SAMKOS REDD+ PROJECT

Document Prepared By Wildlife Alliance

Project Title	Samkos REDD+ Project
Version	1.1
Date of Issue	15-May-2023
Project Location	Cambodia, Battambang, Pursat and Koh Kong Provinces
Project Proponent(s)	Royal Government of Cambodia, Ministry of Environment Contact Name: H.E. Choup Paris, Under-Secretary of State and National REDD Focal Point Email : Paris.ncg@gmail.com Phone : +855 017 313 366
Prepared By	Wildlife Alliance
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Project Lifetime	1 September 2019 - 31 August 2049; 30-year lifetime
GHG Accounting Period	1 September 2019 - 31 August 2049; 30-year period
History of CCB Status	This is the CCB Project validation.
Gold Level Criteria	Gold Level Criteria: Climate and Biodiversity. The Project 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. **Climate**: The Project prevented the emission of 5,675,845 tCO_2e during this monitoring period by stopping deforestation and forest degradation. This was achieved with training on improved agricultural methods, providing water wells, and supporting improved environmental law enforcement across the landscape. Community members and 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, building water wells, supporting protections activities 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: A critically endangered reptile, the Siamese crocodile (*Crocodylus siamensis*), occurs in the project zone, and one species of endangered amphibian, *Philautus cardamonus*, occurs only in (is endemic to) the project zone.
Expected Verification Schedule	This is a joint validation/verification. The first verification was completed concurrently with this validation.

Table of Contents

1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or Impact Estimated by the End of Project Lifetime	Section Reference
1) Community water wells The project aims to increase water access for 26 villages by building water wells that can be used for household consumption and irrigation, improving health and agricultural productivity, thereby reducing pressure on forest resources.	2.1.11
2) Community agriculture The project aims to increase yields on existing farms and decrease dependence on the clearing of additional land for new fields by providing community members with high-protein, low-environmental impact food resources and training on producing food this way.	2.1.11
3) Sacred forests The project protects forests that are sacred to the Por indigenous people. The Por live inside the Project Area in the Phnom Samkos Wildlife Sanctuary and their traditional nature spirits depend on the existence of forests. Deforestation on traditional lands has accelerated recently and threatens the cultural identity of the Por.	2.1.11

1.2 Standardized Benefit Metrics

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
GHG emission reductions or removals	Net estimated emission removals in the project area, measured against the without-project scenario	NA	
	Net estimated emission reductions in the project area, measured against the without-project scenario	47,610,840 t CO2e	3.2.4.7
	For REDD[2] projects: Estimated number of hectares of reduced forest loss in the project area measured against the without-project scenario	282,718 ha	3.1.4.3.5

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[2] 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*)

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
Forest[1] cover	For ARR[3] projects: Estimated number of hectares of forest cover increased in the project area measured against the without-project scenario	NA	
Improved land management	Number of hectares of existing production forest land in which IFM[4] practices are expected to occurred as a result of project activities, measured against the without-project scenario	NA	
Improved land management	Number of hectares of non-forest land in which improved land management practices are expected to occur as a result of project activities, measured against the without-project scenario	NA	
Training	Total number of community members who are expected to have improved skills and/or knowledge resulting from training provided as part of project activities.	8,000	2.1.11
Training	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities	4,000	2.1.11

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

[3] 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*)

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

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
Employment	Total number of people expected to be employed in project activities,[5] expressed as number of full-time employees[6]	100	2.1.11
	Number of women expected to be employed as a result of project activities, expressed as number of full-time employees	20	2.1.11
Livelihoods	Total number of people expected to have improved livelihoods[7] or income generated as a result of project activities	2000	2.1.11
	Number of women expected to have improved livelihoods or income generated as a result of project activities	1000	2.1.11
Health	Total number of people for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	2000	2.1.11
	Number of women for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	1000	2.1.11
Education	Total number of people for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	0	

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[5] 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.

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

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

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
	Number of women and girls for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	0	
Water	Total number of people who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	5850	2.1.11
Water	Number of women who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	2611	2.1.11
Well-being	Total number of community members whose well-being[8] is expected to improve as a result of project activities	34,000	2.1.11
Well-being	Number of women whose well-being is expected to improve as a result of project activities	16,500	2.1.11
Biodiversity conservation	Expected change in the number of hectares managed significantly better by the project for biodiversity conservation,[9] measured against the without-project scenario	20,962	
Biodiversity conservation	Expected number of globally Critically Endangered or Endangered species[10] benefiting from reduced	35	5.1.1

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

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

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

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
	threats as a result of project activities,[11] measured against the without-project scenario		

2   GENERAL

2.1   Project Goals, Design and Long-Term Viability

2.1.1   Summary Description of the Project (G1.2)

With the aim of helping the Royal Government of Cambodia (RGC) achieve its environmental goals for sustained social and economic growth, promote climate change mitigation and adaptation, maintain biodiversity, and create alternative livelihoods under the United Nations scheme of Reducing Emissions from Deforestation and Forest Degradation (REDD+), Wildlife Alliance created The Samkos REDD+ Project (SRP). The Project includes three landscapes: Phnom Samkus Wildlife Sanctuary (PSWS) in northwestern Cambodia, encompassing a total area of 202,451 ha; the Phnom Kravanh Biodiversity Conservation Corridor (PKBCC) with 82,735 ha, and the northern zone of Southern Phnom Kravanh National Park (SPKNP) located in Pursat with 12,211 ha. The Project Accounting Area is 282,718 ha.

The three areas that make up the SRP are an integral part of the Cardamom Mountains, Cambodia's Indo-Burma hotspot. The Indo-Burma hotspot is one of the most biologically important regions on Earth. According to the IUCN, it ranks among the top 10 hotspots for irreplaceability and, unfortunately, in the top five for threats, because only 5% of its natural habitat remains.

The Project Zone includes 26 villages across 14 communes and 2 provinces. These growing communities with approximately 7,953 families and 34,179 villagers, present the biggest threats to the Samkos REDD+ project. The threats manifest themselves in the form of Illegal land clearing, land encroachment, illegal logging, and poorly planned rural infrastructure.

In response to the threats to PSWS and the PKBCC, Wildlife Alliance (WA) with the Ministry of Environment (MOE), decided to create the SRP. The protection of SRP will be achieved by designing and delivering an active park management system specifically for PSWS, which includes direct park ranger patrols along the Project Zone and inside the Project Accounting Area. Wildlife Alliance and MoE rangers have already been patrolling large areas within the Project Accounting Area since 2019, as the sanctuary borders the Southern Cardamom REDD+ Project (VCS Project ID 1748).

The Project will also generate sustainable livelihood opportunities, create alternative income generating activities (IGAs) and initiatives to stimulate investment in local businesses designed to reduce pressure on the environment while significantly increasing community well-being. The programs will address food/nutritional security and infrastructure, such as water wells.

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

Biodiversity co-benefits will be achieved through greater protection of the ecosystem predominantly by means of increased ranger patrols and improved monitoring. The Project will protect critical habitat for significant populations of IUCN listed species, including the Asian elephant, Asiatic black bear, sun bear, large spotted civet, clouded leopard, and the dhole, as well as the critically endangered Siamese crocodile.

The Project's climate benefits include the average annual avoided emission of 1,911,823 t CO2e, for a total of 57,354,690 t CO2e over the project's 30-year lifetime.

2.1.2   Project Scale

Project Scale	
Project	
Large project	x

2.1.3   Project Proponent (G1.1)

Organization name	Royal Government of Cambodia, Ministry of Environment
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2.1.4   Other Entities Involved in the Project

Organization name	Wildlife Alliance (WA)
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2.1.5 Physical Parameters (G1.3)

The Samkos REDD+ Project (SRP) includes three protected areas in the Kingdom of Cambodia: 1) Phnom Samkus Wildlife Sanctuary (PSWS) in Battambang, Pursat and Koh Kong provinces; 2) Southern Phnom Kravanh National Park (SCNP-northern sector) in Pursat; and the 3) Phnom Kravanh Biodiversity Conservation Corridors of Protected Area. There are six biodiversity conservation corridors-two in Battambang and four in Pursat.

Bio and Geo-climatic Region

SRP sits inside the northwestern zone of the Cardamom Mountains (Kravanh Mountains), a vibrant mountain range that covers north and southwest Cambodia. Its dramatic landscape spans almost 300,000 hectares. The Project Area extends into Battambang, Pursat and Koh Kong. It is bounded by the Gulf of Thailand to the southwest and the Central Cardamoms to east.

The monsoon is a principle climatic feature of Cambodia. Because of its location on the Southeast Asian peninsula, Cambodia is at the transition between the South and East Asian monsoon, receiving the rains from both the South China Sea and Indian Ocean. Because of the monsoonal climatic pattern, there are two distinct seasons during the year; the wet season from May to November), and the dry season for the rest of the year (Zhang et al., 2005). It is cooler during the wet season and hotter during the dry season, with an average annual temperature of 28° C, an average maximum temperature that exceeds 40° C in April and an average minimum temperature of 17° C in January (Heng, 2015).

The topography of the Cardamom mountains influences the regional distribution of rain. The SRP is a precipitation "hotspot" due to its location adjacent to the Gulf of Thailand; it receives the highest rainfall of mainland Southeast Asia. The average annual rainfall is between 2500 - 4000 mm per year (Zhang et al., 2005). See information below.

Topography

The Project Area is typified by a hilly evergreen forest ranging from 200 m to 1717 m at Phnom Samkus (Mount Samkus) in Pursat province. Phnom Samkus is the second-highest peak in Cambodia, and the highest peak in all Phnom Samkus Wildlife Sanctuary (See Appendix 1).

The Project Area's forests are the catchment for the adjoining Gulf of Thailand and include seven watersheds that drain into the Koh Kong estuary, one of Southeast Asia's largest remaining intact mangrove ecosystem (Russell, 1987). See below for SRP's provincial data.

SRP Battambang Elevation

Elevation in the target catchment area ranges between 200 and 1146 meters above sea level (See Appendix 1: Project Area Maps). The nine tallest mountains in PSWS Battambang are the following: Phnom One Thousand One Hundred and Forty-Six (1,146 meters), Phnom Amreang (1,121 meters), Phnom Teukprel (1,062m), Phnom Svet (1,022 meters), Phnom Preak (947 meters), Phnom Samraeng (907 meters), Phnom Damraeng (807 meters), Phnom Koul (705 meters), and Phnom Ou Thmor Kombaugh (567 meters). There is one unnamed mountain in southern Battambang bordering Pursat measuring 668 meters.

SRP Pursat Elevation

Elevation in the target catchment area ranges from 200 to 1,717 meters above sea level (Appendix 1: Project Area Maps). Phnom Samkus is the second-highest peak in Cambodia at 1,717 meters and the highest peak in all Phnom Samkus Wildlife Sanctuary. Phnom Tumpor (1551m), Phnom Muyponpramroy (1,500m) and Phnom Muyponbounroy (1400m) are other prominent mountains located in the sanctuary.

More than 75% of the catchment area encompasses terrain of hilly topography with an elevation greater than 200 meters and is covered by forested land of varying densities.

SRP Koh Kong Elevation

Elevation in the target catchment ranges between 200 to 997 meters above sea level (Appendix 1: Project Area Maps). More than 90% of the catchment encompasses terrain of hilly topography with an elevation greater than 200 meters and is covered by forested land of varying densities.

Forest Type and Canopy Cover

SRP Battambang covers 30,590 hectares of evergreen forest, dry dipterocarp forest, pine forest, and grasslands, with an elevational range of approximately 200 to 1146 meters.

CBC Battambang (2 sites) covers 9,931 hectares of evergreen forest, dry dipterocarp forest, pine forest, and grasslands, with an elevational range of approximately 290 to 806 meters: CBC 1 has an elevational range of approximately 322 to 483 meters. CBC 2 has an elevation range of approximately 293 to 806 meters.

SRP Pursat covers 161,747 hectares of evergreen forest, dry dipterocarp forest, pine forest, and grasslands, with an elevational range of approximately 200 to 1717 meters.

CBC Pursat (4 sites) covers 72,804 hectares of evergreen forest, dry dipterocarp forest, pine forest, and grasslands, with an elevational range of approximately 57 to 804 meters. As for the corridors, CBC 1 has an elevational range of approximately 286 to 579; CBC 2- 517 to 559 meters, CBC 3- 144 to 517 meters and CBC 4- approximately 57 to 804 meters.

SRP Koh Kong covers 10,114 hectares of evergreen forest, dry dipterocarp forest, pine forest, and grasslands, with an elevational range of approximately 200 to 997 meters.

SCNP Pursat covers 12,211 hectares of evergreen forest, dry dipterocarp forest, pine forest, and grasslands, with an elevational range of approximately 200 to 738 meters.

Hydrology

SRP fulfils an important ecological role in regulating rainfall and supplying fresh water to all upland villages in the western half of Cambodia (See Table 1 and Table 5). All upland farmers depend on freshwater flow to irrigate their crops. See Appendix 1: Project Area Maps for the importance of freshwater in SRP across three provinces: Battambang (BTB), Pursat (PST) and Koh Kong (KK).

Table 1. Rainfall in the SRP across

Sites	Annual rainfall [mm] (average: 1982-2019)					
	Min.	Qu.1st	Median	Mean	Qu. 3rd	Max
BTB	1849	2156	2378	2355	2552	2929
PST1	2181	2635	2804	2863	3165	3613
PST2	2402	2794	3094	3083	3367	3858
KK1	2608	3237	3573	3499	3782	4612
KK2	2888	3389	3770	3722	3943	4769

SRP Battambang Rainfall

SRP Battambang's annual rainfall of 1,800 to 2,900 mm produces one major waterway called Steung (river) Kronhoung, a 36-kilometer river that feeds into the Steung Sangke (Sangke River), one of the main rivers of Battambang (See Appendix 1: Project Area Maps). The Sangke River flows into the Tonle Sap Great Lake, supplying Southeast Asia's largest inland fishery.

The Kronhoung River starts its journey in Ta Taok Commune (Samlout District) and flows through eight of its nine villages. The river also flows through the following five communes: Sung (1 village), Tasanh (3 villages), Kampong Lpou (2 villages), Ou Samrel (5 villages) and Meanchey (2 villages). The population of the basin area exceeds 5,000 villagers. Villagers use river water for normal household purposes, such as drinking, food preparation, bathing, washing clothes, and toilets. Locals will also use the water to care for their livestock.

SRP Pursat Rainfall

SRP Pursat's annual rainfall of 2,100-3,800 mm produces three major waterways, the Steung Pursat, Steung Meteuk and the Steung Russey. The 193-kilometer Steung Pursat is the only river that bisects the province from west to east. Its headwaters begin in Anlong Reap commune along the western slopes of Phnom Muyponpramroy and flows through two of the Veal Veng's five communes-Pramaoy with 3,159 families or 12,913 villagers and Anlong Reab with 1,717 families or 6,636 villagers. The river also travels through five other districts in Pursat (Kravanh, Sampov Meas, Krakor, Bakan, and Kandieng) before draining into the Tonle Sap Great Lake. Based on local figures provided by the Veal Veng District Government, the population (2020/2021) of SRP Pursat (Project Zone) is 34,721 villagers, or 8,460 families. The total population in the Steung Pursat target catchment area is over 200,000 persons. It has two main tributaries, the Steung Peam and Steung Santre. The Steung Meteuk starts on the western slopes of Phnom Bantwat in Pursat. It travels west for about nine kilometers before reaching Thma Da commune and its three villages with 2,484 villagers (672 families). The river continues to flow for approximately 52 kilometers inside SRP Pursat before traveling south and crossing into SRP Koh Kong, for a total length of 114 km.

The third important river in Pursat is the 74 km Steung Russey Chrum. The river starts on the slopes of Phnom Prambounroy Paitsepbai in O'Som commune and travels through only one (Phum Steung Tachan) of its 6 villages before flowing north for 7 kilometers to reach SRP Koh Kong. The total population of O'Som commune is 4,289 villagers (857 families).

SRP Koh Kong Rainfall

SRP Koh Kong has an annual rainfall of 2,600-4,700 mm. The sanctuary's two major waterways come from SRP Pursat-the Steung Meteuk and the (Lower) Steung Russey Chrum. The Steung Meteuk, also known as the Koh Kong River, flows through Koh Kong for approximately 60 km before it empties into the Gulf of Thailand. The military families living inside SRP Koh Kong depend heavily on the Meteuk River to sustain their livelihoods. The Steung Russey Chrum travels for approximately 53 km from the SRP Pursat/Koh Kong border before draining into the Gulf of Thailand.

SRP SOILS

The Project Area has siltstone-sandstone deposits. (White and Oberthür, 1995). The weathering of these relatively young deposits has produced azonal soils or soils without well-developed profile characteristics. The montane slopes are comprised of acid lithosols, a low fertility soil type that is not good for agriculture. In the riverbeds, there are brown alluvial soils, alluvial lithosoils and alumisoils, that are moderately fertile. In the center of the Project Area (SRP Pursat), there are two small volcanic deposits comprised of latosols and plinthite podzols soils, which are highly fertile and prime locations for agriculture (Crocker, 1962; Sanchez et al., 1982).

SRP ECOSYSTEM SERVICES

In addition to providing a habitat for biodiversity, upland rainforest ecosystems provide several critical functions including regulating water flows, providing important clean water, food, and NTFP for local communities, preventing erosion, and storing carbon.

The Cardamom Mountain range is the largest forest watershed in Cambodia with 21 major waterways providing water to 3,145 villages in 329 communes and 8 provinces. Hydropower dams are operating, and more are planned, with the goal of producing 20% of Cambodia's total electricity needs. The watershed of this area, including PSWS, feeds inland fisheries along each of its major waterways and 155km of coastal mangrove fish nurseries. A wide range of non-timber forest products, such as cardamom, resin, and mushrooms, as well as fuelwood and building materials are also used and sold by the local communities in and around SRP.

2.1.6   Social Parameters (G1.3)

There are 27 villages and 11 sub-villages included in the SRP. The Project Zone includes total population and target population. Whereas the total population includes all villagers living in the Project Zone, the target population includes only villagers (families) that have been identified by a nationwide program called Poor Households Program (ID Poor) implemented by the Cambodian Ministry of Planning. ID Poor serves as an official Government social registry of poor and vulnerable households. The Project aims to provide direct livelihood assistance to all villagers with an ID Poor card. The total population of the Project Zone is estimated to be 67,106 villagers (16,016 families). The target population is estimated to be 13,261 villagers (3,041 ID Poor families).

The words village and sub-village are given distinct meanings in this project document. A village is an official administrative community: a community of villagers administered by a single official village chief. A sub- village is a settlement that can be located several kilometers from the official village. Many sub-villages are created by a natural increase in population and/or the influx of new migrants, including relatives of villagers, and cannot offer services such as health and education to the settlers because of the distance to the main village. Additionally, sub-villages tend to be closer to core conservation zones, which can lead to increased deforestation and wildlife poaching.

Historic conditions: At the end of 1998, the year of reintegration and full peace across the Kingdom, the northwestern region of Cambodia became one of the last forest frontiers of the country. In a region that was known as the Khmer Rouge stronghold, the opening of tropical forest lands in Battambang and Pursat initiated an intense competition for land, forests and soil to improve the living standards for all, especially the poor. Agricultural colonization was supported by a massive flow of in-migration of landless farmers/villagers from lowland regions across Cambodia. Analyzing forest land use cover changes across the landscape from 1998 to 2016, it's clear that the negative impacts on forest areas were growth in the region's population, expansion of villages/sub-villages and farmland to cultivate the following primary crops, maize, cassava, and fruit trees over a period of almost 20 years.

Landuse/Economic Activities: Almost 100% of Project Zone villagers depend on agriculture activities to support their families, especially in the wet season. From the results of the questionnaire surveys, villagers inside the Project Zone said that the current size of their farmland was insufficient for supporting their growing family sizes and needed to clear more land to meet basic needs. Climate change was another driver of deforestation. Many farmers complained that drought or dry spells and/or salinity continued to affect their crops in the Project Zone. Decreasing agricultural yields will only create food insecurities for vulnerable populations. If forests are available, families will clear them for their survival, which will cause more environmental destruction.

Based on the RGC's General Population Census of 2019, the average family size in Battambang province is 4.5, and 4.0 in Pursat. It is important to note that in the dry season, while some farmers from PSWS, SNCP and PKWS cross the border into Thailand for work, most villagers stay and harvest timber and/or other forest products from inside the protected areas to sell to external parties to support their families.

PSWS Battambang: Income streams for most upland farmers come from fruit trees, corn, soya and mung beans, sesame and cassava. Fruit trees offer a main source of income for many upland farmers across all 18 villages (Figure 1).

