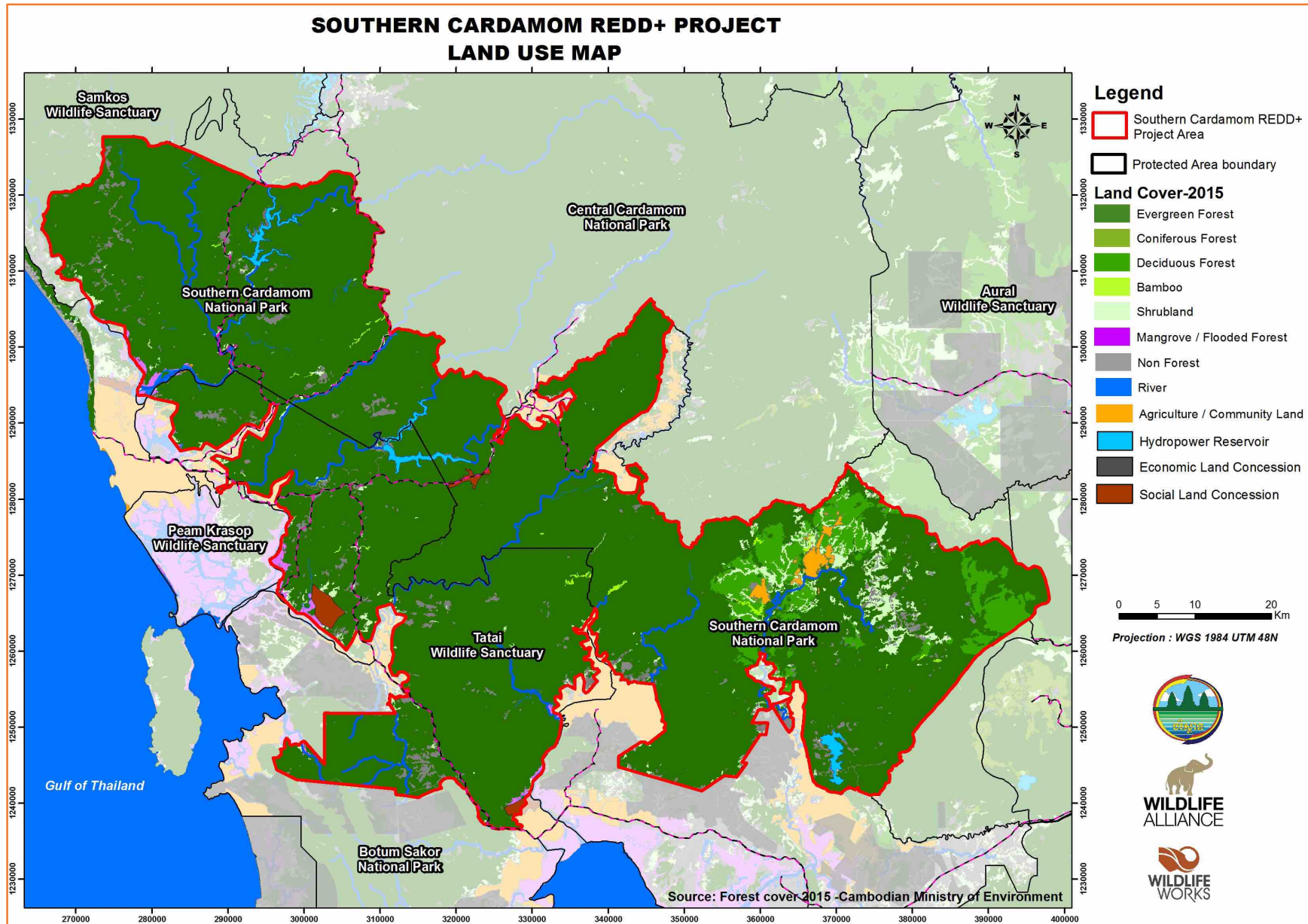


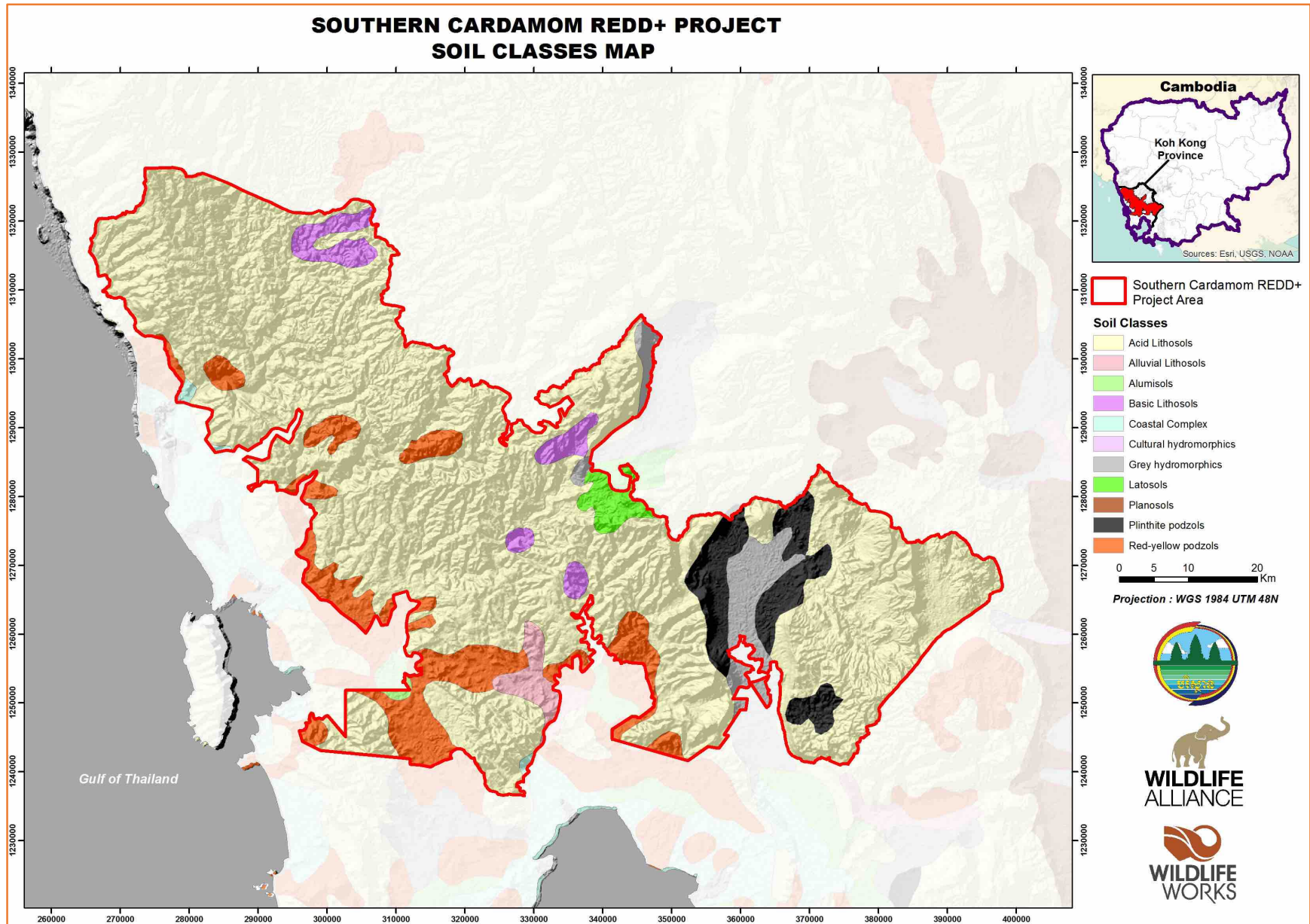






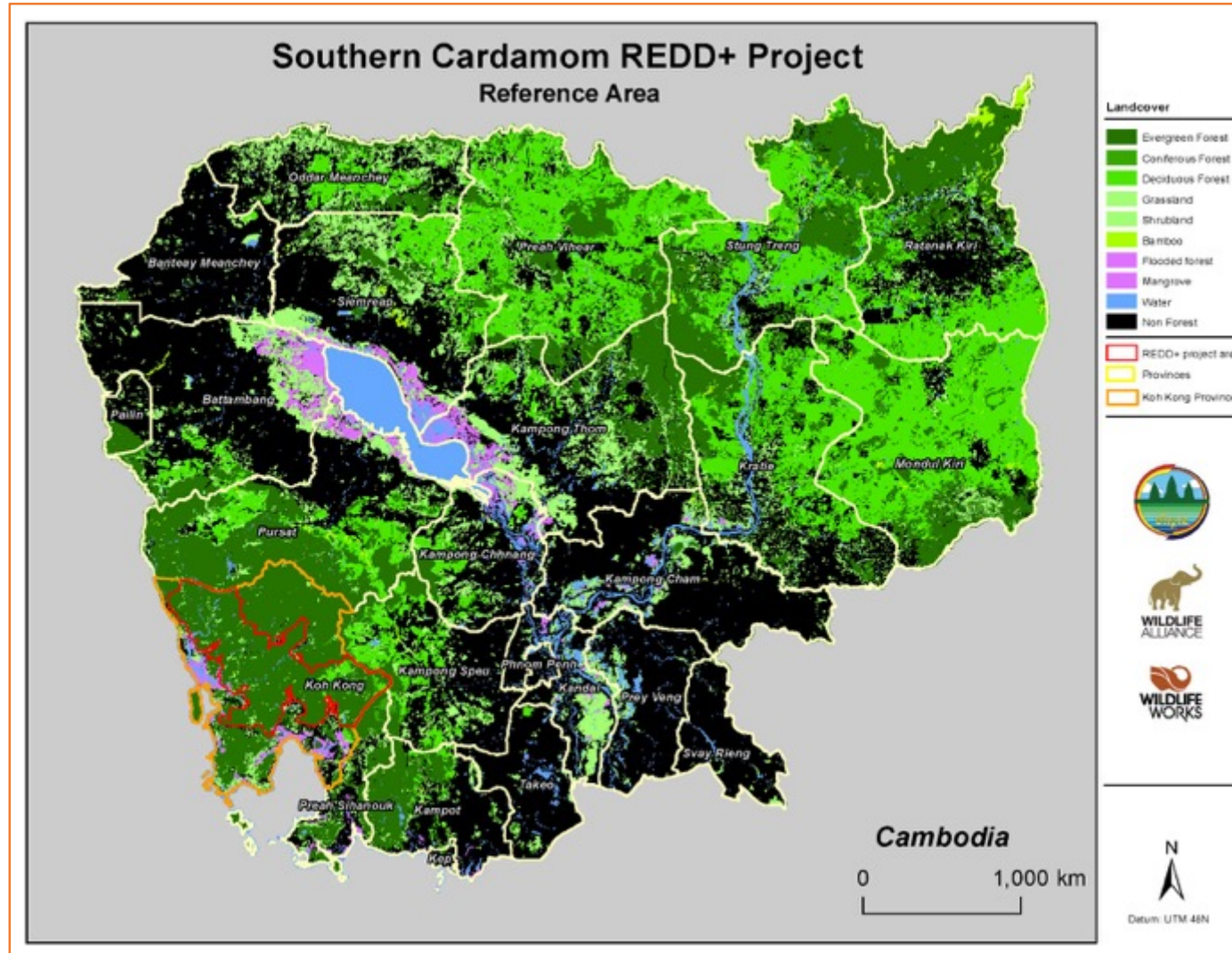


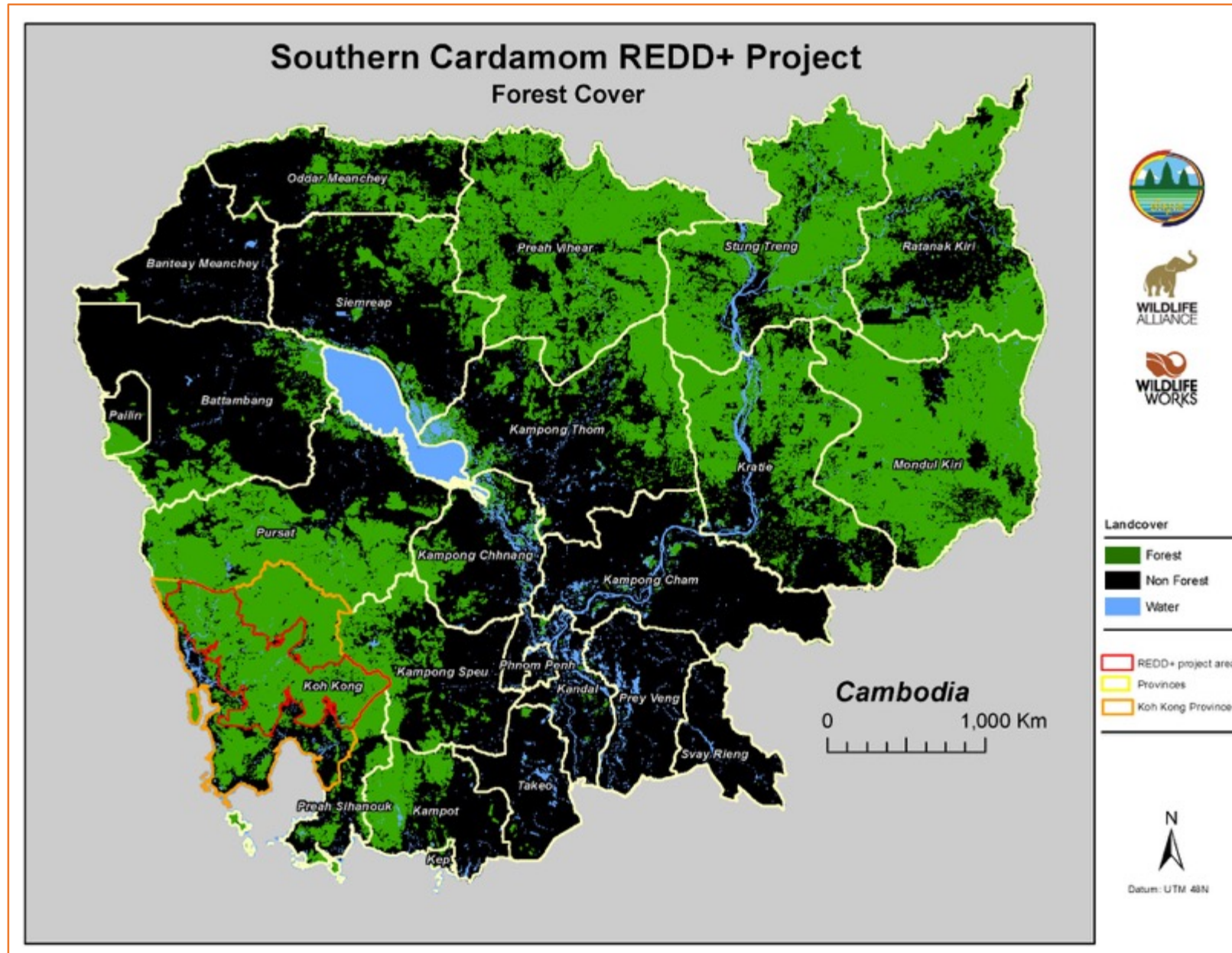