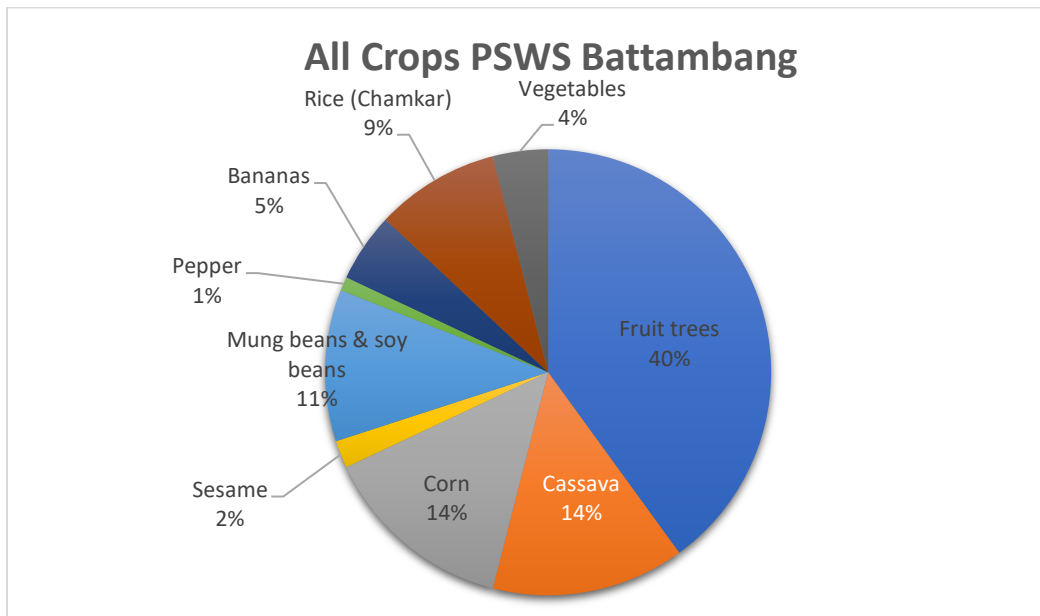Figure 1. Primary crops of farmers in PSWS Battambang

In PSWS Pursat, income streams for most farmers come from fruit trees, cassava, corn, soya and mung beans. Rice cultivation and vegetable crops occupy less than 10% of farmland (See **Error! Reference s ource not found.** and Figure 3). Vegetables include turmeric, galangal, cabbage, chillies, eggplant, long bean, cucumber and Chinese cabbage.
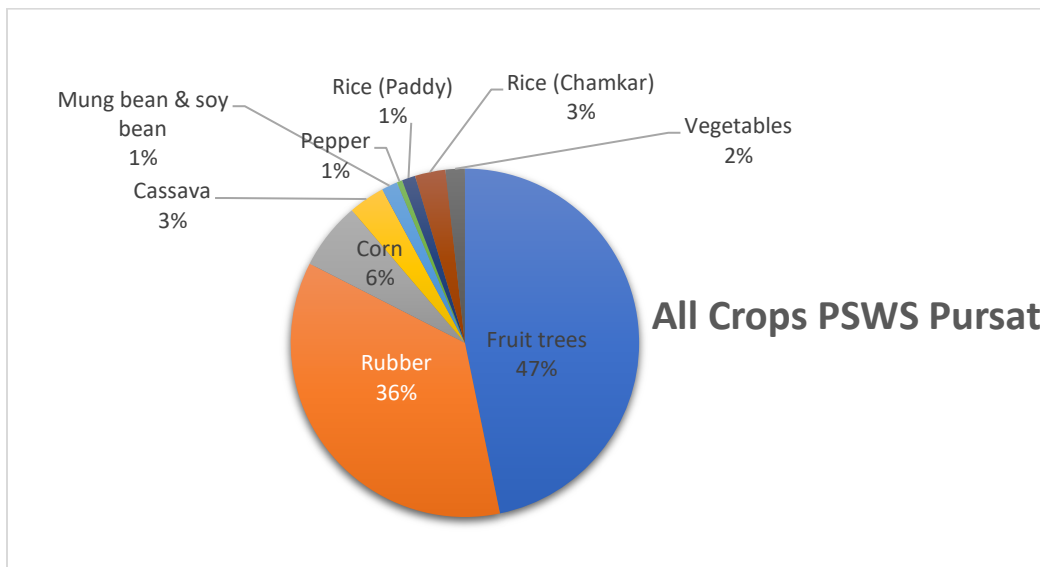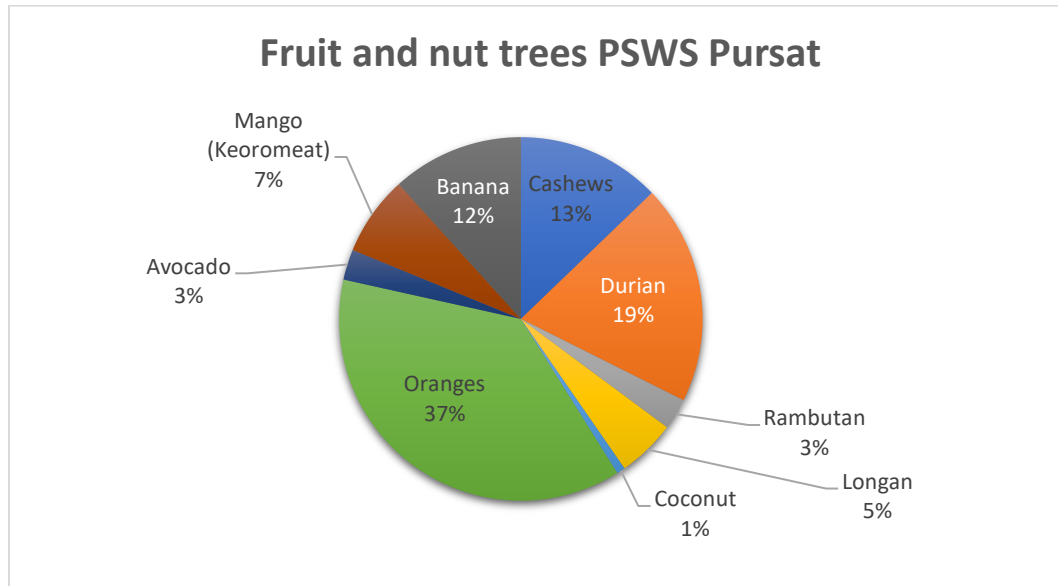
Figure 2. Primary crops of farmers in PSWS Pursat.

Fruit and nut trees PSWS Pursat

- Cashews 13%
- Durian 19%
- Rambutan 3%
- Longan 5%
- Coconut 1%
- Oranges 37%
- Avocado 3%
- Mango (Keoromeat) 7%
- Banana 12%

Figure 3. Fruit and nut trees of farmers in PSWS Pursat.

Socio-cultural information: Most villagers living in the Project Zone are ethnic Khmers. It is important to note that the Project Zone has the original demobilized Khmer Rouge soldiers and their families living off the land. Apart from the demobilized Khmer Rouge soldiers and their families, PSWS Battambang, PSWS Pursat and SCNP Pursat have 8 indigenous peoples - the Por, the Chong, the Phunong, the Kreung, the Jarai, the Tumpoun, the Kouy, and the Kachak. While the Phunong, the Kachak, the Kreung, the Jarai, the Tumpoun and the Kouy moved into PSWS Battambang after the civil war in 1989, the Chong and the Por have been living in PSWS Pursat, PSWS Battambang and SCNP Pursat, or Phnom Kabal Kamouch (Skull Mountain) as the Chong call it, since before French colonial rule in the 1800s. The Por people of Battambang are the least integrated, meaning that most of the Por still practice their culture and traditions, and have a unique relationship with the forests and wildlife in the protected area. Please note that indigenous communities in Cambodia are called ethnic minorities, hill tribes, highlanders, highland people, indigenous people, and Khmer Leu. The Project will use the term indigenous peoples.

Landownership: PSWS Battambang- As of December 1, 2020, the Samlout district government received all official land requests by the villagers living inside PSWS Battambang. Based on the information provided by the PSWS Battambang park director, 3,487 plots of land were requested by 1,750 families in Ta Taok commune and 7,418 plots of land were requested by 3,677 families in Kampong Lpou commune. The Battambang departments of the environment, land management, and agriculture, assisted by the PSWS park director and Samlout district governor, will inspect the land requests to decide whether these lands are under the jurisdictions of the departments of the environment or forestry. Once categorized, the interdepartmental inspection team will decide if lands were recently cleared, and therefore not eligible for land titling. The provincial department of land management will submit the final requests for land allocations to the Battambang provincial government for approval in the coming months. It is important to note that Phnom Rey village, an ethnic minority village, has not registered any land title requests because of landmines in the village.

PSWS Pursat- As of December 1, 2020, villagers from all 5 communes in Veal Veng district submitted 82,000 hectares of land requests to the district government for review. It is important to note that in 2013, there were only 15,000 hectares of land requests for the entire province of Pursat. To manage these unusually high numbers, the district government created 3 working groups. One of the three working

groups is specifically investigating all land requests and stopping any illegal land encroachment on site, if found.

As of January 1, 2021, the working groups have almost finished processing the land allocation requests in Pramaoy commune. Of the 22,000 requests, the district government removed 12,000 hectares. More requests will be denied once the working group investigates the two remaining villages in the commune. The working groups have also started to review land allocation requests from Anlong Reab commune, where 61,167 hectares land requests were submitted.

Migration

Most respondents in PSWS Battambang, PSWS Pursat and SCNP Pursat perceived in-migration flow (migrants), which include relatives, as a driver for deforestation (See **Error! Reference source not found.**). Some village chiefs said that the arrival of newcomers in their respective villages had increased by 30-50% over the last 5 to 10 years, especially in Steung Touch, Ou Treng, and Phnom Rey villages (PSWS Battambang). Migrants, especially those with no relatives in the villages and no available shelter to rent or buy, are pushed to enter core conservation zones to clear the land to build temporary or permanent shelters, sell the timber and gather fuelwood to cook their food. Because migrant workers also tend to be poor, they poach wildlife for food, including threatened and endangered species. Links between migration and clearing of forests have been reported in Samlout Protected Area (Samlout Multiple Use Area), north of PSWS Battambang. PKWS respondents identify in-flow migration as a problem, but not to the same level as they witnessed in 1990s and mid 2000s.

Household Income

One of the major challenges for the sustainable development of the rural communities located inside the Project Zone, include rural poverty, which directly affects the lack of key quality social services in health and education, land tenure rights, and insufficient park protection resources.

Over the past decade, Cambodia has managed to successfully grow and sustain its economy with incredible strength and drastically reduce poverty. Cambodian and international records all show that incidence of poverty under the national poverty line fell from 47.8 per cent in 2007 to 13.5 per cent in 2014. In 2018, using data from the Asian Development Bank (ADB), only 12.9 per cent of Cambodians lived below the national poverty line. But most Cambodians who are not in extreme poverty are, by international standards, either moderately poor or economically vulnerable, with two-thirds of the population, mostly in rural communities, living under USD 5.50 a day (World Bank 2019). Based on figures from UNICEF, over 75% of Cambodians continue to live in rural areas, one of the highest amongst ASEAN (Association of South East Asian Nations) member states.

Although malnutrition prevalence has declined over the past two decades, it must be noted that in 2018, about 33 per cent of Cambodian children under the age of five were stunted and 10% wasted (not weighing enough for their height), some of the highest rates in the region. In addition, Cambodia still has one of the highest maternal mortality rates in the region (160 per 100,000 live births in 2018), which points to problems in quality and access to healthcare.

The Project identified many households in the Project Zone as 'food insecure' for at least 3 months a year, which means that rural household diets lack in the quantity and quality of food needed for the maintenance of adequate nutritional status and prevention of disease. In one village in SRP Pursat, 85% of children under 5 were diagnosed as 'malnourished' by a study conducted in September/October 2020. Women's understanding of the relationship between feeding practices, food intake and health was very limited.

To assist the Government in addressing the needs of rural Cambodians, the NGO community has been very active in delivering poverty alleviation activities. NGOs, however, have never been given guidelines

on how to operate inside Phnom Samkus Wildlife Sanctuary. From the focus group discussions with NGOs, employees working for at least seven international NGOs have spent decades executing health, agricultural and education interventions inside the Project Zone without understanding the meaning of a protected area. These NGOs could have helped raise awareness and created a conservation movement. Moreover, some NGOs funded small farmers to create or maintain agriculture practices that did not support biodiversity protection or conservation agriculture. To add to the situation, park officials in both sanctuaries had never been invited to review the design of these agriculture projects to reduce the ecological impacts. Constructive dialogue between the local park officials, the NGO and the farmers at a deep technical level could have been very useful in creating alternative and more nature-friendly practices and techniques.

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

PDR.4 A digital (GIS-based) map of the project area with at least the above minimum requirements for delineation of the geographic boundaries.

The Samkos REDD+ Project includes three protected areas in the Kingdom of Cambodia: 1) Phnom Samkus Wildlife Sanctuary (PSWS) in Battambang, Pursat and Koh Kong; 2) Southern Cardamom National Park (northern sector) in Pursat; and the 3) Cardamom Biodiversity Conservation Corridors (CBC). There are six biodiversity conservation corridors- two in Battambang and four in Pursat.
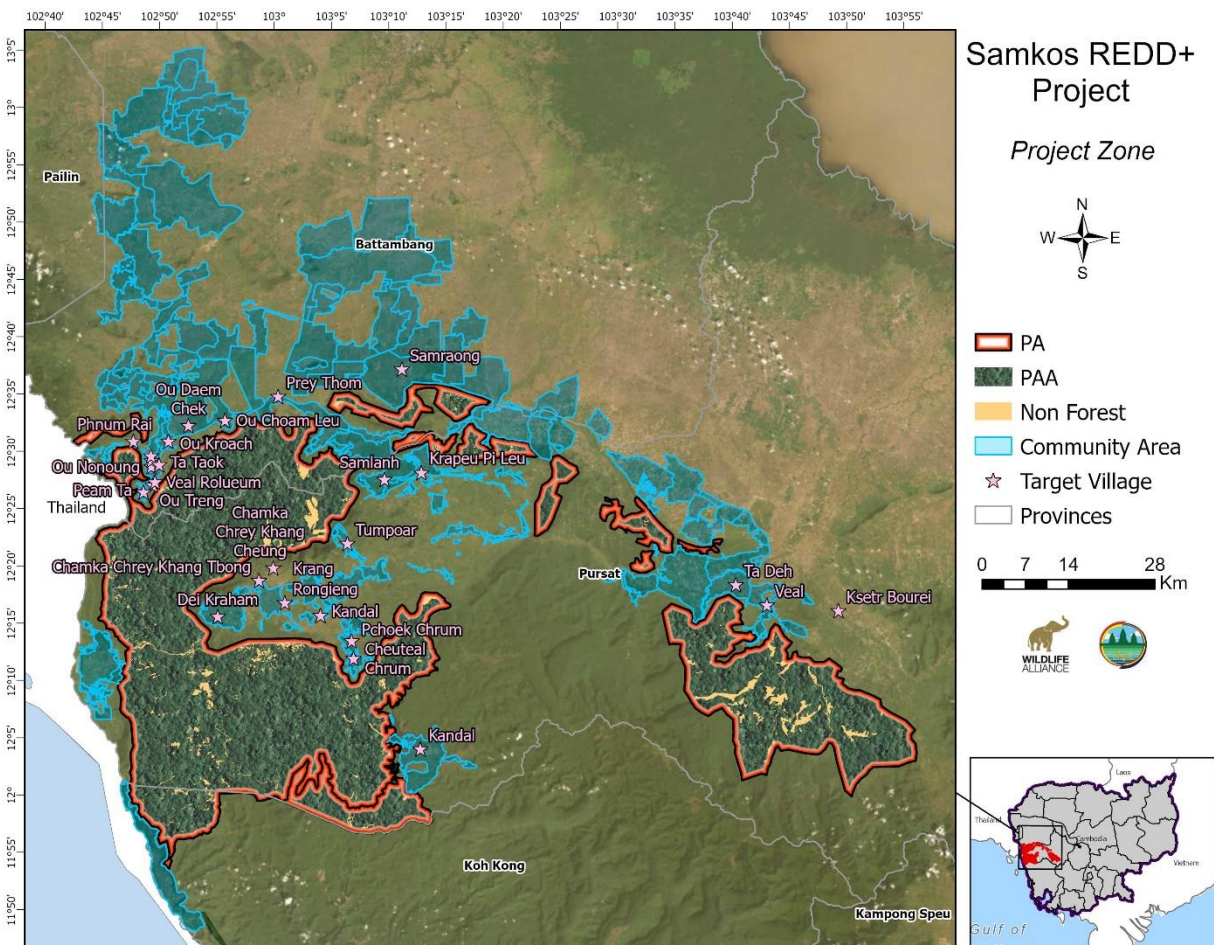

Figure 4. The Samkos REDD+ Project Zone.

2.1.8   Stakeholder Identification (G1.5)

Wildlife Alliance has been working on the protection of the southern portion of the Cardamom Mountain range for twenty years and in the project area since 2019, when they built two new government ranger stations. At the initiation of their conservation efforts, they first conducted a spatial analysis of the region to understand the location of all the communities that were adjacent to the area they were committed to protecting. Next, they conducted a participatory rural appraisal with each community. During this process, Wildlife Alliance worked with a suite of government agencies including the ministry of environment, ministry of agriculture, forest and fisheries, as well as with local district and provincial government offices thus developing a more in-depth understanding of all other stakeholders in the region.

To enable a participatory stakeholder analysis, including identification of and further analysis into potential impacts of the project on different community groups, a Social Impact Assessment (SIA) workshop was held from 11-13 October 2022. A total of 60 participants attended, representing 27 villages from 9 communes, 4 districts and 2 provinces. It is important to note that at the end of the SIA process, Kandal village in O'Som commune was not selected as a project beneficiary because families do not suffer from food-nutritional insecurities and have accumulated significant amounts of wealth through land investments, tourism and agro-products.

The 27 villages included (1) Ou Nonoung, (2) Ou Kroach, (3) Ou Treng, (4) Peam Ta, (5) Peam, (6) Ou Tateak, (7) Ta Taok, (8) Veal Rolueum, (9) Phnum Rey, (10) Ou Daem Chek, (11) Ou Choam Leu, (12) Prey Thom, (13) Samrong, (14) Samlanh, (15) Krapeu Pi Leu, (16) Kandal, (17) Krang Rongieng, (18) Chamka Chrey Khang Cheung, (19) Chamka Chrey Khang Tbong, (20) Dei Kraham, (21) Cheuteal Chrum, (22) Pchoek Chrum, (23) Tumpoar, (24) Kandal (O'Som), (25) Ksetr Bourei, (26) Tadeh, and (27) Veal.

Workshop participants comprised representatives of the local administration (provincial administrations, district administrations, commune council members, village chiefs and deputy village chiefs), village elders, local community leaders, indigenous (Por), women and youth representatives from various locations within the Project Zone.

Through an open and all-inclusive process where the facilitators helped the participants group similar issues and prioritize (through voting), the plenary settled on the following three overall Focal Issues (listing is not an indication of priority):

Potential combined focal Issues for the entire Project are as below:

1. Logging and land grabbing

2. Lack of community participation in forest protection

3. Poverty of local communities

Participants were then randomly divided into three Working Groups, one for each Focal Issue. Although this formation was random, gender, local administration (chiefs/deputy-chiefs) and youth representation in each group was considered, necessitating some reshuffling to ensure the following:

-   Each Working Group has a mix of participants from at least six different communities

-   Each Working Group has at least 15 members, with woman and youth representatives

-   Each Working Group has a local authority representative(s)

After creating Problem Flow Diagrams (see section 4.1.4), each Work Group discussed who should be considered a stakeholder within the Project zone by considering who will be impacted by the Project directly or indirectly.

Table 2. Stakeholder analysis for the Samkos REDD+ Project focal issue 1: logging and land grabbing

Focal issue	Direct Factor	Who Benefits	How they benefit	Who loses	How they lose
Logging and land grabbing	Illegal logging	Loggers Workers Middlemen Timber traders Timber transporters Owners of sawmills People who accept bribes	Logging and selling timbers to traders Making money by working for loggers or timber traders Getting benefits from buying and selling timber Making money from transporting timber Selling wooden furniture Bribery	Local communities People of the world Wildlife Government	Local people will not be able to continue collecting NFTP. They will lose income (from NTFP, tourism) Local people will face more challenges of climate change and natural disasters. Loss of habitat, food and wildlife. Loss of national budget
	Forestland clearing to claim ownership	Land encroachers Land speculators People who are hired by land speculators to clear forestland. People who are hired to guard the encroached land.	Owning the land (for agriculture and cropping) Receiving labor fees Getting benefits from land speculation Making money by guarding others' land	Government	The government loses ownership over the grabbed land

Table 3. Stakeholder analysis for the SRP focal issue 2: lack of community participation in forest protection.