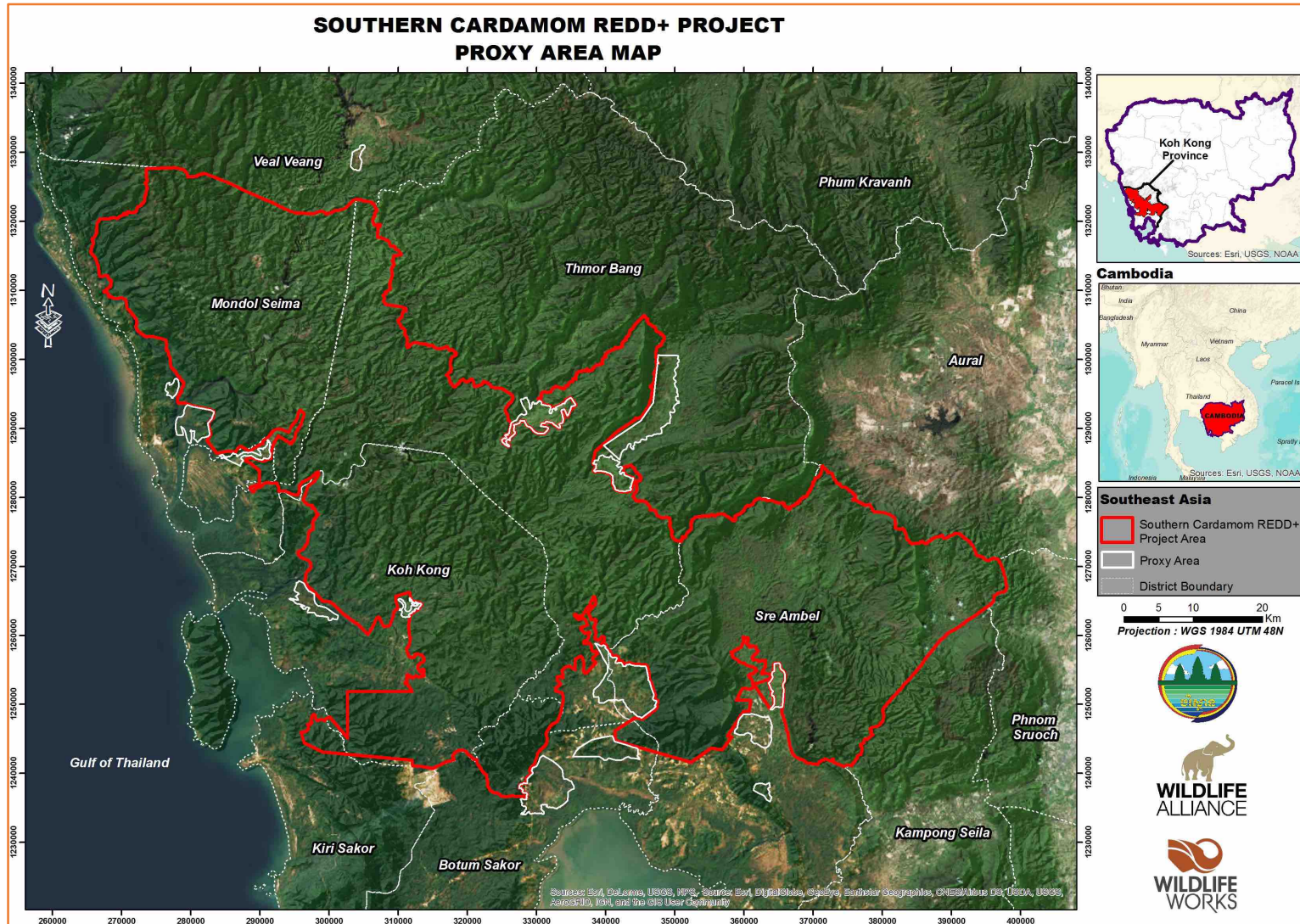
**Appendix B: Reference Area Maps**



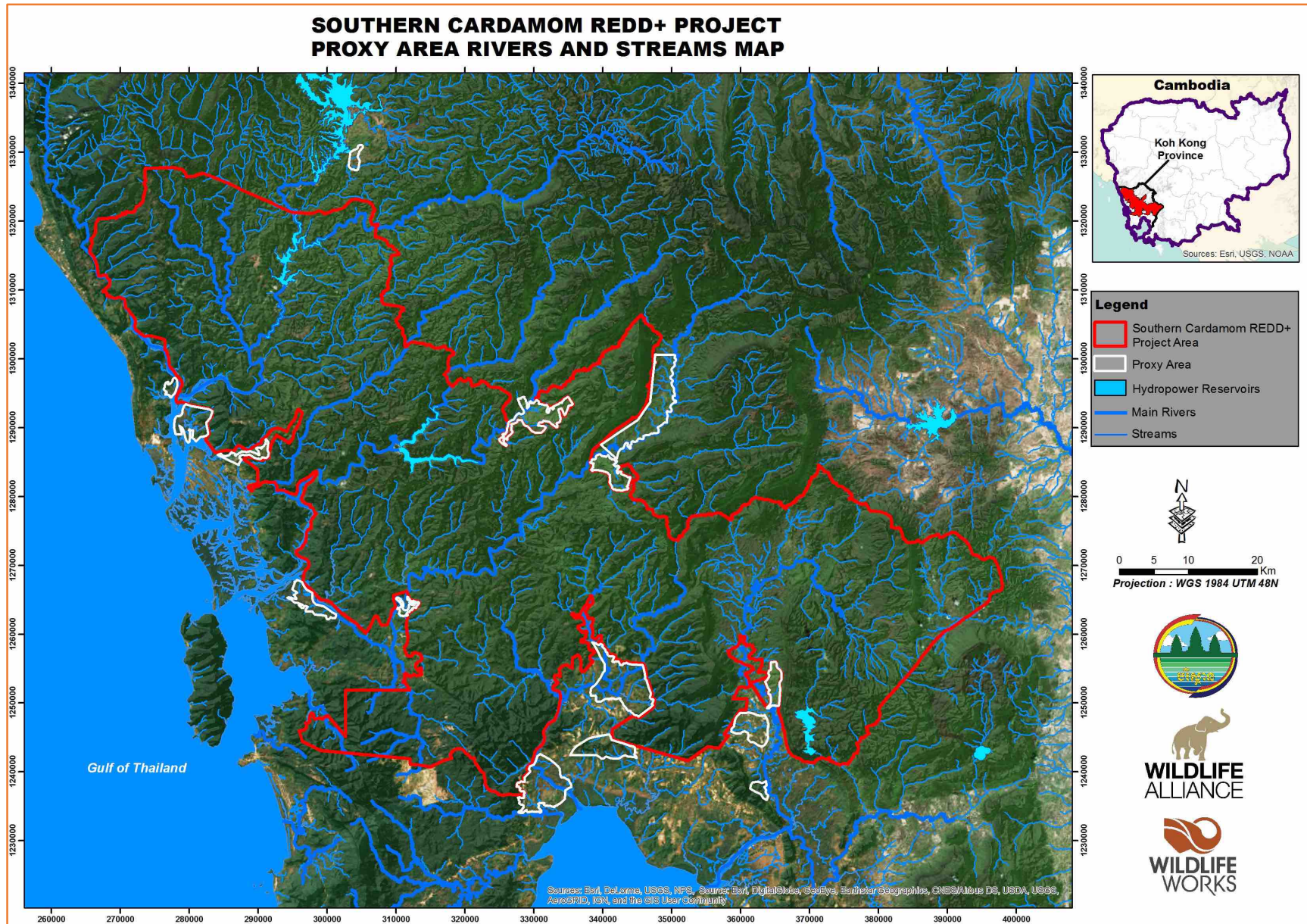