Focal Issue	Direct Factor	Who Benefits	How they benefit	Who loses	How they lose
Lack of community participation in forest protection	Lack of commitment and interest in forest protection	Loggers Poachers Timber traders Wildlife traders	Trading (timber and wildlife)	Local communities Government	Loss of forest and wildlife Loss of biodiversity and natural resources Lack of rainfall for agriculture Loss of tourists Experiencing natural disaster and climate change Loss of soil fertility Loss of income Lack of timber for housing construction
	Concerns about personal safety	Loggers Poachers Timber traders Wildlife traders Powerful people and accomplices	Committing forestry crimes anarchically Accepting bribes (of timber, money, wildlife, etc.)	Communities Government	Loss of economic land concession, social land concession, tourism, NGOs
	Poverty	Traders Powerful people and accomplices	Low labor costs (when hiring people to commit forestry and wildlife crimes) Encroaching forestland	Communities Government	Loss of biodiversity Loss of income for national budget, communities and NGOs

| | Lack of support from NGOs/ government to motivate local communities to participate in forest protection | Violators Powerful people | Taking natural resources for granted Committing all kinds of threats Committing forestry and wildlife crimes freely Taking natural resources for granted | Communities Government | Loss of biodiversity Loss of income for nation and communities Loss of decision-making power and rights of communities and local authorities Loss of forest, wildlife, and forestland (natural resources) Loss of income for local people Loss of income for national budget |

Table 4. Stakeholder analysis for focal issue 3: poverty of local communities

Focal issue	Direct Factor	Who Benefits	How they benefit	Who loses	How they lose
Poverty of local communities	Lack of occupation/lack of income	Saving groups NGOS Investors Microfinance institutions Middlemen	Getting interest from loans Easy to raise funds Low labor costs High demand for loans Opportunity to increase interest rates (more income)	Community members Children Students Disabled people Elderly Local authorities Religious Groups	No jobs No income Lack of support to disabled and elderly people Children receive low education Students do have high education Lose money by paying interest

It is important to note the following:

1. The 20 military families located inside the project zone in Koh Kong province will not be included in the SRP. These families receive direct assistance by the Cambodian Government. It is a restricted zone.

2. The village of O'Som in Pursat province will not be included in the SRP. The families living in this village have substantial wealth due to its strategic location in the project zone. It lies at the heart of a tourist corridor, bringing in wealthy tourists to visit the sites, purchase the land, and buy organic and conventional agricultural products, which lifts the entire socio-economic conditions of the families.

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

The Project Zone includes 26 villages with a total population of 34,179 people (Table 5). They were identified by the Project partner WA as most associated with natural resource use and forest loss within the Project Accounting Area (PAA), and thus are most likely to be positively impacted by the project activities.

PSWS Battambang includes one district, two communes and 12 villages, corresponding to approximately 10,718 villagers (2,332 families), of which 796 families have IDPoor status.

PSWS Battambang Corridor (B2) includes one district, 1 commune and 1 village, corresponding to approximately 889 villagers (207 families), of which 88 families have IDPoor status.

PSWS Pursat includes one district with 3 communes and 10 villages and 11 sub-villages, corresponding to 15,933 villagers (3,958 families), of which 497 families have ID Poor Status.

PSWS Pursat Conservation Corridor (P4) includes one district with 2 communes and 3 villages, corresponding to 6,732 villagers (1552 families), of which 366 families have ID Poor Status.

Table 5. List of villages included in the Samkos REDD+ Project Zone.

Battambang province						
	Commune/ District	Village	# Families	# Population		# IP Families (2020/ 2021)	# ID Poor
				Total Pop.	Female Pop.		
1	Tataok	Ou Nonoung	58	234	117	NA	46
2	Samlout District (2022)	Ou Krouch	162	649	330	NA	113
3		Ou Treng	75	272	133	4	52
4		Peam Ta	36	111	58	5	25
5		Peam	73	400	112	NA	38
6		Ou Tatiek	89	383	161	NA	45

7		Ta Taok	73	324	157	6	46
8		Veal Roloem	105	323	161	2	68
9		Phnom Rey	341	1237	609	171	249
	Tataok Sub-total	9 villages	1,012	3,933	1,838	188	682
10	Battambang/ Kampong Lpou, Samlout District	Ou Dermchek	176	674	321	NA	22
11		Ou Chom Leu	162	577	299	NA	13
12		Prey Thom	975	5,423	2,711	NA	79
13	Kampong Lpou Sub-total	3 villages	1,313	6,674	3,331		114
	Chhnal Mon, Koas Krala District (Corridor)	Samroang	223	788	404	NA	88
	Chhnal Mon (corridor) Sub-total	1 village	223	788	404		88
	Battambang Total	13 villages	2,548	11,395	5,573	188	884

Pursat Province

Commune/ District		Village	# Families	# Population		# IP Families (2020/ 2021)	# ID Poor
				Total Pop.	Female Pop.		
1	Krapeu Pir, Veal Veng District	Samlanh	225	852	407	NA	27
1.1	Sub-village	Krasang Pnou	174	766	363		24
1.1	Sub-village	Ou Taten	158	558	335		22
1.2	Sub-village	Kamporng	224	1039	530		27

1.3	Sub-village	Ou Rumchek	175	753	374		N/A
1.4	Sub-village	Ou Thom	198	844	427		15
1.5	Sub-village	Smaeth	193	773	386		N/A
1.6	Sub-village	Boeng Rumlech	234	1091	498		21
1.7		Krapeu Pir Leu	232	902	406	NA	19
2	Krapeu Pir	2 villages, 7 sub-villages	1,813	7,578	3,726		155
3	Anlong Reab, Veal Veng District	Kandal	317	1106	560	NA	67
3	Sub-village	Ou Khley					
3.1		Krang Rongieng	174	720	359	NA	93
4		Chamkar Chrey Cherng	133	509	262	NA	46
5	Sub-village	Steung Khiev	95	342	176	NA	12
5.1		Chamkar Chrey Tboung	212	885	421	NA	23
6	Sub-village	Ou Dei Khmao	195	771	367	NA	35
6.1		Dei Krahom	598	2324	1124	NA	75
7	Sub-village	Ou 17					
7.1	Anlong Reab	5 villages, 4 sub-villages	1,724	6,657	3,269		351
8	Pramaoy, Veal Veng District	Chheu Teal Chrum	181	764	312	22	13
8		Pchoek Chrum	136	545	321	NA	12
9		Tumpor	111	410	184	NA	19
10	Pramaoy	3 villages	428	1,719	817	22	44

11	Santre, Phnom Kravanh District (Corridor)	Kset Borey	825	4,296	1,933	NA	213
11	Santre sub-total	1 village	825	4,296	1,933		213
	Samroang, Phnom Kravanh District (Corridor)	Ta Desh	275	1,127	629	NA	67
12		Veal	340	1,407	704	NA	86
13	Samroang (Corridor)	2 villages	615	2,534	1,333		153
	Total Pursat province	13 villages and 11 sub-villages	5,405	22,784	11,078	22	916
Grand Total Battambang and Pursat		26 villages and 11 sub-villages	7,953	34,179	16,651	210	1,800

During the SIA workshop, groups of stakeholders were identified and analyzed in relation to the focal issues. See Tables 2-4 for descriptions of how stakeholders are affected by each focal issue.

The stakeholders who benefit from the status quo are:

- Loggers
- Poachers
- Timber traders
- Wildlife traders
- Land speculators
- Non-timber forest product collectors
- Microfinanciers and money lenders/creditors

The stakeholders who are adversely affected by the status quo are:

- Communities in general, including present and future generations
- Government and local authorities
- Youth and women
- Workers/ job-seekers
- Borrowers and debtors

2.1.10 Sectoral Scope and Project Type

The SRP falls under the VCS Sectoral Scope 14- Agriculture. Forestry, and Other Land Uses (AFOLU), under the category Reduced Emissions from Deforestation and Degradation (REDD). Specifically, the Project falls under the REDD+ categories of Avoided Unplanned Deforestation & Degradation (AUDD).

The SRP is not a grouped project.

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

Project Activities

During the SIA workshop, the following **focal issues** were identified:

1) Logging and land grabbing

2) Lack of community participation in forest protection

3) Poverty of local communities

Based on the Problem Flow Diagrams developed for each of the three focal issues identified, several strategic project entry points were discussed during the SIA workshops and agreed upon as the most likely strategies and activities to address root causes of the problems. These thus constitute the project activities for the SRP that if implemented would follow the theory of change logic developed in the Results Chains (Figure 5) to lead to the desired outcomes. These proposed project activities were further enriched by the knowledge and experience of the project partner WA, who has been engaging with local communities in this landscape for the last decade to identify their needs. As such, the project communities have been variously engaged in designing these Project activities.

While the Project partner WA has been successful in implementing some of these activities, the effectiveness and scope of their implementation has been limited by a lack of sustained funding. Therefore, the Project Partner WA deems it most effective that the SRP maintains and expands these on-going project activities. Supporting these operations will be the most direct way to deliver benefits to the communities in a timely fashion. It is envisioned that several new activities, directly supporting the sustainability of the REDD+ Project while simultaneously providing alternative means to the local communities, will also be possible with carbon revenue. Specific activities are described below, followed by detailed Results Chains and a description of the key activity areas that will serve as a framework for activity implementation.

The Project will design and implement the following project activities to help address the focal issues.

Park Management: Conservation law enforcement will be the main tool used to protect and conserve the natural resources in SRP, which addresses focal issue 1, logging and land grabbing. The Project will provide field assistance through on-the ground ranger enforcement training and supervision; patrolling equipment such as, motorbikes and vehicles; and upgrade and/or construct additional ranger-field stations for the purpose of 1) protecting the 3 protected areas, 2) monitoring and collecting wildlife population data, 3) promoting the values of protected areas to local communities and 4) working with NGOs and community-based organizations to ensure that all activities in the SRP follow MOE laws, sub-decrees and conservation guidelines.

An important cultural aspect of forest protection is for the Por people, whose traditional nature spirits depend on the existence of trees. The Por leader and his children are very concerned about the loss of forests and the impact on the Por culture. Deforestation on traditional lands has been accelerating in the last 6 years. With the loss of trees, the Por leader fears for the loss of their traditional nature spirits- the 2 male and 2 female spirits representing nature. Without the spirits, the Por ceremonies won't be able to be

celebrated. Without the ceremonies, the youth will never learn about the group's beliefs and behaviors. Mr. Chhorn, the eldest son, said that there are 3 spirit places in the forest where the Por people pray: 1- Phnom Rey 2- Community forest for the spirit is Chomteav Mao (female) 3- Community forest for the spirit Tvear Ouknha Vang (male).

Conservation Agriculture: Conservation agriculture will address all three focal issues. It will help reduce illegal logging by local farmers/villagers by giving them an alternative to forest products. The conservation agriculture program will lead to better livelihoods and address poverty by providing ID Poor families with high-protein, low environmental impact food sources (chickens and frogs), which aims to reduce malnutrition and reliance on forest resources. Additional families will be trained in conservation agricultural methods.

Clean Water: The SRP will provide 64 solar-powered water wells in 26 villages for household consumption (drinking, cooking, etc.). This will address focal issues 2 and 3 by providing water for irrigation and improving health.

Focal issue 1) Logging and land grabbing
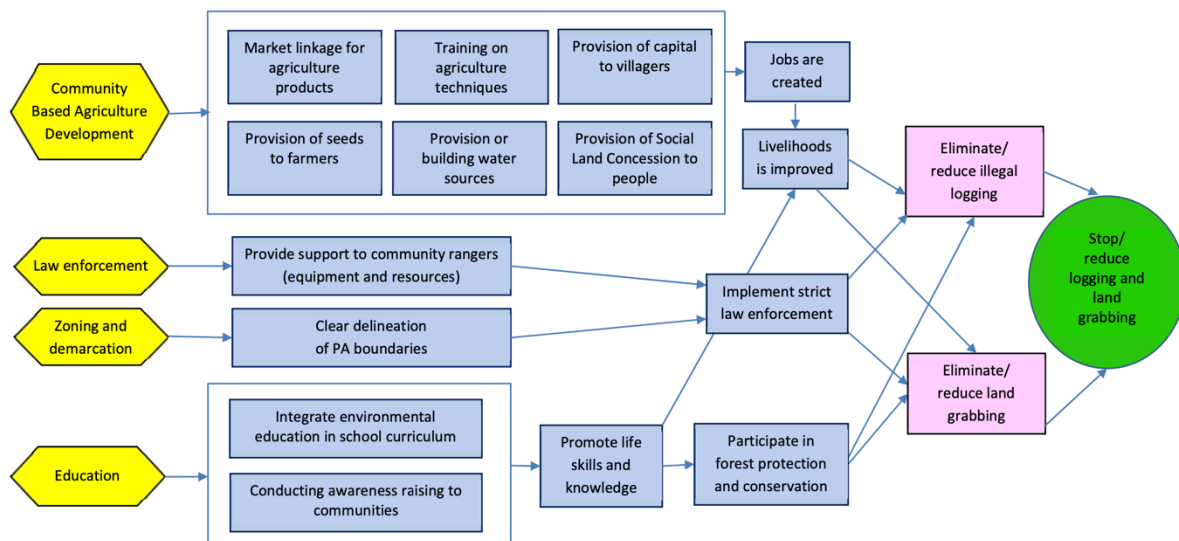
Focal issue 2) Lack of community participation in forest protection
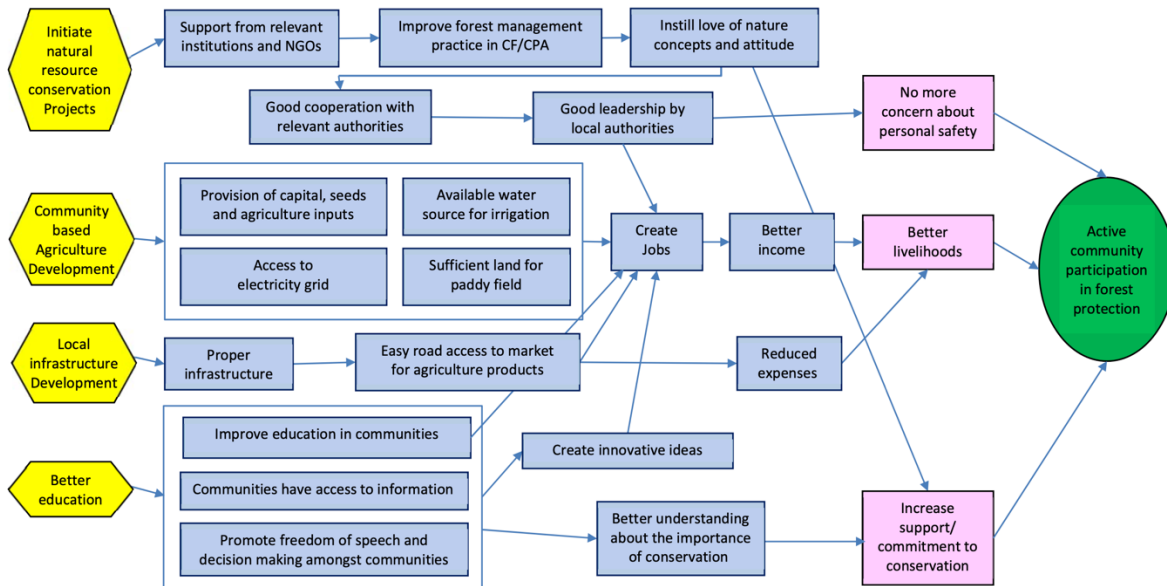
Focal issue 3) Poverty of local communities
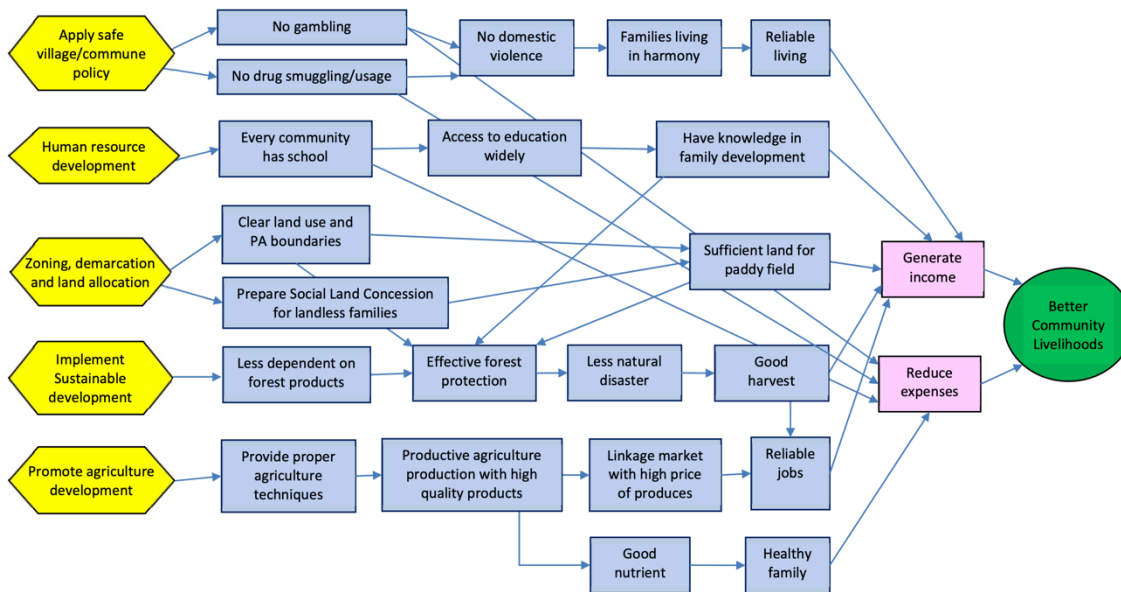
Figure 5. Results Chains underlining the theory of change logic for the three Focal Issues identified during community SIA workshop for the SRP.

Legend Table	⬡ Strategy	☐ Intermediate Result	☐ Threat Reduction Result	⬭ Target

2.1.12 Sustainable Development

The Royal Government of Cambodia (RGC) endorsed the Sustainable Development Goals (SDGs) at the UN General Assembly in 2015. Of the 18 Cambodian Sustainable Development Goals (CSDG), the

government has prioritized the following six goals: Education, Decent Work and Growth, Reduced Inequalities, Climate Action, Peace and Institutions, and SDG Partnerships. These six goals are also prioritized within the RGC's strategic planning priorities, as set out in the Rectangular Strategy Phase IV (RS-IV) and the National Strategic Development Plan (NSDP) 2019-2023. The Project activities will fall under the following CSDGs:

- SDG 1 End Poverty

- SDG 2 Zero Hunger

- SDG 6 Clean Water

- SDG 10 Reduced Inequalities

- SDG 13 Climate Action

Goal 1 End Poverty

One of the goals of the RGC is to lower poverty levels in rural areas. The SRP will support poverty reduction by generating employment and supporting an increase in household incomes. The SRP will work with ID Poor families and will focus on providing employment and livelihood support to the neediest community members.

The Project will employ local Cambodian rangers/forest personnel to protect Phnom Samkus Wildlife Sanctuary. Since 2019, the Project has already employed 61 local rangers. Another 21 Cambodian rangers will be employed in 2023/2024 as a direct result of the Samkos REDD+ project.

Goal 2 Zero Hunger

The Project identified many households in the Project Zone as 'food insecure' for at least 3 months a year, which means that rural household diets lack in the quantity and quality of food needed for the maintenance of adequate nutritional status and prevention of disease. In one village in SRP Pursat, 85% of children under 5 were diagnosed as 'malnourished' by a study conducted in September/October 2020. Women's understanding of the relationship between feeding practices, food intake and health was very limited.

Goal 6 Clean Water

The Project identified 68 sites for the construction of water wells in the 26 target villages – 26 wells in Battambang and 42 in Pursat province. The Project will create a water well sub-committee for each location to help maintain and solve potential problems. A water well committee for the whole village will also be created for overall monitoring and inspections of all wells in their villages.

Goal 10 Reduced Inequalities

The SRP drives financial flows to a least developed country, Cambodia, to reduce inequalities. The SRP aligns the voluntary carbon market (VCM) with Nationally Determined Contributions, and supports governments and local communities through carbon financing.

Goal 13 Climate Action

Under Goal 13 Climate Action, the following activities will be prioritized:

13.1 Physical Protection/Monitoring

Conservation law enforcement is the main tool used to protect and conserve the natural resources in all three protected areas of SRP. Ranger patrols are a difficult and life-threatening task that requires all conservation enforcement teams to have the capacity, tools, and commitment to protect the country's

resources for future generations. The Ministry of Environment adopts the following methods to protect its parks: land patrols (foot, motorbike, and truck), riverine patrols, and partnerships with NGOs for technical field support and financial assistance.

Based on the Project's focus group discussions in SRP, participants viewed the quantity and limited capacity of forest rangers to arrest illegal loggers and process forest crimes as contributing factors to deforestation. Rangers, on average, can patrol 10 days a month or three times per week. Poachers, therefore, would go on other days of the week. In addition, the core conservation zones inside the SRP are large. Rangers have been unable to patrol the whole geographic region because they do not have the patrolling tools, like motorbikes to effectively patrol. Illegal loggers have been able to take the absence of rangers, tools, including the means to quickly process the crimes, as opportunities to clear the land and harvest the trees.

The Project will provide conservation law enforcement training, patrolling equipment and upgrade and/or construct additional ranger-field stations for the purpose of 1) protecting the sanctuary, 2) monitoring and collecting wildlife population demographic data, 3) promoting the values of protected areas to tourists and local communities and 4) working with NGOs to ensure that all projects follow conservation guidelines.

The Project will also partner with MoE to deliver a pro-ranger program to strengthen the technical skills of the rangers, whose duties include detection, investigation, and apprehension of persons responsible for criminal forest activities. Wildlife Alliance has been one of MoE's strategic conservation partners since 2000.