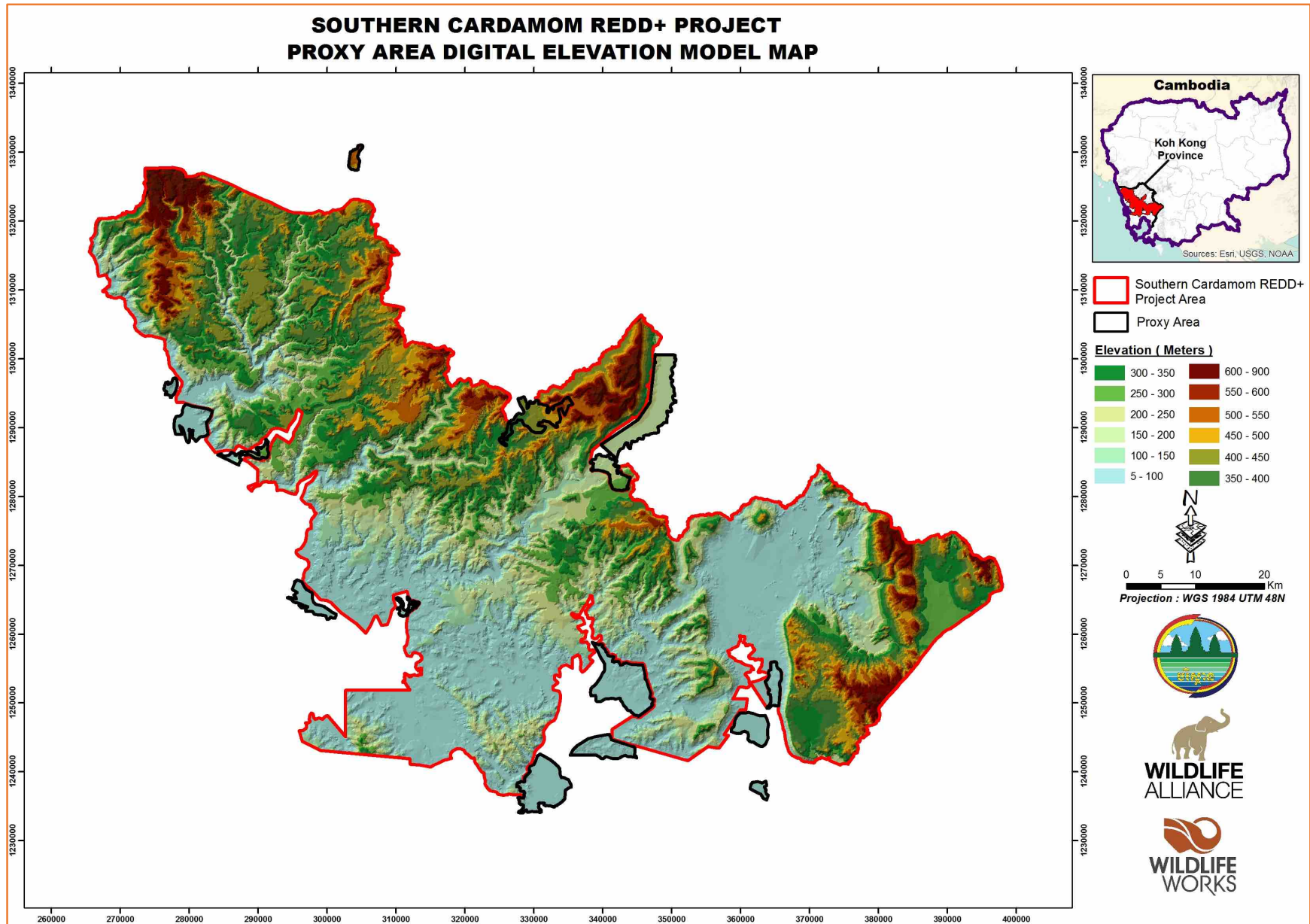
**Appendix C: Proxy Area Maps**

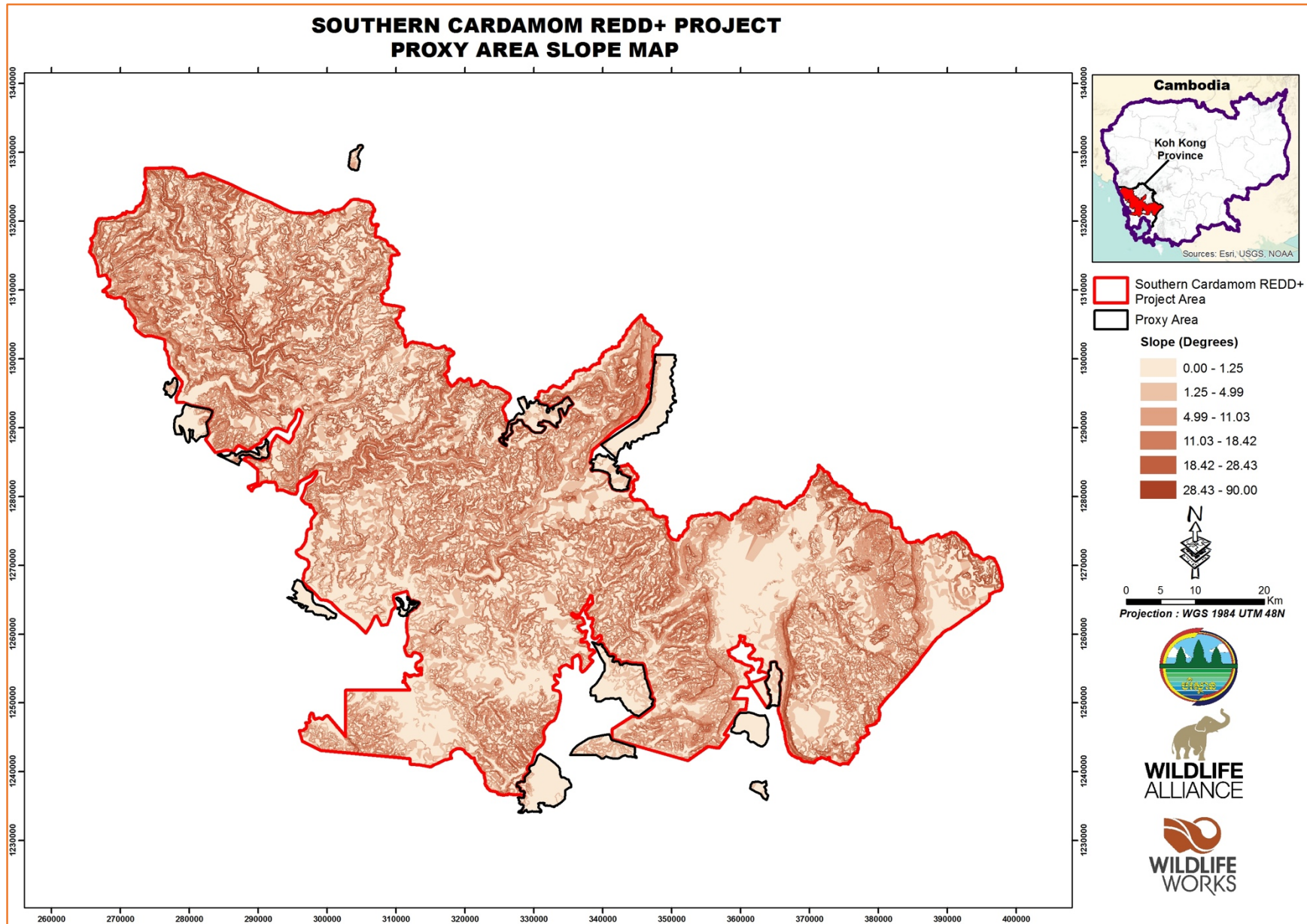