13.2 Conservation Agriculture

Many villagers in the Project Zone have faced environmental challenges in the last 5 years, including longer dry spells during the rainy season, uncertainty of harvesting yields due to natural disasters like flooding, and declining yields because of the loss of soil nutrients. Poor harvests and/or low sales on agricultural goods have also pushed many farmers to take out loans from outside parties. With declining yields in corn and cassava, two commodities that resource-poor farmers cultivate, families have been unable to repay their high-interest loans. To compensate for the loss of income streams from agriculture, some farmers illegally cleared more land and sold more timber inside and outside of their respective communities, including crossing the border into Thailand to fell trees.

Conservation agriculture would not only address the practices needed to improve agricultural productivity on existing farmland and restore crop diversity, but it would also help to protect the ecology of SRP by preventing villagers from clearing more forests to simply meet the basic needs of their families. Additionally, conservation agriculture can help improve market access. Connecting the farmer's conservation-friendly products to a growing group of globally responsible food shoppers may enable them to sell more of their products above the break-even price point. Eco-tourists prefer buying and consuming products that are responsibly grown and delivered.

2.1.13 Implementation Schedule (G1.9)

Date	Milestone(s) in the project's development and implementation
1 Sept 2019	SRP protection efforts started; GHG accounting period started
1 Sept 2019	O'Som and Roveang ranger stations become fully operational
23 July 2020	Ministry of Environment (MOE) gave final approval for SRP project

25 July 2022	MOE and WA signed Project Agreement to develop and implement SRP
25 Nov 2022	Started survey of SRP community water wells in Project Zone
23 Nov 2022 to 26 January 2023	Delivered 27 SRP FPIC Workshops across Project Zone
11-13 Oct 2022	Delivered SRP SIA workshops in Pursat town
24 February 2022	Started livelihood surveys in IP village (Phnom Rey)
14-15 Nov 2022	Delivered BIA workshops in Phnom Penh
22 June and 1 July 2022	Chrak Chang Let and Thmor Da ranger stations become operational

2.1.14 Project Start Date

PDR.6 The Project Start Date.

The Project start date for the Samkos REDD+ Project is 1 September 2019. This is the date the Cambodian Ministry of Environment gave verbal approval to Wildlife Alliance under their Cardamom Forest Protection Program (2002) to begin park protection activities inside SRP. The SRP has elected to start the Project after the national FREL historic reference period end date to prepare for nesting into the national REDD+ Program.

2.1.15 Benefits Assessment and Crediting Period (G1.9)

PDR.7 The project crediting period start date and length.

The Project lifetime will be 30 years, commencing from the project start date of 1 September 2019 and ending on 31 August 2049. The crediting (GHG accounting) period will be the same 30 years as the lifetime of the Project.

PDR.8 The dates for mandatory baseline reevaluation after the project start date.

Per the VCS guidelines, a mandatory baseline re-evaluation is to be executed at a minimum of every 10 years after the project start. Therefore, there will be a mandatory baseline re-evaluation on or before 1 September 2029 and on or before 1 September 2039.

PDR.9 A timeline including the first anticipated monitoring period showing when project activities will be implemented.

Table 6. Proposed Project timeline including project activities and first and second monitoring milestones.

Date	Project Activity or Event
2019	Construction of 2 government ranger stations
2022	Construction of 2 government ranger stations

2022	Opening of Project Office in Battambang
2022	WA Database
2023	SRP Community Water Wells-34 (565 families)
2023	Agriculture- 21 families (IP village)
2024	SRP community water wells-34
2024	1 ranger station in PSWS Battambang

PDR.10 A timeline for anticipated subsequent monitoring periods.

The following diagram depicts the proposed Samkos REDD+ Project validation and verification timeline.

Figure 6. Proposed Project verification and baseline re-evaluation timeline (Ve= Verification event; BR= Baseline Re-evaluation).

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

There is no difference between the GHG emissions accounting, climate adaptive capacity and resilience, community, and/or biodiversity assessment periods.

2.1.17 Estimated GHG Emission Reductions or Removals

Year	Estimated GHG emission reductions or removals (tCO$_2$e)
2019	568,984
2020	1,702,287
2021	1,702,287
2022	1,702,287
2023	1,549,341
2024	1,549,341
2025	1,549,341
2026	1,549,341

2027	1,549,341
2028	1,549,341
2029	1,549,341
2030	1,549,341
2031	1,549,341
2032	1,549,341
2033	1,549,341
2034	1,549,341
2035	1,549,341
2036	1,549,341
2037	1,549,341
2038	1,549,341
2039	1,549,341
2040	1,549,341
2041	1,549,341
2042	1,549,341
2043	1,549,341
2044	1,549,341
2045	1,549,341
2046	1,549,341
2047	1,549,341
2048	1,549,341
2049	1,031,479
Total estimated ERs	47,449,037
Total number of crediting years	30

Average annual ERs	1,549,341

2.1.18 Risks to the Project (G1.10)

Human Activity Risks

1. 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 the expanding local population, in-bound provincial migration, and wealthy businessmen trying to find new and unsustainable opportunities in forested areas. Unsustainable agriculture is a primary risk to the SRP benefits and the Project's sustainability.

Mitigation for this risk is through Project Activities, mainly in the form of increased and strategic protection of the Project Area, creation of new sustainable income generating activities, and through the promotion of improved agricultural methods as described in 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 SRP Project Area and pose a significant risk to the Project's climate benefits. Conservation law enforcement under MoE routinely patrol the Project Area in the attempt to halt the illegal activities. These law enforcement units are limited because of the size of the Project Area. The SRP will provide the financial, political and human capacity support necessary to maintain and strengthen conservation law enforcement. This is achieved by employing more government rangers, providing ranger training on park management, including SMART patrols, and more equipment to effectively complete their tasks.

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 brush for agriculture, or some may be the unintentional result of illegal activity, such as charcoal production. SRP will monitor the Project Area for the occurrence of fire and will 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. 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.

2.1.18.1 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 have been no catastrophic fires in forests of this type in this region. Therefore, natural events have low risks to the Project's benefits.

2.1.18.2 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 low, especially given that the Project Area is currently under government ownership and under protective status (It includes national park land and a wildlife sanctuary). As a highly visible international REDD+ project, the likelihood that the RGC would allow the SRP 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.

There are upcoming national elections in July 2023, which brings with them the risk of civil unrest if the party in power loses the election. Additionally, there will be a change in the Ministry of the Environment. While we expect the future Minister to be supportive of the SRP and REDD+ projects generally, it does present a potential risk.

2.1.18.3 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.

2.1.19   Benefit Permanence (G1.11)

The SRP 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 SRP 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 sustainable agriculture and management of natural resources. These activities will reduce the necessity for community members to deforest and degrade the Project Area. During the Project Lifetime, this will be achieved, for example, by improving education by training farmers in sustainable agriculture. These activities are outlined in more detail in 2.1.11.

2.1.20   Financial Sustainability (G1.12)

The Project Proponent is the Royal Government of Cambodia Ministry of Environment, which is a government supported administrative unit. The development of the Samkos REDD+ Project has been supported by the funds provided by Wildlife Alliance. Wildlife Alliance's sales partner Everland is experienced at marketing and sales of REDD+ credits on the global market.

Moreover, the Project Proponent and Wildlife Alliance combined REDD+ project development experience (successful prior VCS/CCB validated & verified Southern Cardamom REDD+ Project) contributed to the creation of a detailed financial model for the development and management of the SRP. 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.

2.1.21   Grouped Projects

This section is not applicable.

2.2   Without-project Land Use Scenario and Additionality

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

According to the social impact assessment, the potential range of the "without-project" land-use scenarios is varied depending on the stakeholder. In order to analyze these scenarios, we first created an exhaustive list of focal issues, and then, through voting and group discussion, prioritized three focal issues without the project. Without the Project the land-use scenarios that were determined to lead to deforestation were a lack of modern agricultural techniques to increase agro-yields, un-controlled migration, land speculation, and some land tenure disputes. The drivers of these scenarios are illegal logging, land allocation through Order 01, small scale land conversion, and fuel and deadwood collection for cooking.

The identified without-project scenario for the SRP is conversion of native ecosystems from a natural forested landcover to a non-forest or agricultural state. The baseline scenario outlined in the VCS Additionality Tool of Section 3.1.5 demonstrates that the Project Accounting Area would be converted to subsistence agricultural. Please refer to Section 3.1.4 and 3.1.5 for more details.

2.2.2 Most-Likely Scenario Justification (G2.1)

PDR.18 A list of the agents and drivers of conversion, including quantitative descriptions of agent mobilities.

PDR.19 A narrative describing the agents and drivers of conversion.

PDR.20 Descriptions of agents and drivers including any useful statistics and their sources.

In the SIA workshop that was held with project stakeholders the participants classified the agents and drivers of deforestation as local community members protecting land for agricultural and livestock-use, in-migrants and outsiders who are coming to the Project Area into three categories:

1. **Local Communities:** This includes households residing in the Project Zone that use destructive agricultural techniques, actively clear lands for livestock, and work to protect agricultural land from becoming a part of either community or government protected areas.

2. **In-Migrants:** This includes households who have never previously owned land, households that have sold their ancestral land to third parties and need new plots of land, and poor households. These households come to the Project Area to clear plots of forests to build houses and to grow crops. Generally, many of these households unofficially gain land titles to the deforested land and settle in the area permanently.

3. **Outsiders:** These are individuals or groups of individuals who immigrate to the Project Area and illegally clear forest land for individual property. After clearing the land, they construct simple buildings and plant agricultural crops to legitimize their land claim. They will sell the land to another party, mainly wealthy people who live in Phnom Penh or provincial towns. Many land speculators look for new forest area where they will repeat the process. Generally, these people are not landless households and they will not settle in the area permanently. A second type of outsider is a middleman, who comes to the Project Area to purchase plots of land from the land speculators. They will sell these land plots to landless households or to wealthy or powerful people mostly from the nation's capital.

Direct and indirect drivers of deforestation and degradation were identified and are listed below.

Direct Drivers of Forest Deforestation and Forest Degradation

1. Illegal land clearing for potential commercial interests

2. Illegal land clearing for potential residential interests

3. Illegal land clearing for subsistence agriculture

4. Illegal logging for domestic use

5. Charcoal production

6. Inter and Intra-provincial migration

7. Natural population growth

8. Natural disaster

9. Fuelwood for domestic consumption

Indirect Drivers of Forest Deforestation and Forest Degradation

1. Land tenure rights

2. Lack of protected area law enforcement officers and enforcement tools

3. The Belt and Road Initiative (BRI)

4. NGO and donor knowledge gaps on protected areas

5. Knowledge gaps in public education system on Cambodia's protected area system

6. Private-based ecotourism

7. Poorly managed/funded community protected areas

2.2.3 Community and Biodiversity Additionality (G2.2)

According to the social and biodiversity impact assessment, benefits to communities and biodiversity in the absence of the Project would be limited. There are multiple protected areas throughout Cambodia, including Samlout Multiple Use Zone, Roneaum Daum Sam Wildlife Sanctuary, and Kulen Promtep National Park, that are clear examples of what the project area would be like without the Project. Most of these areas were declared protected areas in 1993, while the Khmer Rouge still occupied large portions of forestland in the country, including the Cardamom Mountains. Even with the support of international NGOs most of these areas lost 30% or more of their forest cover over the last 20 years (Pech, 2017). This was partially because of government resettlement schemes that directed poor families to protected areas, such as in Roneaum Duam Sam, where now there is no forest remaining.

In the without-project scenario, there has been a push by the government for resettlement adjacent to protected areas, but the government does not provide resources to benefit communities and biodiversity. There has been a lack of community development initiatives around protected areas which leads to the destruction rather than protection of natural resources (ICEM, 2003). This leads to significant financial, technical and institutional barriers to implementation of project activities such as income generation, agricultural training and forest and biodiversity protection.

The identified without project scenario for both communities and biodiversity are described in more detail in Section **Error! Reference source not found.** and **Error! Reference source not found.** respectively. Pl ease refer to Section **Error! Reference source not found.** and **Error! Reference source not found.** for more details.

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

The SRP is not claiming any other offsets or credits from the community or biodiversity benefits produced by the Project.

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

All livelihood field activities will be undertaken directly by the Samkos REDD+ implementation team through field officers who have been carefully hired based on their subject matter skills. These field officers will be working from a field office centrally located in PSWS Battambang. All stakeholders will be informed of the field office once established (April/May 2023). This field office, in addition to the project office in Battambang provincial town, will hold all project documents (community livelihoods) for stakeholders to review. For conservation enforcement matters, stakeholders will visit all government ranger stations in their communities.

The Project Office and Project Sub-Office maintains a full printed version of the PD in English for public viewing. The executive summary has been translated into Khmer is posted in public places in communities throughout the Project Zone.

The full PD version and the executive summary of the PD 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 has been translated into Khmer and is posted in public places in communities throughout the Project Zone. The full PD version and the executive summary of the PD in English and Khmer version are made available on the project webpage (http:// https://www.wildlifealliance.org/) and official Wildlife Alliance Facebook page. Additional 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.

2.3.3   Informational Meetings with Stakeholders (G3.1)

The Samkos REDD+ Project team must first contact the commune chiefs and village chiefs by phone and official letters before meeting with villagers. Local communities follow a very strict code of conduct when organizing and delivering project meetings and information. Once meetings have been delivered, the Project team sends the official minutes of the meetings to the commune and village chiefs with a list of participants. The commune and village chiefs decide where and how notices should be made public, for example, on the notice board at the commune hall or a village chief's house. Today, local governments use Telegram to send and receive information. The Project team will create a Telegram group if the local authorities make a request.

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

A Project Office was established in the Battambang town in 2022. This office serves as an information hub for SRP and is open to all community members and stakeholders who wish to gain information about the Project's community livelihoods and/or submit 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, letters and Telegram in a timely fashion.

Project Partners have been kept up to date with regular communication and dissemination of project documentation. Community members are encouraged to visit the office in Battambang and/or government ranger stations where they have full access to any such material. The SBIA community meetings took place 11-13 October 2022 and 14-15 November 2022 in Pursat town and Phnom Penh. In addition, community FPIC meetings took place from 23 November 2022 to 29 January 2023 (27 meetings). In total for the FPIC process 27 meetings were held attended by 1,262 community members from the Project Zone, of which 750 were women. 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 the Section **Error! Reference source not found.**.

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

The executive summary has been translated into Khmer and is posted in public places in communities throughout the Project Zone.

The full PD version and the executive summary of the PD in English and Khmer version are made available on the project webpage (http:// https://www.wildlifealliance.org/) and official Wildlife Alliance Facebook 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 field visit was posted in communities throughout the Project Zone. It included details on how a comment to the CCB can be made.

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

The Project partner WA 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 WA 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 Consultations (G3.4)

Communities were consulted during the first round of our Free, Prior, Informed Consent (FPIC) process, which is continuous throughout the Project lifetime. A list of FPIC meetings to date is in Table 7. The SIA training and workshop utilized the theory of change logic to hypothesize how the SRP intends to achieve its objectives. In other words, through the SIA training and workshop the Project partner WA, local government officials and key community leaders created a roadmap of how the SRP 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.

Table 7. Location, date, and attendance of FPIC meetings for the Samkos REDD+ Project.

ID	Location	Commune	District	Date	Place	Total	Female	Male
SRP-101	Ou Nonoung	Ta Taok	Samlout	08-Jan-2023	Villager's house	34	23	11

SRP-102	Ou Kroach	Ta Taok	Samlout	26-Jan-2023	Village chief's house	65	44	21
SRP-103	Ou Treng	Ta Taok	Samlout	04-Dec-2022	Peam Ta Primary School	57	43	14
SRP-104	Peam Ta	Ta Taok	Samlout	05-Dec-2022	Village chief's house	31	23	8
SRP-105	Peam	Ta Taok	Samlout	05-Jan-2023	Village member's house	33	28	5
SRP-106	Ou Tateak	Ta Taok	Samlout	05-Jan-2023	Village member's house	26	22	4
SRP-107	Ta Taok	Ta Taok	Samlout	08-Jan-2023	Village chief's house	52	41	11
SRP-108	Veal Rolueum	Ta Taok	Samlout	03-Dec-2022	Ou Nonoung Primary School	45	24	21
SRP-109	Phnum Rai	Ta Taok	Samlout	27-Jan-2023	Phnum Rai Pagoda	56	33	23
SRP-110	Ou Daem Chek	Kampong Lpov	Samlout	29-Jan-2023	Village chief's house	31	13	18
SRP-111	Ou Choam Leu	Kampong Lpov	Samlout	16-Dec-2022	Ou Choam Leu Pagoda	71	35	36
SRP-112	Prey Thom	Kampong Lpov	Samlout	17-Dec-2022	Village chief's house	55	28	27
SRP-113	Samrong	Chhnal Mean	Koas Krala	20-Dec-2022	Samrong Leu primary school	55	41	14
SRP-114	Samlanh	Krapeu Pi	Veal Veng	23-Dec-2022	Samlanh primary school	50	30	20
SRP-115	Krapeu Pi Leu	Krapeu Pi	Veal Veng	26-Dec-2022	Village chief's house	44	32	12

SRP-116	Kandal	Anlong Reab	Veal Veng	25-Jan-2023	Villager's house	50	26	24
SRP-117	Krang Rongieng	Anlong Reab	Veal Veng	22-Jan-2023	Village chief's house	42	27	15
SRP-118	Chamka Chrey Khang Cheung	Anlong Reab	Veal Veng	11-Jan-2023	Villager's house	36	21	15
SRP-119	Chamka Chrey Khang Tbong	Anlong Reab	Veal Veng	07-Jan-2023	Village meeting Hall	36	15	21
SRP-120	Dei Kraham	Anlong Reab	Veal Veng	09-Jan-2023	Dei Krahom Pagoda	90	64	26
SRP-121	Cheuteal Chrum	Pramaoy	Veal Veng	07-Dec-2022	Village chief's house	46	16	30
SRP-122	Pchoek Chrum	Pramaoy	Veal Veng	09-Dec-2022	Village chief's house	63	35	28
SRP-123	Tumpoar	Pramaoy	Veal Veng	20-Dec-2022	Village chief's house	36	21	15
SRP-124	Kandal	Ou som	Veal Veng	05-Dec-2022	Village chief's house	24	10	14
SRP-125	Ksetr Bourei	Santreae	Phnom Kravanh	23-Nov-2022	Commune meeting hall	40	6	34
SRP-126	Ta Deh	Samroang	Phnom Kravanh	25-Nov-2022	Village meeting Hall	51	24	27
SRP-127	Veal	Samroang	Phnom Kravanh	28-Nov-2022	Villager's house	43	25	18
					Total	1,262	750	512

2.3.8 Continued Consultation and Adaptive Management (G3.4)

WA plans to install comment boxes in each of the 26 communities, in which stakeholders can leave anonymous comments about the Project and its activities. These comment boxes will complement the new field office that will house the field team. The field office will be centrally located so that the target beneficiaries have access.

2.3.9   Stakeholder Consultation Channels (G3.5)

The Project has held community meetings and workshops during the project development process. Sections 2.1.8 and 2.3.8 list the community meetings and workshops that were held for all Project stakeholders. A complete report of the SBIA workshops and FPIC meetings, including pictures and meeting results have been provided to the validator.

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

In order to ensure effective participation of SRP 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 SRP 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 SRP 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   Feedback and Grievance Redress Procedure (G3.8)

The SRP strives to minimize the possibility of conflicts and grievances by maintaining close linkages with the local communities and stakeholders throughout the Project Zone. The Project additionally has an open-door policy, and will encourage community members, stakeholders and employees to visit the new Project Office, in Battambang town and Project Sub-office in Samlout District, and discuss any issues or feedback directly with project staff. The Project will also create a REDD Facebook Page (https://www.facebook.com/WildlifeAllianceREDD/) to allow comments and feedback which will be followed up upon by project staff. Facebook is an important social media platform across Cambodia and used by many rural and forest communities as the main source of information and news. A project phone number has will also be disseminated to communities.

If conflicts or grievances arise, the SRP has a feedback and grievance redress policy and process, the purpose of which is to provide an efficient, fair and accessible mechanism for resolving complaints and conflicts, and ensure that the process is transparent and comprehensive. The SRP feedback and grievance redress process has been publicized to communities and a copy provided to the project validator.

The full grievance policy has been submitted to the validator and is available to anyone upon request. In summary, community members and project stakeholders are encouraged to submit grievances, comments or feedback to the Project Office through several channels, with all communication methods

receiving the same level of response. The primary method for communication will be through the Project Office or Sub-office, and government ranger stations located throughout the Project Area.

Two types of issues accounted for in the grievance process include:

- Issues or conflict between the community or other project stakeholder and MoE, and

- Concerns regarding project employee rights, work practices, and employee safety raised by MOE or WA employees or contractors.

This procedure applies to the MOE/WA and activities under the SRP. If a Project Stakeholder(s) has a complaint or grievance, the first step should be taken up with a commune chief. The complainant could communicate this verbally or in writing to their nearest government ranger station of Project sub-office. In addition, the MOE/WA has published an email address, phone number, and Facebook page that Project stakeholders can use to make comments or voice grievances.