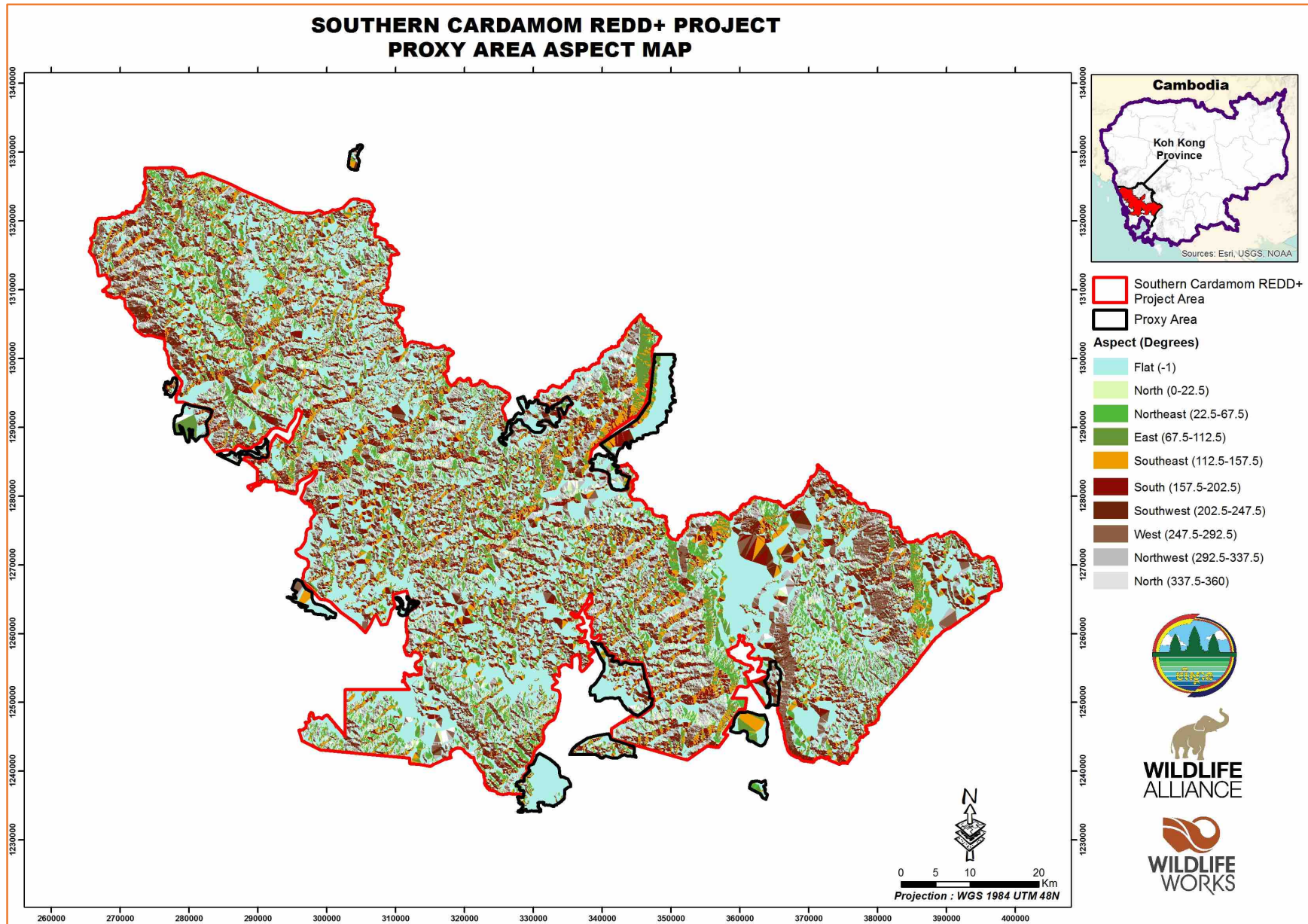