This grievance policy is outlined in the document "Samkos REDD+ Project Grievance Redress Mechanism." This grievance process was described in general at community meetings, and the document has been provided to the local government offices in the Project Zone. In addition, a summary of the grievance policy was translated to Khmer and posted on the Project information boards located at commune halls across the Project Zone.

In summary, once the commune chief has received a grievance, through any of the described channels, they are required to respond to the aggrieved person(s) within 7 working days. The commune will maintain full records of all grievances received, communications made between the commune chief and the aggrieved person(s), and the agreed resolutions. If the commune chief and the aggrieved person(s) cannot resolve the grievance to a mutually satisfactory manner, the aggrieved person(s) may raise complaints and grievances to the Provincial Project Committee (PPC) or its members either verbally or in writing (using Complaints and Grievances Form provided). At his level, the MOE/WA Project Management Unit (PMU) is obliged to (1) record every complaint and keep track of the status, and (2) keep complaints and grievances confidential unless otherwise directed by the aggrieved person (s). If there is reason to believe that the PPC will not provide an objective review of the concern, the matter may be taken up directly to PBC further review and decision-making. The PPC has to respond complaint within 7 working days since the date of the complaint has been submitted.

The PMU will maintain a record book of all grievances received and their resolutions, which can be viewed upon request from project stakeholders or auditors. The PMU will update and present the record of recorded cases to the PBC during the annual PBC meeting.

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

Please see Section 2.3.12 for an explanation of how accessibility of the feedback and grievance redress procedure is publicized and made publicly available.

2.3.14 Worker Training (G3.9)

The SRP 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 SRP 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, 60 local forest protection personnel have been trained through ranger trainings.

The SRP also has 4 full-time local employees currently working in Battambang. All have received first aid training.

2.3.15 Community Employment Opportunities (G3.10)

The SRP has developed an Equal Opportunity Policy, which has been provided to the validator for review. Based on this policy future SRP job positions will be openly advertised through the Project Office within the Project Zone. The Project has the responsibility for the fair treatment of all, representation for all Project Zone groups, and encouraging diversity within project staff and management. SRP policy stresses equal opportunity for all groups, including members of ethnic minorities, various socio-economic groups, genders and sexual orientations, for all employment positions and for inclusion in REDD+ program activities. The selection of potential employees is held on a democratic and neutral basis, providing equal opportunity to all applicants. The SRP operates a strict non-discrimination policy such that women and vulnerable groups of people will receive equal chances regardless of the type of work.

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

The SRP complies with all relevant local, regional and national laws related to workers' rights including the following:

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 and Project partner WA will ensure that any relevant international convention or government regulation is fully followed.

2.3.17 Occupational Safety Assessment (G3.12)

The SRP 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 SRP ensures that workers' health and safety are protected to the best of the Project's ability always and across all sites. Risks are identified, mitigation strategies produced, and appropriate measures adopted 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. The SRP 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. Rangers are insured for accidents that occur during work time for SRP as part of their contracts with WA.

2.4   Management Capacity

2.4.1   Project Governance Structures (G4.1)

In Cambodia there is clarity of institutional responsibilities with relation to carbon rights and forest and wildlife management. All protected areas fall under the jurisdictions of the Ministry of Environment. Below is a list of key project partners:

- **Ministry of Environment:** All REDD+ projects fall under the ministry's jurisdiction.

- **Battambang provincial authority and Samlout local authorities**: Key stakeholders because almost 25% of the Project Area and 50% of the Project's beneficiaries are located in Battambang.

- **Pursat Provincial Authorities:** Key stakeholders because the central portion of the SRP Project Area and Project Zone are located inside Pursat province.

- **Koh Kong Provincial Authorities:** Minor stakeholders because the area covers less than 10% of the Project Area and there are no beneficiaries because the area is a military restricted zone.

- **Wildlife Alliance (WA):** WA manages the Southern Cardamom REDD+ Project that is on the southern and southwestern border of the SRP, adjacent to the Phnom Samkus Wildlife Sanctuary and Peam Krasop Wildlife Sanctuary REDD+ Project Zone. Wildlife Alliance has been operating in Cambodia since 2000, with a special focus on south and southwestern Cambodia. It was instrumental in helping MoE to create the Southern Phnom Kravanh National Park in 2016.

2.4.2   Required Technical Skills (G4.2)

The key technical skills required to implement the SRP 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 SRP.

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 SRP.

The team of the MOE and Wildlife Alliance have the skills and resources to successfully implement the SRP.

2.4.3   Management Team Experience (G4.2)

Wildlife Alliance has a strong Project team with a wealth of land management and carbon project experience that will support project management and implementation.

Mr. Romica Grosu – GIS/Monitoring Manager – Wildlife Alliance – SCRP Monitoring Manager

A former French Legioner, Mr. Grosu supports carbon monitoring and forest protection. Mr. Grosu 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 for WA in the Southern Cardamom since 2001 Mr. Hort understand the nuances of local communities and government officials. He will be supporting all community engagement activities for the SRP.

WA will have a Livelihood Manager who will manage all community aspects of the REDD+ project. They will be charged with overall management of community engagement. The Livelihood Manager also serves as an interface between WA, communities, and local government agencies.

The following managers will oversee the key components of the REDD+ project.

- *Wildlife Alliance* Regional Field Director-Conservation Law Enforcement. This director will lead and coordinate with all foreign park supervisors and local park rangers.

- *Wildlife Alliance* Regional Field Director-Land Use Planning, Zoning and Demarcation. This director will lead and coordinate with all government officers on zoning, demarcation and planning.

- *Wildlife Alliance* Regional Field Manager-Conservation Law Enforcement. This manager will lead and coordinate with all government and civilian park rangers and trainees to protect SRP

- *Wildlife Alliance* Regional GIS Manager-This manager will create and oversee all drafts, and designs of maps.

- *Wildlife Alliance* Finance Program Manager - Will oversee all Project finances

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

All relevant project management experience is present in the current SRP partners.

2.4.5   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.

Moreover, the Project Proponent, and Project partner WA's combined REDD+ project development experience (successful prior VCS/CCB validated & verified Southern Cardamom REDD+ Project) contributed to the creation of a detailed financial model for the development and management of the SRP. 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 partner WA has already received the funds for the project design and start-up costs. Documents supporting these investments will be produced for the project auditor to review.

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

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 Samkos Project Agreement, that outline project benefit sharing and ensure transparent financial transactions of the Project. These documents were shared with the validator.

2.4.7   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 version. All efforts have been made by the Project Proponent to make as much information freely available to the public as 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   Statutory and Customary Property Rights (G5.1)

PDR.5 Credible documentation demonstrating control of the project area, or documentation that the provisos listed in the case of less than 80% project control at the time of validation delineated in section 5.1 of the methodology are met.

Land use

Please refer to Section 2.1.6 for a description of land use within the Project Zone.

Customary and Legal Property Rights

Within the Project Zone there are several land use and tenure systems, which are recognized in both customary and statutory rights regimes. Below is an overview of statutory property rights in Cambodia.

The Land Law of 2002 classifies the various types of property and ownership rights in Cambodia: (i) State Public Property, (ii) State Private Property, and (ii) Private property:

> **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).

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 be sold or transferred to other legal entities, such as use for social or economic land concessions.

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 Project Zone is composed of the three property types listed above. The entirety of the Project Area is State Public Property comprised of protected areas managed by the Ministry of the Environment. Parts of the Project Zone outside the Project Area are both state private and private property. The state private property in the Project Zone includes social and economic land concessions. Private Property in the Project Zone comprises land legally allocated to community members (some of which has been sold to land speculators and outsiders).

2.5.2   Recognition of Property Rights (G5.1)

The RGC owns the land inside the Project Accounting Area. Outside the Project Accounting area, the district and provincial governments in Pursat are reviewing land titles of villagers. WA has requested that the Pursat provincial government create a task force to title the lands of families living in the Project Zone. The Battambang government has agreed to create such a task force to look at the families that still do not have land titles and live within the Project Zone. 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.

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

The project will not encroach uninvited on private property, community property or government property. Tenure of the Project Area is outlined in section 2.5.9. Furthermore, 0 outlines the comprehensive procedure of FPIC activities which ensures that all stakeholders and communities are consulted.

FPIC meetings were held from 23 November 2022 to 29 January 2023 with the targeted 27 beneficiary villages/communities in the Samkos REDD+ Project with a total of 1,262 participants, of which 750 were women.

During these 27 meetings, the WA Community Engagement Team documented a total of 100 suggestions/comments, which were classified into 8 categories:

- Infrastructure - 38 comments

- Environmental awareness - 32 comments

- Community livelihoods – 15 comments

- Education - 6 comments

- Land tenure – 2 comments

- Health – 2 comments

- Forest protection – 1 comment

- Benefit sharing – 1 comment

2.5.4   Property Rights Protection (G5.3)

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

2.5.5   Illegal Activity Identification (G5.4)

We have identified illegal logging as a major threat to the project's forested area. We have built new ranger stations where the biggest threats are and have employed 60 rangers to reduce illegal logging. As part of this effort, rangers to confiscate chainsaws and other logging equipment being used illegally within the Project Area.

2.5.6   Ongoing Disputes (G5.5)

There are some minor conflicts or disputes in the SRP 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. Additionally, illegal land clearing and intrusion by outsides 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 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.

2.5.7   National and Local Laws (G5.6)

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:

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).

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 be sold or transferred to other legal entities, such as use for social or economic land concessions.

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 MAFF. Permanent Forest Reserves consist of three sub-categories:

- Production Forests
- Protection Forests
- 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 Cambodian Ministry of Environment the authority to manage all protected areas in Cambodia. It lists the type of protected areas under MOE's purview as:

- National park
- Wildlife sanctuary
- Protected landscape
- Multiple use area
- Ramsar site
- Biosphere reserve
- Natural heritage site
- Marine park

It also states that protected areas shall be defined by a sub-decree, the process by which protected areas can be created or altered. This law also defines which activities are permitted in the various zones of the Protected Area:

- Core Zone
- Conservation Zone
- Sustainable Use Zone
- Community Zone

The entirety of the Project Area will be within Core and Conservation Zones under this law.

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.

The Project developers declares that all the laws, rules, royal degree, and sub decrees stated in this document apply to the whole geographic region of SRP.

It is important to note that in 2002, the Cambodian Ministry of Environment (MOE) and Wildlife Alliance created The Cardamom Forest Protection Program. The program has been in operation in the southern cardamoms (Southern Cardamom National Park, Tatai Wildlife Sanctuary, Botum Sakor National Park) since 2002. In 2019, WA was granted permission to expand the program into the northern Cardamoms

(Phnom Samkus Wildlife Sanctuary and Cardamom Biodiversity Corridor) and 50% of the Central Cardamom National Park.

2.5.8   Approvals (G5.7)

The Project Proponent of the SRP is the Royal Government of Cambodia Ministry of Environment. The Project Area is comprised completely of Phnom Samkus Wildlife Sanctuary, Phnom Kravanh Biodiversity Conservation Corridor, and Southern Phnom Kravanh National Park that are under the jurisdiction of the MOE. Approval by the traditional authorities in these communities for the project has been granted through the FPIC process, please refer to section 2.5.1 for details on that process.

2.5.9   Project Ownership (G5.8)

The SRP accounting area (PAA), which will generate credits at the project start date, is state owned land, under the mandate of the Ministry of Environment (MOE) in accordance with the Protected Area Law of 2008. It is comprised of three official protected areas: Phnom Samkus Wildlife Sanctuary, Phnom Kravanh Biodiversity Conservation Corridor, and Southern Phnom Kravanh National Park (Pursat jurisdiction).

Regarding issuance of land titles to communities living in protected areas, the most recent government directive regarding the subject is resolution No. 1064 SorChorNor dated 30 November 2022 by the Office of the Council of Ministers instructing MoE to convert a total of 933,577 hectares from part of protected areas into community areas. Community areas are areas where people can build houses and farm. Inside Community Protected Areas (CPAs), people cannot build houses or grow crops, only collect NTFPs.

Our preliminary analysis of the 933,577 hectares concluded that the 933,577 hectares do not affect the project area of SRP. However, Wildlife Alliance told MoE that it can help to conduct any investigations into all land claims inside the Project Area. In Tataok, a commune in Battambang province, the provincial government and WA have already agreed to create a technical committee to review all land claims.

The area that is now Phnom Kravanh National Park was formerly production forest under the jurisdiction of the Ministry of Agriculture, Forestry and Fisheries. In April 2016, the national park area was transferred to the jurisdiction of Ministry of Environment by the Sub-Decree 69. Then on May 9, 2016, Southern Cardamom National Park (Phnom Kravanh National Park) was declared through Sub-Decree No. 89 signed by the Minister of the Environment. The sub-decree has three objectives:

> 1. Ensure the protection of wildlife habitat and ecosystems, and to ensure the necessary conditions for any type of fauna, flora and biodiversity.
>
> 2. Provide natural products and services for sustainable uses of natural resources
>
> 3. Promote the participations of local communities as well as public in contribution to management and conservation of biodiversity and natural resources in the areas.

The sub-decrees described above demonstrate title/right of use for the Ministry of Environment to develop and manage a REDD+ project within Phnom Samkus Wildlife Sanctuary and Phnom Kravanh Biodiversity Conservation Corridor on behalf of the RGC as the land is government-owned.

2.5.10   Management of Double Counting Risk (G5.9)

The SRP will also be validated under the Climate, Community, and Biodiversity (CCB) standards (Third Edition, Gold Level) and the SD VISta standards. The Project will not be seeking to generate any other form of environmental or social credit.

2.5.11 Emissions Trading Programs and Other Binding Limits

The SRP is not subject to any additional emission trading programs or other binding limits. The SRP is being developed under the VCS and CCB standards, along with the SD VISta standards as applicable. The VCS standard requires that all carbon credits (VCUs) generated by the project are listed on the Verra registry and are tracked from the time of initial verification until their eventual retirement. Unique serial numbers will be generated for each tonne of CO2e that remains sequestered under this protocol and issued as VCUs, so as to ensure that no credits can be sold more than once (double-counted). This project area will not be involved with any other projects developed under another voluntary or regulatory carbon offset protocol.

2.5.12 Other Forms of Environmental Credit

The SRP has not sought or received any other forms of GHG-related environmental credit.

2.5.13 Participation under Other GHG Programs

This is the first and only application for the SRP to a GHG credit program. The Project is concurrently seeking validation/verification under the CCB standards of Verra, along with SD VISta as applicable.

2.5.14 Projects Rejected by Other GHG Programs

The SRP has neither applied nor been rejected by any other GHG program.

2.5.15 Double Counting (G5.9)

The SRP is not subject to any additional emission trading programs or other binding limits. The SRP is being developed under the VCS and CCB standards. The VCS standard requires that all carbon credits (VCUs) generated by the project are listed on a third-party registry and are tracked from the time of initial verification until their eventual retirement. Unique serial numbers will be generated for each tonne of CO2e that remains sequestered under this protocol and issued as VCUs, so as to ensure that no credits can be sold more than once (double-counted). This project area will not be involved with any other projects developed under another voluntary or regulatory carbon offset protocol.

3 CLIMATE

3.1 Application of Methodology

3.1.1 Title and Reference of Methodology

The methodology used for the Samkos REDD+ Project was the VCS methodology VM0009 Methodology for Avoided Ecosystem Conversion, v3.0. This methodology quantifies greenhouse gas emission reductions generated from avoiding either planned or unplanned (or both) deforestation as initiated by a variety of agents and drivers. The tools used are:

- VCS AFOLU Non-Permanence Risk Tool, v4, published on September 19, 2019.

- VCS Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination.

- VT0001 Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities, v3.0, published on February 2012.

- VMD0037 Global Commodity Leakge Module: Production Approach (LM-P), v1, published February 4, 2014.

- LK-UD-AS Estimation of emissions from activity shifting for avoiding unplanned deforestation (LKUD-AS), v1, published on March 30 2022.

3.1.2 Applicability of Methodology

PDR.1 For each applicability condition, a statement of whether it applies to the project. If the applicability condition does not apply to the project, justification for this conclusion.

PDR.2 Where applicability conditions apply, credible evidence in the forms of analysis, documentation or third-party reports to satisfy the condition.

1. This methodology was developed for avoiding land use conversion of forest and native grassland ecosystems. The drivers and agents of conversion in the baseline scenario must be consistent with those described in section 6 of this methodology and the end land use in the baseline scenario is non-forest or converted native grassland. Accordingly, the project activity must be Avoided Planned Deforestation (APD) or Avoided Unplanned Deforestation and/or Degradation (AUDD) for forested project accounting areas and Avoided Planned Conversion (APC) or Avoiding Unplanned Conversion (AUC) for grassland project accounting areas.

VM0009 version 3.0 "Methodology for Avoided Ecosystem Conversion" is applicable to the SRP. The baseline scenario includes agents of deforestation who carry out native ecosystem-clearing activities that result in land-use conversion to a non-forest state. The Project partner (WA) has documented evidence that the principal driver of conversion is agriculture, and that substantial portions of the surrounding region have already been converted. Agricultural conversion is already present in the Project Zone.

2. All project accounting areas must have been in an unconverted state (i.e., forest or native grassland) for at least 10 years prior to the project start date, according to the following:

    a. Land in all forested project accounting areas has qualified as forest on average across the project accounting areas as defined by FAO 2010 or as defined by the residing Designated National Authority (DNA) for the project country for a minimum of 10 years prior to the project start date.

All land within the PAA has been native tropical moist evergreen or deciduous forest for at least 10 years prior to the project start date. This was verified using the 2009 landcover dataset produced by MOE from historic Landsat imagery, which shows all of the PA to be forest cover. An analysis of canopy cover was performed to ensure that it met Cambodia's minimum requirements of canopy coverage and height on average across all forest strata. The definition of forest as set by the Cambodia Forest Administration, who is the designated national authority (DNA) established by the FAO, is for a minimum area of 0.5 hectares with 10% or greater canopy cover, with a minimum canopy height of 5 m (Forestry Administration, 2013).

    b. Land in all grassland project accounting areas has qualified as native grassland or shrub land for a minimum of 10 years prior to the project start date.

This project does not contain a grassland project accounting area. This application condition is not appliable to the Project.

3. For project accounting areas of baseline type U (unplanned), a conversion threat must exist for each project accounting area as demonstrated by one of the following two options:

a. Imminent conversion as predicted by a survey (see definition of imminent conversion). Moderate risk is defined as when more than 60% of respondents predict the end land use identified in the baseline scenario. The survey must meet the requirements of Appendix E.

OR

b. As of the project start date, some point within 2 kilometers of the perimeter of the project accounting area has been converted to the end land use identified in the baseline scenario (Broadbent et al., 2008).

There is considerable evidence of native ecosystem conversion within 2 km of the perimeter of the Project Accounting Area. These points have all been converted to agricultural, which was identified as the primary baseline activity. Additionally, there was some ecosystem conversion to agriculture inside of the Project Area. Please see the Project Area map presented in Figure 10 which shows areas of deforestation around the perimeter of the PAA.

4. In the case of baseline type F-U1, at least 25% of the project area boundary is within 120 meters of deforestation and at least 25% of the project area boundary is adjacent to the reference area (see VM0009 Methodology section 6.3).

The Project Accounting Area has a baseline type of F-U3. This application condition is not applicable to the Project.

5. In the case of baseline type G-U1, at least 25% of the project area boundary is adjacent to the reference area (see section 6.3).

This project does not contain a grassland project accounting area. This application condition is not applicable to the Project.

6. In the case of baseline type F-U2, at least 25% of the project area boundary is within 120 meters of deforestation (see section 6.3).

The Project Accounting Area has a baseline type of F-U3. This application condition is not applicable to the Project.

7. The project accounting area(s) must not contain peat soil.

The Project Accounting Area does not contain any areas of peat soil. Please refer to Appendix 4 for a map showing the soil types present in the Project Area.

This map shows the soil types for the PAA and lists the soil types by name. The soil types included in the PAA are:

1. Acid Lithosols

2. Brown hydromorphics

3. Latosols

4. Red-yellow podzols

Peat soils are generally classified in the Histosol category, as this is the category for organic soils that have greater than 20-30% organic matter by weight. Peat is additionally a type of histosol that is characterized by being completely water logged and having an extremely low oxidation potential resulted in the accumulation of undecomposed plant matter.

There are several soils in the Project Area that fall into the hydromorphic soil category, which are soils that developed under the presence and influence of a high amount of water, but that does not infer nor imply in any way that the soil would be a peat soil. Lithosol refers generally to a young soil that is thin, meaning shallow bedrock and podzols are well developed soils that show some aspects of the factors of formation, most likely rivers here. The auditor has been provided with a document that lists the soils and some background. This document is based on the same soil dataset as the soil layer in the Project Map.

8. For each project accounting area, a reference area can be delineated for each baseline type in the baseline scenario that meets the requirements, including the minimum size requirement, of section 6.8.1 of the VM0009 methodology.

The national FREL of Cambodia was used for the SRP as allowed under section 6 of the VM0009 methodology. Please refer to Section 3.1.4.3.1 regarding the selection of the reference area. In the section referenced there is the results of the spatial analysis demonstrating that the Reference Area contained as much forest as the Project Accounting Area at the onset of the historic reference period.

9. As of the project start date, historic imagery of the Reference Area(s) exists with sufficient coverage to meet the requirements of section 6.8.4 of the VM0009 methodology.

The national FREL of Cambodia was used for the SRP as allowed under section 6 of the VM0009 methodology. Please refer to Section 3.1.4.3.1 regarding the reference area.

10. Project activities are planned or implemented to mitigate ecosystem conversion by addressing the agents and drivers of conversion as described in section 8.3.1 of the methodology VM0009.

The Project design includes a number of activities that will result in a reduction in ecosystem conversion. These activities are all designed to address the identified agents and drivers of conversion as documented in this document. Please refer to Section 2.1.11 for a description of these activities.

11. The project proponent has access to the activity-shifting leakage area(s) and proxy area(s) to implement monitoring (see sections 8.3.2.1 and 6.4), or has access to monitoring data from these areas for every monitoring event.

The Project Proponent has full access to activity-shifting leakage area and proxy area. This is demonstrated by the collection of data on the post-conversion residual carbon stock from the Proxy Area. Additionally, the activity-shifting leakage area for the Project has been established under the requirements of the VCS Module "Estimation of emissions from activity shifting for avoiding unplanned deforestation (LKUD-AS)" and all data will be collected using remote sensing methods.

12. If logging is included in the baseline scenario and a market-effects leakage area is required per section 8.3, then the project proponent has access to (or monitoring data from) the market-effects leakage area if measurement is needed (see section 8.3.3).

The SRP does include small-scale illegal logging in the baseline scenario, however a market leakage area is not required per the requirements of the VCS Methodology VM0009 section 8.3.3. This is due to the fact that the logging which occurs in the Project's baseline is small-scale in nature and is to supply local needs, with only a small amount sold in local markets (Hayes et al., 2015). Therefore, the likely result of the Project would not affect the market supply of the wood commodity but be more like a subsistence activity and shifted to the next available area and be consider activity-shifting leakage. As the reduction in the supply of wood from the Project Area will not result in a change to market commodity for timber in Cambodia. A market leakage deduction has been calculated utilizing the VCS Production Approach market leakage tool (See Section 3.2.3.1.2 and 3.2.4.7).

13. This methodology is applicable to all geographies, however if SOC is a selected carbon pool and the default value from section 6.19.2 is selected then the project must be located in a tropical ecosystem.

Soil organic carbon is not an included carbon pool in the SRP. This application condition is not applicable to the Project. However, the SRP Project Area is located in a tropical ecosystem.

14. If livestock are being grazed within the project area in the project scenario, there must be no manure management taking place, as emissions from N2O as a result of manure management are not quantified or addressed in this methodology.

There may be small areas of animal grazing within the Project Area by local communities. These livestock grazing activities are not a component of the project, nor are they a project activity. There will be no manure management of any type occurring on in the Project Area.

15. Project activities must not result in significant GHG emissions. All GHG emissions from project activities must be shown to be de minimis (see section 8.3.1of the methodology VM0009).

All project activities in the Samkos REDD+ Project will not result in any significant GHG emissions. The project activities have been designed to be low carbon in nature and do not include any industrial scale agricultural, large uses of fertilizer or other industrial type activity that may result in GHG emissions above the de minimis level.

PDR.3 Definition of forest used by the project proponent and its source.

Table 8. Definition of Forest for Cambodia

Forest Definition	
Item	Value
Minimum Crown Cover (%)	10
Minimum Land Area (ha)	0.5
Minimum Tree Height (m)	5

3.1.3   Project Boundary

PDR.11 A list of the greenhouse gases considered.

Carbon dioxide (CO_2) was determined to be the primary source of greenhouse gas emissions in the project, given the threat of deforestation and native grassland conversion from the drivers listed in the baseline scenario. Methane (CH_4) and nitrous oxide (N_2O) are conservatively excluded from the project.

Source		Gas	Included?	Justification/Explanation
Baseline	Source 1	CO_2	Yes	Major pool considered in the baseline scenario
		CH_4	No	Conservatively excluded

Source		Gas	Included?	Justification/Explanation
		N_2O	No	Conservatively excluded.
		Other	No	No other GHG gases
	Source 2	CO_2	N/A	N/A
		CH_4	N/A	N/A
		N_2O	N/A	N/A
		Other	N/A	N/A
Project	Source 1	CO_2	Yes	Major pool considered in the project scenario
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded.
		Other	No	No other GHG gases
	Source 2	CO_2	N/A	N/A
		CH_4	N/A	N/A
		N_2O	N/A	N/A
		Other	N/A	N/A

A map of physical locations of project activities is shown above. All activities will happen in targeted villages, except for forest protection, which happens throughout the PAA. Please see Appendix 1 for reference area and leakage belt maps.

3.1.3.1   Selected Carbon Pools

PDR.12 A list of the selected carbon pools and evidence for the conservative exclusion of any optional pools.

Table 9. Selected carbon pools in the Project Accounting Area (REDD+ baseline type).

Pool		Required	Included in FREL?	Included in Project?	Justification
AGMT	Above-ground merchantable tree	Yes, if baseline scenario or project activity(ies) include the harvest of	No	No	No commercial tree harvesting or production of long-

		long-lived wood products. Otherwise, accounting for this carbon pool is not required			lived wood products included in baseline
AGOT	Above-ground other (non-merchantable) tree	Yes	Yes	Yes	Major pool considered
AGNT	Above-ground non-tree	Yes, if the baseline scenario includes perennial tree crops. Otherwise, accounting for this carbon pool is optional.	No	No	Conservatively excluded
BGMT	Below-ground merchantable tree	Optional	No	No	No commercial tree harvesting or production of long-lived wood products included in baseline
BGOT	Below-ground other (non-merchantable) tree	Optional	Yes	Yes	Major pool considered
BGNT	Below-ground non-tree	Optional	No	No	Conservatively excluded
LTR	Litter	No	No	No	Conservatively excluded
DW	Dead wood	Yes, if AGMT is selected	No	No	Conservatively excluded
SD	Standing dead wood	Optional	No	No	Conservatively excluded
LD	Lying dead wood	Optional	No	No	Conservatively excluded
SOC	Soil organic carbon	Optional	No	No	Conservatively excluded
WP	Long-lived wood products	Yes, if AGMT is selected	No	No	Conservatively excluded

Several optional carbon pools have been conservatively excluded from the Project's baseline, as is shown in Table 9. The exclusion of these optional carbon pools is conservative in all cases, as their exclusion from the project will result in fewer emission reductions. Section 8.4.7 of the methodology VM0009 states that ex-ante estimates are required to demonstrate that the exclusion of a carbon pool is conservative only if a carbon pool is expected to increase in the baseline scenario. The carbon pools which have been excluded, including AGMT, BGMT, SD, LD, and SOC will all decrease under the baseline scenario, which is detailed in Section **Error! Reference source not found.**. The Project's b aseline scenario is the complete conversion of the forest to non-forest, with most if not all above-ground living and dead carbon pools being removed, and additionally the below ground and soil carbon pools being reduced through the resulting agricultural activities. AGMT, BGMT, SD, LD and SOC carbon pools were excluded additionally to ensure that the SRP's included carbon pools are consistent with those used in the RGC's FREL program.

3.1.3.2   Delineating the Project Accounting Areas

PDR.22 A digital (GIS-based) map of the project accounting areas, including aerial or satellite imagery showing that they are forested as of the project start date and 10 years prior to the project start date.

Under the methodology VM0009 v3 the SRP is defined by 3 different areas: the Project Area (PA), the Project Zone (PZ) and Project Accounting Area (PAA). The Project Zone is defined in the Climate, Community and Biodiversity (CCB) standard, whereas the PA and PAA are defined under the VCS standard an methodology (VM0009). The PA is the official / legal boundary of the project (e.g., a concession, indigenous territory, or protected area). The PAA is the forested portion of the PA where deforestation will be avoided, and emission reductions (credits) calculated. Although agricultural lands, villages, and bodies of water may be part of the PA, they are outside of the PAA.

Table 10. The Samkos REDD+ Project Area and Project Accounting Area

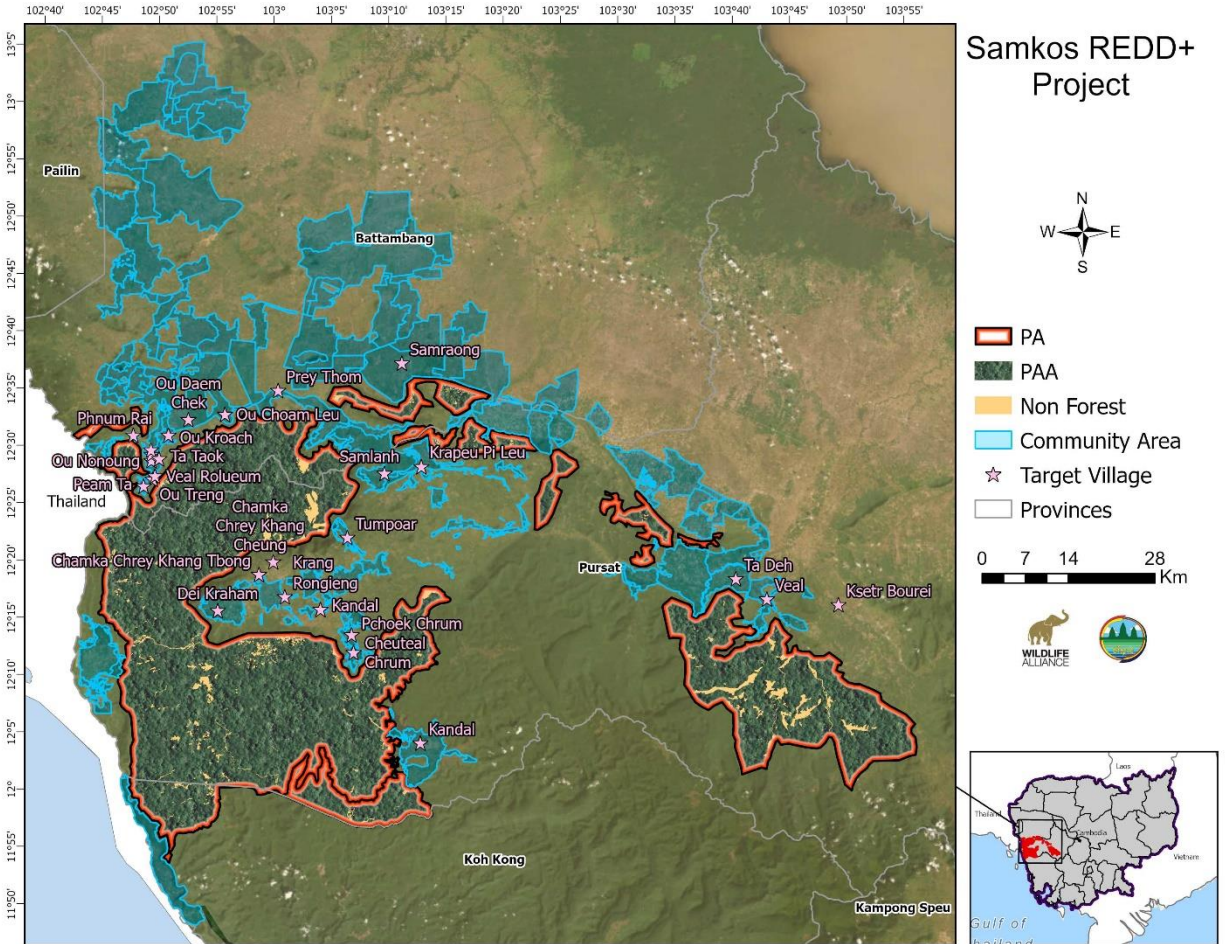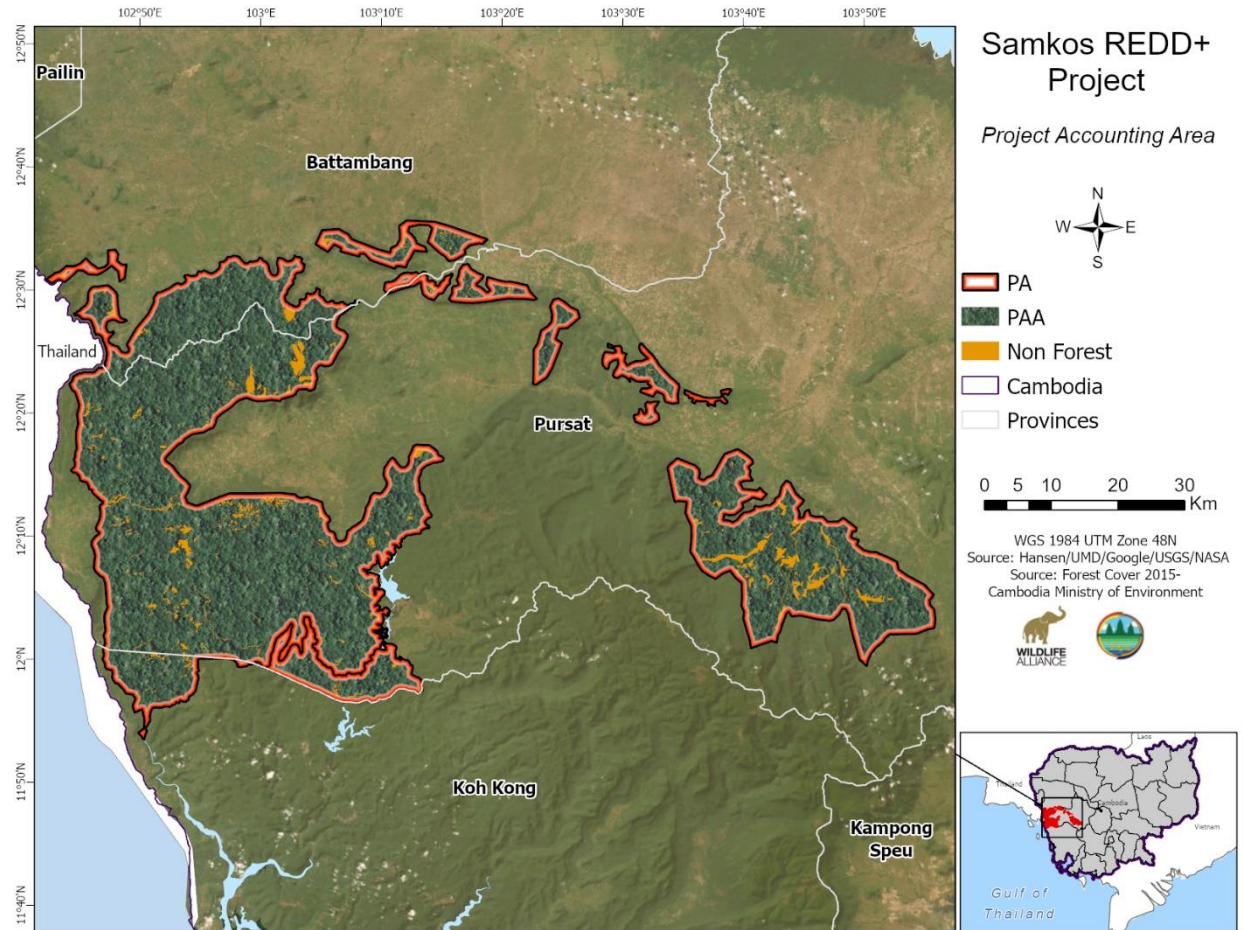| Item	Area (ha)
Project Area	297,397
Project Accounting area	282,718

Figure 7: The Samkos REDD+ Project

Figure 8. The Project Area and Project Accounting Area (PAA). Excised Areas are regions inside the Project Area that have been previously converted, and therefore removed from GHG accounting.
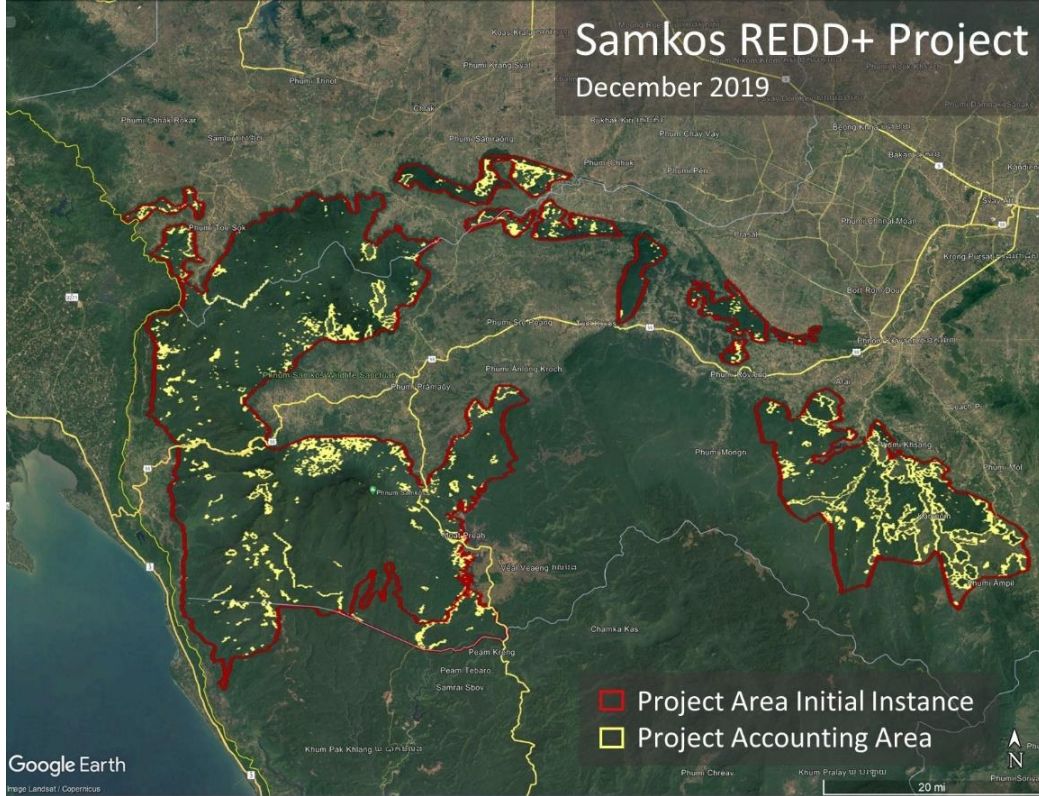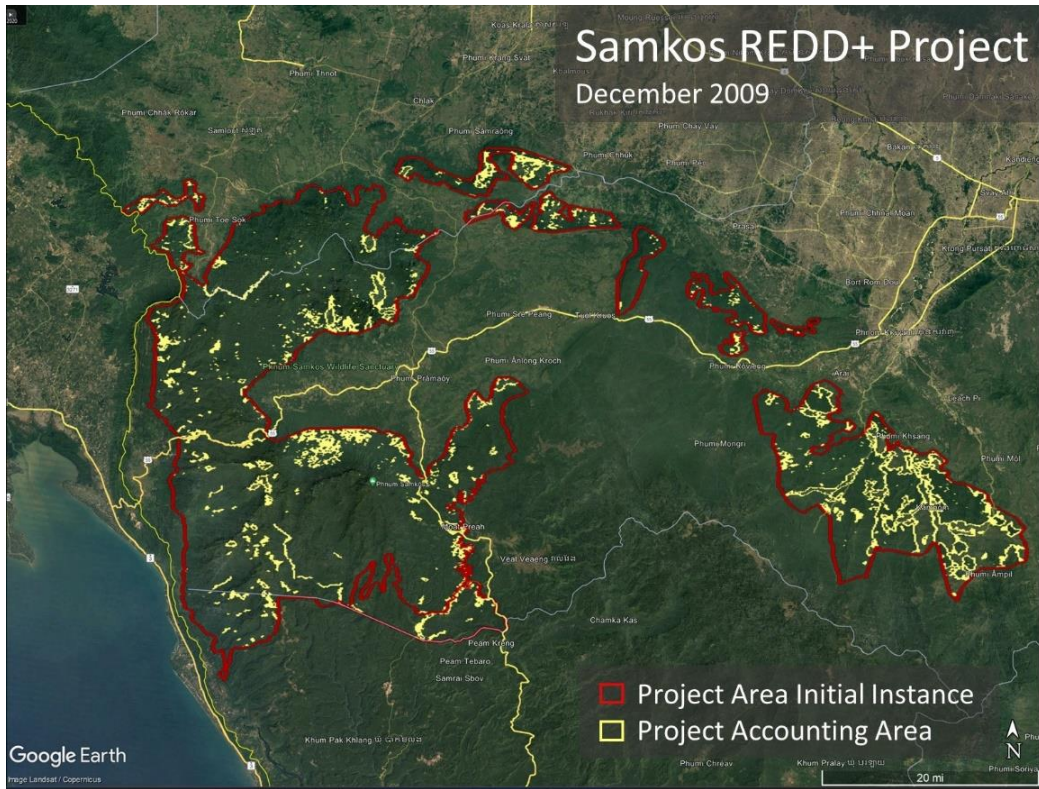
Figure 9: The Project Area, with landcover data indicating forest cover in December, 2009 (above), and in December, 2019 (below), demonstrating compliance with PDR.22: The PA was forested at least 10 years prior to the Project start date.