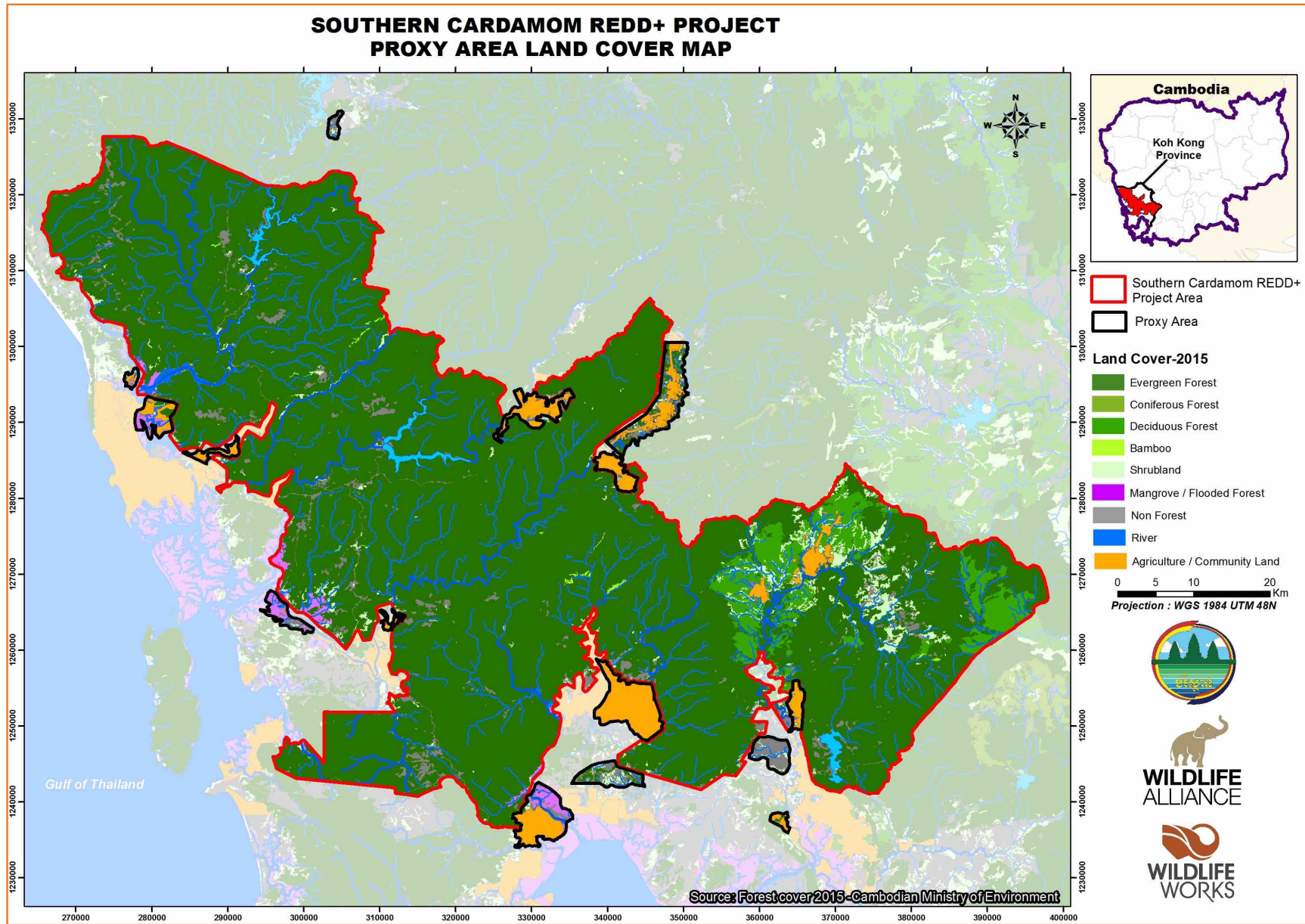




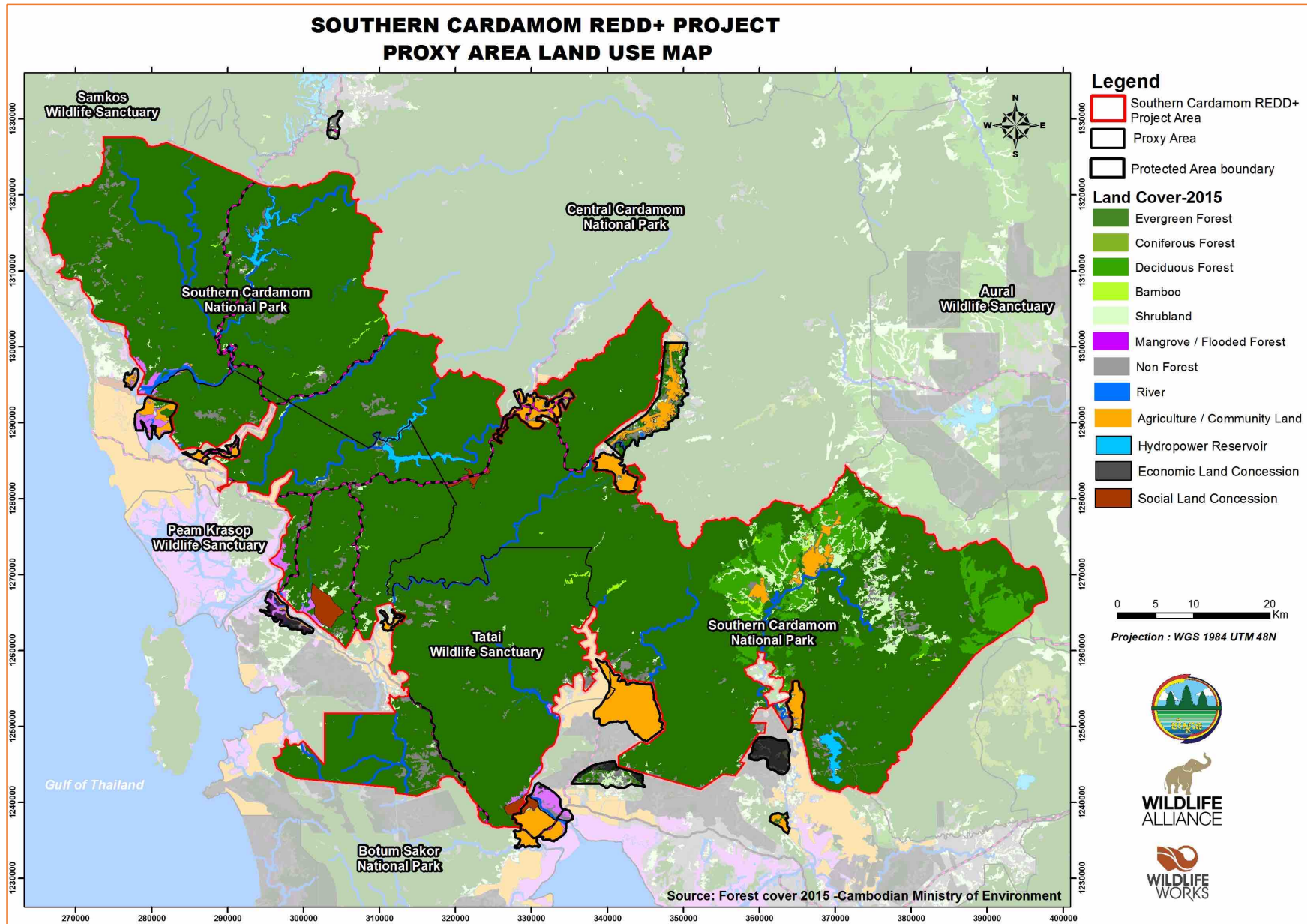