PDR.23 Justify the project accounting areas using the identified agents and drivers of conversion, constraints to conversion, and attributes listed above in the methodology VM0009 section 6.2.

There is a single Project Accounting Area in the Project Area, comprised of three protected landscapes: Phnom Samkus Wildlife Sanctuary (PSWS), a protected landscape in northwestern Cambodia; the Cardamom Biodiversity Conservation Corridors (CBC); and the northern zone of Southern Cardamom National Park (SCNP). The PAA spans three provinces; Battambang, Pursat and Koh Kong.

This PAA was additionally defined by the land cover in the area, as identified from MOE-provided remote sensing imagery. High resolution imagery was used to ensuretjat any PAA areas that showed evidence of conversion to settlements or agriculture were identified. After excising areas identified as settlements, agriculture, surface water or any other non-forest land cover from the PAA, with the remaining forested PAA area was stratified by land cover. Forest inventory data was then used to confirm that all PAA strata met the Cambodian definition of forest.

The PAA is fully contained within the reference area, and easily accessed by the identified agents and drivers of conversion. Minimal conversion occurred historically in the national park, but has been scarce due to protection efforts by Wildlife Alliance.

3.1.4   Baseline Scenario

PDR.17 Show that the identified baseline type is the most plausible baseline scenario identified in section 7 of the Methodology.

The baseline scenario as identified as the conversion of native ecosystems from a natural forested state to a non-forest (agricultural) state. The baseline scenario outlined in the VCS Additionality Tool in Section 3.1.5 demonstrates that the entire PAA would be been converted to subsistence agriculture in the absence of the SRP. Please refer to Section 3.1.5, 'VCS Additionality Tool' for more details.

3.1.4.1   Baseline Types

3.1.4.1.1 Project Accounting Area

PDR.30 If Type F-U1 is selected, a spatial analysis of the project area showing that at least 25% of the perimeter is within 120 meters of deforestation that occurred within 10 years prior to the project start date and showing that the reference area is adjacent to at least 25% of the project area.

PDR.32 If Types F-U1, F-U2 or F-U3 is selected, a spatial analysis of the project area showing that it is within 120 meters of deforestation that occurred within 10 years prior to the project start date.

Perimeter analysis was performed per VM0009 and VCS AFOLU Guidance. The percentage deforestation occurring 10 years prior to the Project start date and within 120 m of the PA boundary was calculated as 40.86%. Therefore, the SRP is determined to be of type F-U3 (Avoided Unplanned Deforestation, that meets the VCS definition of a Mosaic or Frontier Deforestation Pattern and that Features an Adjacent Reference Area). Figure 10 below indicates the results of the perimeter analysis using Global Forest Watch v1.9, including deforestation between the years 2009-2019.
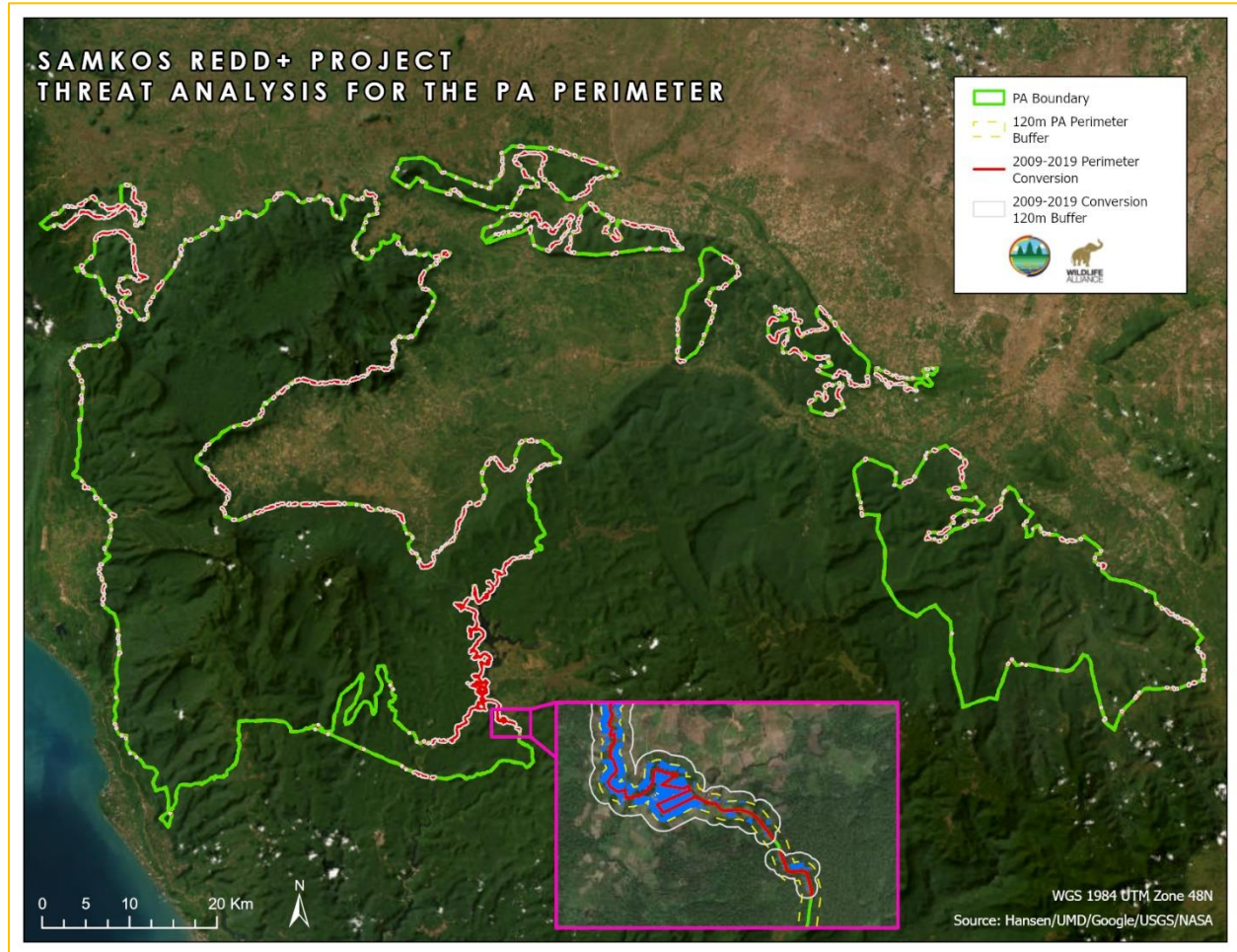
Figure 10. Edge threat analysis for the Project Area perimeter. Percentage deforested within 10 years prior to project start date and within 120m of the project boundary was calculated to be 40.86%.

3.1.4.2 Delineating Proxy Areas

PDR.35 A map of the Proxy Area's delineated boundaries.
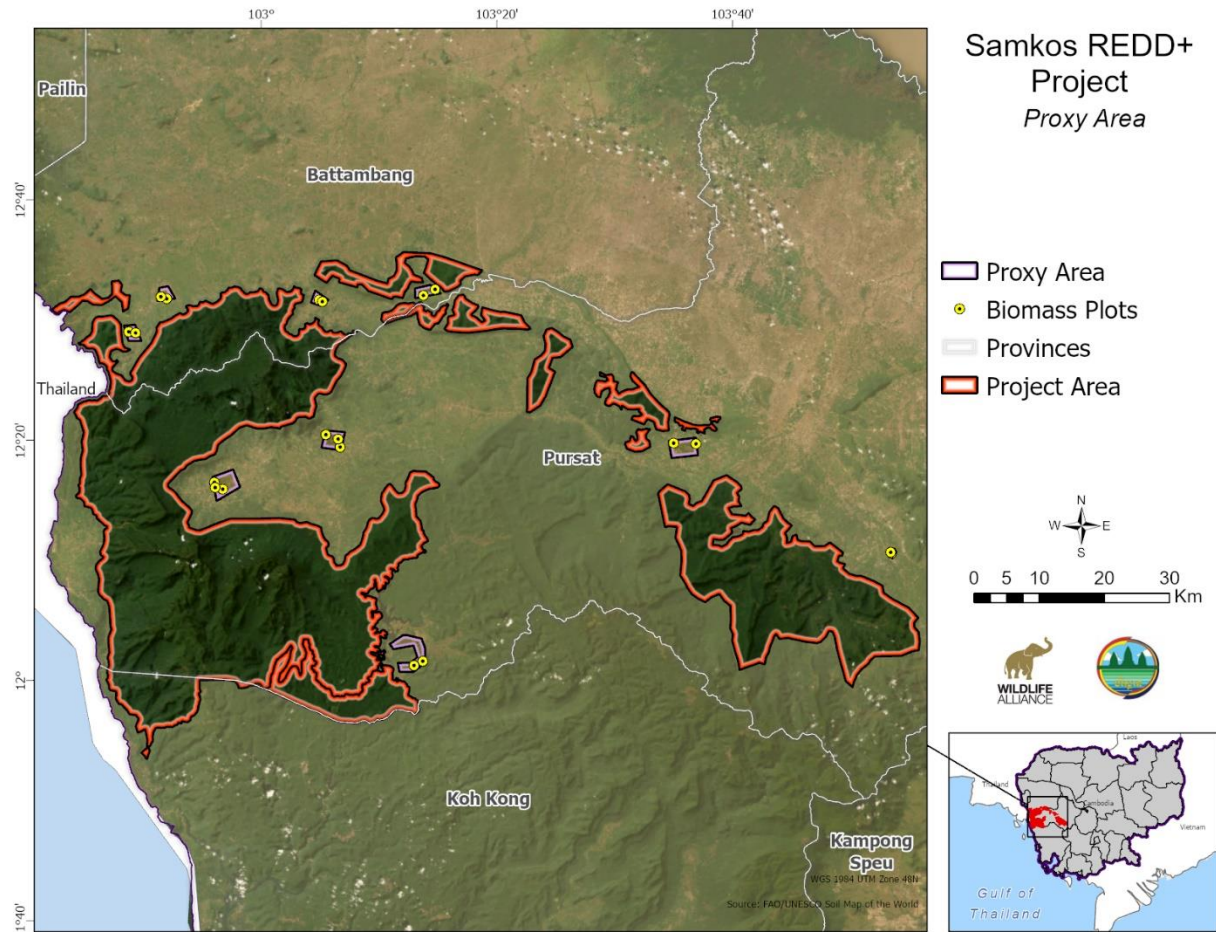
Figure 11: The Proxy Area and Proxy Area biomass plot locations

PDR.36 Maps or other evidence that the proxy area's site characteristics and landscape configuration is similar to its respective Project Accounting Area, including:

a. Vegetation;

Please see Appendix 1: Project Area Maps. The Proxy Area landcover shown meets all requirements of the methodology VM0009. Additionally, please see Figure 9, which shows the Project Area at the Project Start date and at a point 10 years prior to the start date over a base map of high-resolution satellite imagery. Although an outline of the Proxy Area is not shown in this map, the area can be viewed immediately adjacent of the Project Area's western boundary, and it can be seen that in the map 10 years prior to Project Start Date the Proxy Area vegetation cover was very similar to that which is observed.

b. Climatic conditions (e.g. mean temperature, rainfall, etc.);

Please refer to Section 2.1.5. The referred section describes the climatic conditions, including temperature and precipitation, present in the general region where the Project Area is located. As the Proxy Area is located immediately adjacent to the Project Area as shown in Appendix 1: Project Area Maps and has very similar topography, slope and aspect, as seen in Appendix 4, the climatic conditions present in the Proxy Area are nearly identical to those in the Project Area.

c. Topographic constraints to conversion (slope, aspect, elevation);

Please see Appendix 1 'Map of the Proxy Area Topographic Maps.'

d. Land use and/or land cover;

Please see Appendix 1 'Map of the Proxy Area Landuse.'

e. Soil map (if available) or other soil information;

Please see Appendix 1 'Map of the Proxy Area Soil Class.'

f. Applicable infrastructure (e.g. water ways, roads, railroad, airports, provision of electricity, and other access points); and

Please see Appendix 1 'Map of the Proxy Area Infrastructure.

g. Ownership/tenure boundaries that influence conversion (e.g. government holdings, private holdings and reserves).

PDR.37 A narrative describing the rationale for selection of proxy area boundaries, including the proxy area's similarity to the corresponding project accounting area with respect to vegetation, soil and climatic conditions.

The Proxy Area was chosen primarily for its accurate representation of the most likely "end state" of the baseline scenario that has been identified for the Project Area. Local expertise suggests that the chosen area, adjacent to the Project Area is emblematic of the Project Area, and of the types of land use on deforested and converted native grasslands that are typical in this region. The proxy area is also required to be accessible to the project proponents, providing the ability to install permanent plots that can be re-visited for monitoring of the carbon stocks for the lifetime of the project. The proxy area delineated for this project meets this requirement. The proxy area was delineated using land cover data, so as to identify areas that are classified as having a land use of agriculture. The delineated area was then confirmed using high-resolution imagery and through on the ground verification.

PDR.38 Results of a spatial analysis to demonstrate the proxy area is converted, on average, as of the project start date.

Please see a map demonstrating that the proxy area has all been converted to an agricultural land use as of the project start date in Appendix 4.

PDR.123 Summary of sampling procedures for the proxy areas, with a copy of a sampling protocol used to carry out measurements.

The procedures used for locating and sampling the Proxy Area sample plots are found in Annex 2 – 'Standard Operating Procedure Samkos - Proxy Area v1.1.pdf'. The sampling procedure used is exactly the same as that used for the biomass sample plots. The plot locations are randomly placed within the Proxy Area. The sample design is a nested circular plot, with a 15 m radius circle in which all trees are measured, and an inner 5 m sample plot where shrubs are measured. In the 15 m radius plot all trees over 10 cm DBH are measured and recorded.

3.1.4.3 Estimating the Reference Level

National FREL and Nesting System

The SRP elects to invoke the option in VM0009 v3.0, section 6 which allows for the allocation of a jurisdictional FREL that has been established by the relevant authority applicable to the project activity. The Royal Government of Cambodia (RGC) submitted an initial national Forest Reference Level (FREL)

under the UNFCCC Framework in 2017 (MoE, 2016) and after a technical assessment and subsequent recalculation of the FREL by The United Nations Development Program (UNDP), RGC submitted a second FREL in January 2021 and a modified submission in February, 2022. The Second FREL was updated with the following goals (MoE, 2022):

- increase in transparency, consistency, coherence, and accuracy,

- incorporate newly available information and methodologies, and

- construct the FRL to facilitate the upcoming nesting process.

The Cambodian Ministry of Environment has indicated that the SRP shall nest into the second national FREL, and it is therefore applicable to the project activity of avoiding deforestation in the Project Area.

The following details Cambodia's second national FREL submission to the UNFCCC:

Table 11. Summary of Results for the Cambodia's national FREL submission to the UNFCCC (MoE, 2022)

Item	Modified Second national FREL (2022)
Implementing Agency	United Nations Development Program (UNDP)
Proposed FREL (in tCO2 eq/yr)	60,257,501
Historical Reference Period	2011-2018 (8 years)
Uncertainty	11.07%
Activity Data	Stratified Area Estimation
Emission Factors	Sub-classes (e.g., evergreen forest, deciduous forest, etc.)
Forest Definition	> 0.5ha minimum patch size, > 5m height, > 10% canopy cover (National REDD+ Definition)
Activities	Emissions from deforestation
Carbon Pools Included in FREL	Above-ground biomass (AGB) and below-ground biomass (BGB)
Gases	CO2

The RGC has developed a regulatory framework document ("PRAKAS"), which indicates the rules and procedures for registration of REDD+ projects into the national REDD+ program (i.e., nesting), including eligibility requirements, baseline update intervals and monitoring criteria.

For SRP, the national FREL is distributed to forested areas according to predicted risk of future deforestation. The core hypothesis for the risk mapping process assumes that future deforestation extends outward from historical deforestation, and therefore areas closest to previous deforestation are at highest risk. This method differentiates risk, thus providing appropriate reward incentive in those areas

that most require it. The RGC Ministry of Environment has decided to apply this baseline setting approach to the SRP.

3.1.4.3.1 Delineating the Reference Area

PDR.40 A map of the delineated boundaries, demonstrating that the reference area was held by the identified baseline agent or agents and does not include the project area.

The SRP uses the nationally determined activity data (deforestation rate) and emission factors used to calculate the FREL. The SRP reference area is therefore defined synonymously with the national FREL reference region: i.e. the country of Cambodia's national boundaries. The reference area with the SRP Project Area overlaid is shown in Figure 12.

The reference area fully contains the REDD+ Project Area. It therefore contains the same agents of conversion that were identified in the baseline scenario. As the SRP uses a jurisdictional reference level (i.e. the national FREL), the criteria of PDR.40 requiring that the reference area does not include the Project Area does not apply.
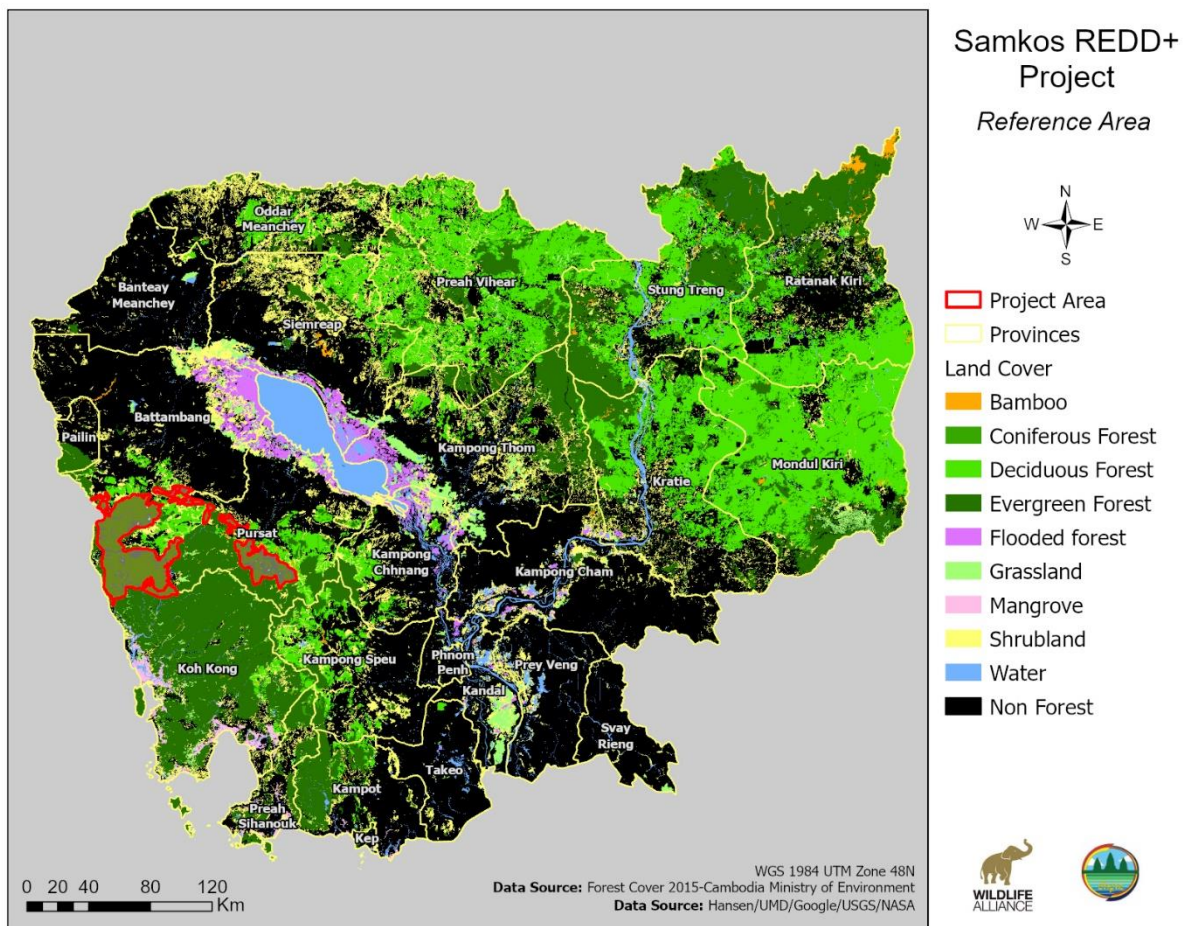
Figure 12. Vegetation in the reference area for the year 2018

PDR.41 Results of a spatial analysis to demonstrate the reference area had as much forest or native grassland as the project area at some point in time during the historic reference period.

Based on the spatial analysis of land cover data, the reference area (country of Cambodia) contained more forest than the REDD+ PAA. Figure 12 depicts this analysis. The numerical results of this analysis

are shown below in Table 12 indicating that the reference area contains as much native vegetated area as each respective PAA. VM0009 requires that this criterion is met at some point within the historical reference period.