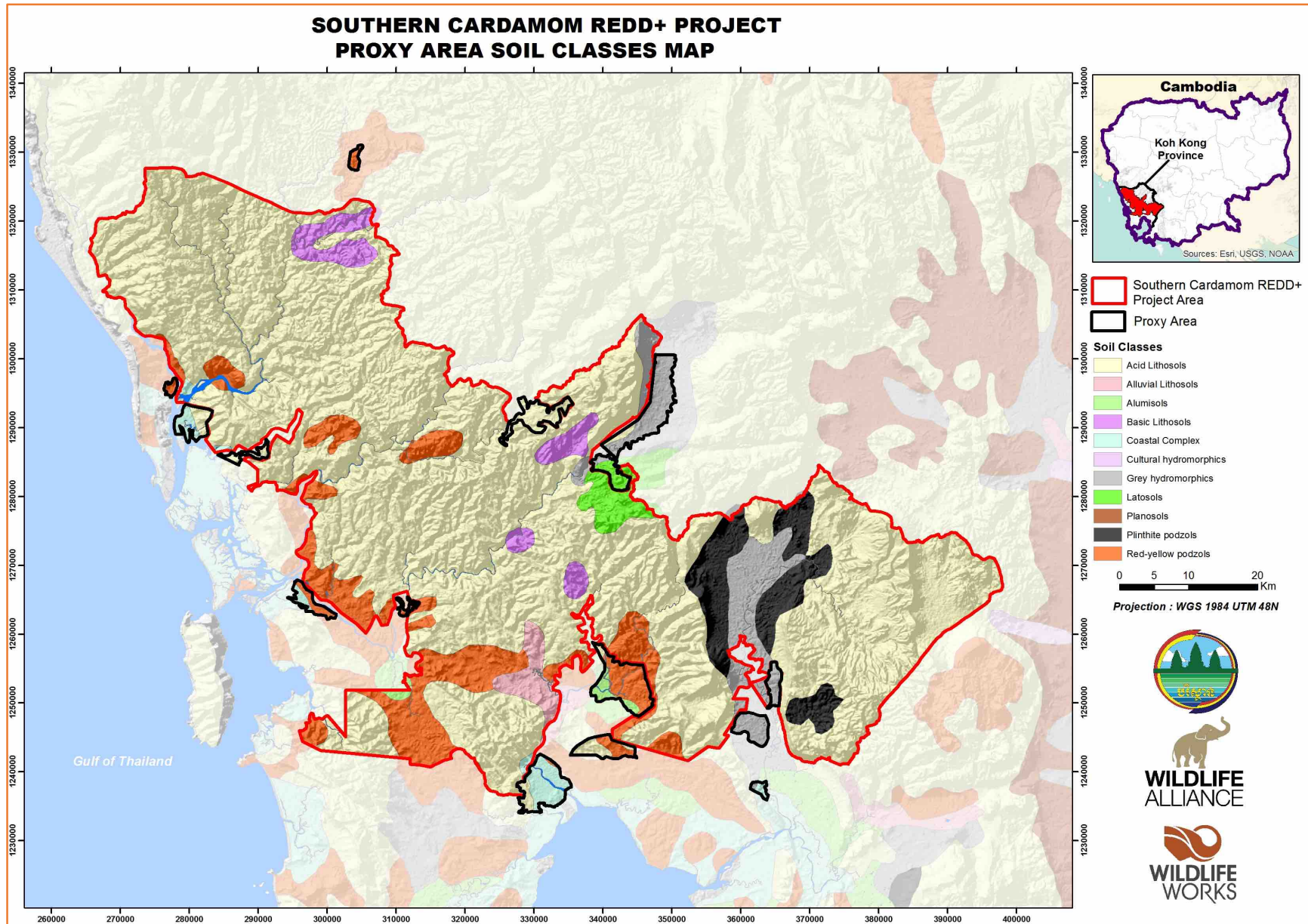














Appendix D: Leakage Area Maps