Table 12: Results of spatial analysis to demonstrate validity of the reference area(s)

Land Cover Strata	PAA area (ha)	Reference area forested area (ha)	Reference area % of PAA
Bamboo	-	63,519	
Coniferous Forest	0	6,996	
Deciduous Forest	17,194	3,327,674	
Evergreen Forest	265,525	3,601,811	
Flooded forest	-	308,275	
Mangrove	-	70,599	
Grand Total	282,718	7,378,874	260,997%

PDR.42 Evidence that the management practices of the baseline agents in the reference area are similar to those that would have been applied to the Project Accounting Area or areas in the baseline.

The Project Area is located entirely within the reference area and contains a similar cultural mix and socio-economic factors (Please refer to Section 3.1.5 the VCS Additionality Tool for more details). Having been successfully protected, the Project Area is one of the last contiguous forest blocks remaining in the region. The same factors that have led to significant deforestation throughout Cambodia during the Project's reference period still present a heavy threat to the Project.

PDR.43 A description of the rationale for selection of reference area boundaries.

PDR.44 The documentation required in the Reference Area selection requirements that the selected reference area meets the Reference Area Selection Requirements.

Documentation for the Reference Area selection requirements for the Samkos REDD+ Project is dispersed throughout various sections of this document. In the interest of brevity, references to these descriptions and maps are included below:

1. The location and size of the Reference Area relative to the PAA:

    a. A pair of maps showing the boundaries and size of the Reference Area and the PAA, including an indication of their locations relative to each other. (See Figure 12, Table 12 above)

    b.   Written justification for the selection of the location of the Reference Area. (See PDRs 42 and 43 above)

2.   A description of the drivers of conversion, including the following, relative to the Project Area:

    a.   Written description of the socio-economic conditions in the Reference Area and PAA including the following data, where available:

        i.   Census data depicting relevant demographics and socioeconomic conditions

        ii.   PRA data

        iii.   Economic studies

        iv.   Maps depicting demographic data and socio-economic conditions (See PDRs 19 and 20, Section 4.5.4 above)

    b.   Written description of the cultural conditions, such as historical events, cultural shifts, migration patterns, tribal traits and characteristics, and current cultural patterns including the following data, where available:

        i.   Participatory Rural Appraisal data

        ii.   Publications relevant to the cultural conditions in the area

        iii.   Maps depicting cultural data (See Section 1.3.3 above)

3.   The location(s) of the agents of conversion relative to the PAA and surrounding region including the following:

    a.   A paired comparison of maps of the Reference Area and PAA, including locations of settlements or other population centers. For subsequent use in determining the mobility of the agents of conversion. (See maps in Appendix D below)

4.   The mobility of the agents of conversion relative to the PAA, including the following:

    a.   Written description of the mobility of all primary and secondary agents in the PAA and Reference Area. Acceptable data sources should be used to demonstrate mobility, including geographic and/or anthropogenic factors that may influence their movement or access. (See PDR 18, Section 4.5.4 above)

5.   Landscape configuration of the Reference Area and the PAA including all of the following factors:

    a.   A paired comparison of maps of the Reference Area and PAA, which must include the following criteria:

        i.   Topographic constraints to conversion (slope, aspect, elevation);

        ii.   Land use and/or land cover;

        iii.   Soil map (if available) or other soil information;

        iv.   Applicable infrastructure (e.g. water ways, roads, railroad, airports, provision of electricity, and other access points); and

        v.   Ownership/ tenure boundaries that influence conversion (e.g. government holdings, private holdings and reserves). (See maps in Appendix D below)

3.1.4.3.2 Defining the Historic Reference Period

PDR.48 Established reference period boundaries.

The historical reference period for the Cambodian national FREL is a 8-year period between 2011 and 2018 inclusive (MoE, 2022).

PDR.49 A list of available historic imagery for the reference area.

According to the national FREL submission, 4 epochs were used to calculate historical deforestation %: 2010, 2014, 2016 and 2018. SPOT, Sentinel 2 and Landsat imagery were used to calculate activity data using a wall-to-wall classification approach (see MoE, 2022 for detail). A detailed list of images may be acquired from MoE.

PDR.50 A timeline of important events as they relate to the agents and drivers of conversion.

Cambodia has addressed the requirements for the Warsaw Framework for REDD+, which provides countries with national REDD+ Program guidance, and includes provisions for addressing the drivers of deforestation and degradation, as follows:

- 2017: Implementation of the National REDD+ Strategy

- 2014-2015: Various Studies on Forest Change Drivers

- 2017: First FREL submitted to the UNFCCC

- 2017: National Forest Monitoring System launched

- 2018: Safeguard Information System (SIS) submitted to the UNFCCC

- 2020: First Biennial Update Report (BUR$_1$) submitted to the UNFCCC

- 2022: Modified Second National FREL submitted to the UNFCCC

Deforestation in Cambodia has occurred as a result of economic development that the government has had little capacity to enforce (MoE, 2017). The REDD+ Roadmap identified a series of direct drivers, including clearance for agriculture, settlement expansion, infrastructure development, illegal logging, and unsustainable harvesting of wood fuel, alongside a large set of indirect factors related to the socioeconomic environment and governance conditions both within and outside the forestry sector (Forestry Administration, 2010). A dramatic increase in deforestation since 2010 is likely a consequence of an increase in forestland conversion, timber harvesting and agricultural expansion for cash crops. Forest disturbance resulting from the expansion of monoculture plantations for rubber has been statistically linked to international market price fluctuations, with recent years seeing higher market prices and consequentially exceptionally high disturbance rates (Grogan et al., 2015).

PDR.51 Narrative rationale for the selection of the reference period.

3.1.4.3.3 Selecting Historical Imagery

PDR.52 A map of the reference area showing the area of "double-coverage".

This PDR is not applicable because the national FREL has been applied to the SRP.

PDR.53 Quantification of "double coverage"(greater than 90%).

This PDR is not applicable because the national FREL has been applied to the SRP.

PDR.54 A line plot of the historic image dates to confirm stationarity.

This PDR is not applicable because the national FREL has been applied to the SRP.

PDR.55 Evidence that all image pixels are not more than 30m x 30m.

All the imagery used for the FREL analysis is from the SPOT, Sentinel 2 and Landsat programs, with the coarsest spatial resolution (Landsat) being used at 30m x 30m (MoE, 2022).

PDR56 Empirical evidence that imagery is registered to within 10% RMSE, on average.

Cambodia's modified Technical Annex on REDD+ (MoE, 2020) describes the image Pre-processing procedure for development of activity data (deforestation rate) as shown below in Figure 13:
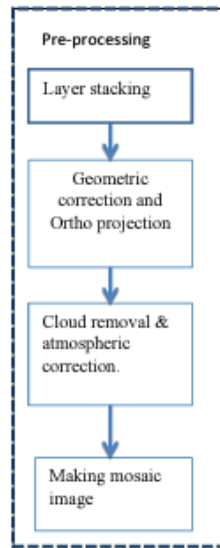
Figure 13. FREL Image Pre-processing procedure.

3.1.4.3.4 Determining Sample Size

PDR.57 The sample size.

To estimate activity data, Cambodia implemented an approach where wall-to-wall landcover maps are compared with "reference data" samples interpreted on higher resolution images and an accuracy calculated per landcover stratum. Landcover strata areas are then each adjusted according to their accuracy measure. Each strata therefore differs from estimate obtained through the initial pixel counts obtained from the wall-to-wall maps (Olofsson, 2014).

3.1.4.3.5 Sampling Deforestation

For the adjustment of landcover strata area, a total of 8,917 samples were evaluated throughout the country of Cambodia (MoE, 2022).

PDR.58 A map of the Reference Area showing the sample point locations.

The following represents the location of the samples evaluated to adjust landcover strata areas.
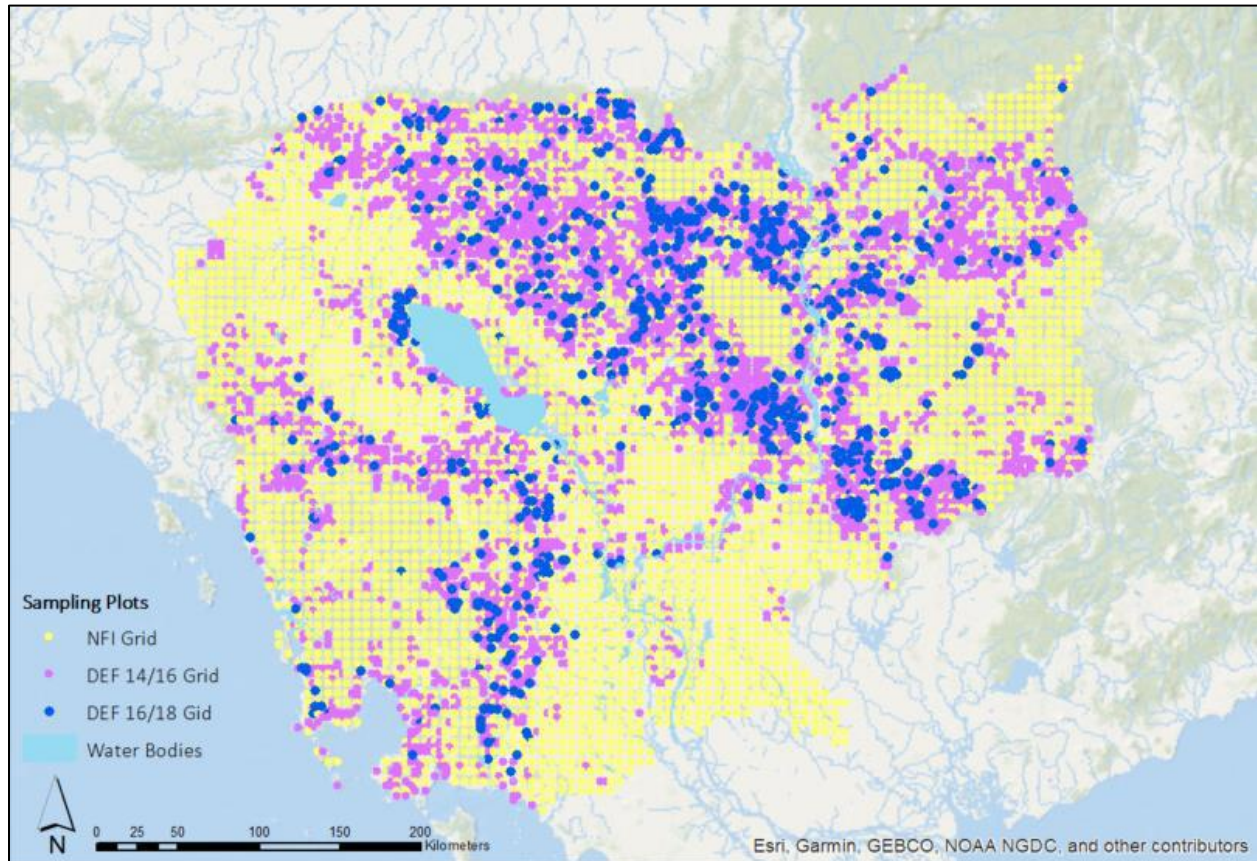
Figure 14. Sample locations for construction of Cambodia's national FREL (MoE, 2022).

3.1.4.3.6 Discarded Sample Points

A Quality Control (QA) procedure was implemented by MoE, which resulted in removal of samples prior to interpretation (MoE, 2022). The number of samples removed may be obtained from MoE.

3.1.4.3.7 Parameterizing α, β and θ

This PDR is not applicable because the national FREL has been applied to the SRP.

3.1.4.3.8 Minimizing Uncertainty

PDR.63 A protocol for interpreting land cover state from imagery, which must include guidance for interpreting the following:

  a. **Discerning conversion features using shape, texture and context in the reference area landscape**

  b. **Addressing seasonal variation of vegetation (phenology) within imagery**

  c. **Identifying and addressing the characteristics of specific landscape configurations (i.e. mosaic forest, grassland, etc.)**

Cambodia's modified second FREL submission describes the image interpretation process in detail, including:

- Selection of existing and creation of new wall-to-wall landcover maps (MoE, 2022).

- Explanation of the analysis procedure (T.A. BUR, 2020).

- Sampling design for adjustment of landcover strata according to Olofsson, 2014 (MoE, 2022).

- Response design (i.e. sample interpretation).

- Analysis according to Oloffson, 2014 (i.e. adjustment of strata area according to each stratum's uncertainty).

The landcover classification system is shown below. Further detail is available in MoE 2022 and T.A. BUR, 2020.

Table 13. Landcover classification system used to develop activity data for Cambodia's national FREL (MoE, 2022).

No	Forest/ Non-Forest	IPCC land use Category	No	National Land Use/Cover Categories	FRL Classes (Initial FRL)
1	Forest	Forest	1	Evergreen forest	Evergreen forest
			2	Semi-evergreen forest	Semi-evergreen forest
			3	Deciduous forest	Deciduous forest
			4	Pine forest	Pine forest
			5	Pine plantation	Pine plantation
			6	Tree plantation	Tree plantation
			7	Mangrove forest	Mangrove
			8	Rear mangrove	Rear mangrove
			9	Forest regrowth	Forest regrowth
			10	Flooded forest	Flooded forest
			11	Bamboo	Bamboo
2	Non-Forest	Crop land	12	Rubber plantation	Non-forest
			13	Oil palm	
			14	Paddy field	
			15	Crop Land	
3		Grassland	16	Grassland	
			17	Wood shrub	
4		Wetlands	18	Water	
5		Settlements	19	Built-up area	
			20	Village	
6		Other	21	Rock	
			22	Sand	

Forest plantations.

PDR.64 The results of an independent check of the interpretation.

Cambodia used a labeling protocol designed to avoid interpretation bias. The protocol is described in detail in MoE, 2022.

PDR.65 Evidence that systematic errors, if any, from the independent check of the interpretation were corrected.

A Quality Control procedure was followed for interpretation of the sample points. This involved a random subset of 585 plots independently assessed by three different interpreters, resulting in 79.7% consensus (MoE, 2022).

3.1.4.3.9 Project Reference Level Determination

Cambodia's national FREL was calculated by multiplying the activity data by the emission factor for each land cover change category for each of the included carbon pools and gases. The national FREL is allocated to the SRP using the baseline setting method described above in Section 3.1.4.3, which applies a risk-based allocation of a jurisdictional reference level to the project. The Ministry of Environment has indicated their desire to distribute the national FREL to the SRP using this methodology. Every Cambodian REDD+ Project, including the SRP, will ultimately be nested into Cambodia's national nesting program. Moving forward, the project will engage with the RGC Ministry of Environment to ensure the project is in adherence with national policy.

Carbon Pools and Gases

From five carbon pools described in the IPCC Guidelines, Cambodia's modified second national FREL submission includes two: Above-Ground and Below-Ground Biomass (see Table 11). Litter, deadwood, and soil organic carbon are excluded due to lack of data. The national FREL includes emissions from CO_2 only (MoE, 2022). The Prakas states that REDD+ Projects must include at a minimum include above-ground and below-ground biomass, but may include additional carbon pools. If a project wishes to include additional carbon pools, they must register the measurement methodology with the RGC and verify results. The SRP chooses to maintain alignment with the national FREL, and therefore includes the same carbon pools included in FREL construction (See Table 9).

Activity Data

Activity data is defined as the amount of land that transitions from each land use to another for all possible transitions. Under a national nesting program, projects typically receive an allocation from the national FREL, and therefore activity data is typically determined at the national level. The draft PRAKAS states that REDD+ projects shall estimate activity data biannually in the REDD+ project accounting area and any leakage areas. This data shall be provided to the government for assessment and to potentially be integrated into the national land use change map updates. This data must be provided to the government before the project monitoring reports are produced. REDD+ projects may use their locally measured data or the national land cover maps to estimate the activity data for the project area. Although the draft Prakas requires activity data for the project area to be measured biannually, we assume that projects may choose to measure annually, to support their MRV goals. The draft Prakas does not yet provide technical guidance for site-scale activity data measurement. Activity data areas used for the national FREL construction are summarized as follows.

Table 14. Modified activity data areas for 2011-2014, 2015-2016 and 2017-2018 and (MoE 2016).

2011-2014

MAP1014	AREA(Ha)	AREA Prop	AREA estimate	CI (ha)	CI (%)
F > F 0	5,900,604	32.49%			
F > F 1	1,975,597	10.88%	9,094,587	130,123	1.4%
F > F 2	258,530	1.42%			
E>NF 0	305,832	1.68%			
E>NF 1	289,765	1.60%	409,011	46,391	11.3%
E>NF 2	-	0.00%			
Se>NF 0	169,731	0.93%			
Se>NF 1	123,664	0.68%	175,883	35,376	20.1%
Se>NF 2	-	0.00%			
D>NF 0	673,771	3.71%			

	AREA(Ha)	AREA Prop	AREA estimate	CI (ha)	CI (%)
D>NF 1	465,230	2.56%	569,972	65,506	11.5%
D>NF 2	-	0.00%			
Of>NF 0	195,268	1.08%			
Of>NF 1	93,894	0.52%	100,224	31,962	31.9%
Of>NF 2	-	0.00%			
NF>F 0	218,099	1.20%			
NF>F 1	145,370	0.80%	9,251	8,731	94.4%
NF>F 2	19,877	0.11%			
NF > NF 0	6,631,075	36.51%			
NF > NF 1	694,368	3.82%	7,801,746	132,721	1.7%
NF > NF 2	-	0.00%			
TOTAL	**18,160,674**	**100.00%**	**18,160,674**		

2015-2016

MAP1416	AREA(Ha)	AREA Prop	AREA estimate	CI (ha)	CI (%)
F > F 0	6,118,476	33.69%			
F > F 1	1,757,232	9.68%	8,623,465	132,935	1.5%
F > F 2	278,407	1.53%			
E>NF 0	68	0.00%			
E>NF 1	112,374	0.62%	140,498	22,311	15.9%
E>NF 2	-	0.00%			
Se>NF 0	14	0.00%			
Se>NF 1	36,718	0.20%	81,094	19,723	24.3%
Se>NF 2	-	0.00%			
D>NF 0	24	0.00%			
D>NF 1	149,019	0.82%	249,662	44,031	17.6%
D>NF 2	-	0.00%			
Of>NF 0	122	0.00%			
Of>NF 1	65,625	0.36%	34,200	16,695	48.8%
Of>NF 2	0	0.00%			
NF>F 0	20,211	0.11%			
NF>F 1	7,856	0.04%	4,679	7,720	165.0%
NF>F 2	-	0.00%			
NF > NF 0	7,955,467	43.81%			
NF > NF 1	1,659,064	9.14%	9,026,848	135,366	1.5%
NF > NF 2	-	0.00%			
TOTAL	**18,160,674**	**100.00%**	**18,160,446**		

2017-2018

MAP1618	AREA(Ha)	AREA Prop	AREA estimate	CI (ha)	CI (%)
F > F 0	6,137,818	33.80%			
F > F 1	1,763,551	9.71%	8,240,267	133,267	1.6%
F > F 2	-	0.00%			
E>NF 0	0	0.00%			
E>NF 1	112	0.00%	91,681	24,414	26.6%
E>NF 2	64,733	0.36%			
Se>NF 0	-	0.00%			
Se>NF 1	79	0.00%	42,458	16,001	37.7%
Se>NF 2	32,464	0.18%			
D>NF 0	23	0.00%	202,666	40,284	19.9%

D>NF 1	567	0.00%			
D>NF 2	132,093	0.73%			
Of>NF 0	844	0.00%			
Of>NF 1	779	0.00%	53,073	22,729	42.8%
Of>NF 2	49,116	0.27%			
NF>F 0	16,779	0.09%			
NF>F 1	2,334	0.01%	1,813	2,565	141.5%
NF>F 2	-	0.00%			
NF > NF 0	7,938,916	43.71%			
NF > NF 1	2,020,465	11.13%	9,527,735	132,677	1.4%
NF > NF 2	-	0.00%			
TOTAL	**18,160,674**	**100.000%**	**18,159,694**		

Emission Factors

Emission factors represent the amount of carbon emitted during each possible land cover transition. They are often calculated via ground measurements as part of a forest inventory. Cambodia is currently finalizing its national forest inventory (NFI). For the modified second FREL submission, emission factors were determined by collecting and harmonizing inventory data from Cambodian projects, including 105 plots from the Southern Cardamom REDD+ Project from 2014, and 247 plots from 2017. The following summarizes the emission factors used for the calculation of the national FREL.

Table 15. Emission Factors used in the construction of Cambodia's national FREL

Forest Type	# of plots	Emission Factor (t CO2e)	CI(%)
Deciduous	132	146.55	10%
Evergreen	446	314.30	5%
Semi-Evergreen	49	341.70	19%
Other Forest	54	151.43	0%

Risk-based FREL Allocation

According to the best practices guidance, we firstly perform an exploratory analysis and select a national risk map. We then distribute Cambodia's national FREL to the forested portion of the project area based on modelled risk of future deforestation. The core hypothesis for the risk mapping process assumes that future deforestation extends outward from historical deforestation, and therefore areas closest to previous deforestation are at highest risk. This method differentiates risk, thus providing appropriate potential for revenue in those areas that most require it.

Figure 15 depicts the selected risk map using the best practice guidance, indicating risk of future deforestation for the country of Cambodia, and the proposed SRP Project Area.
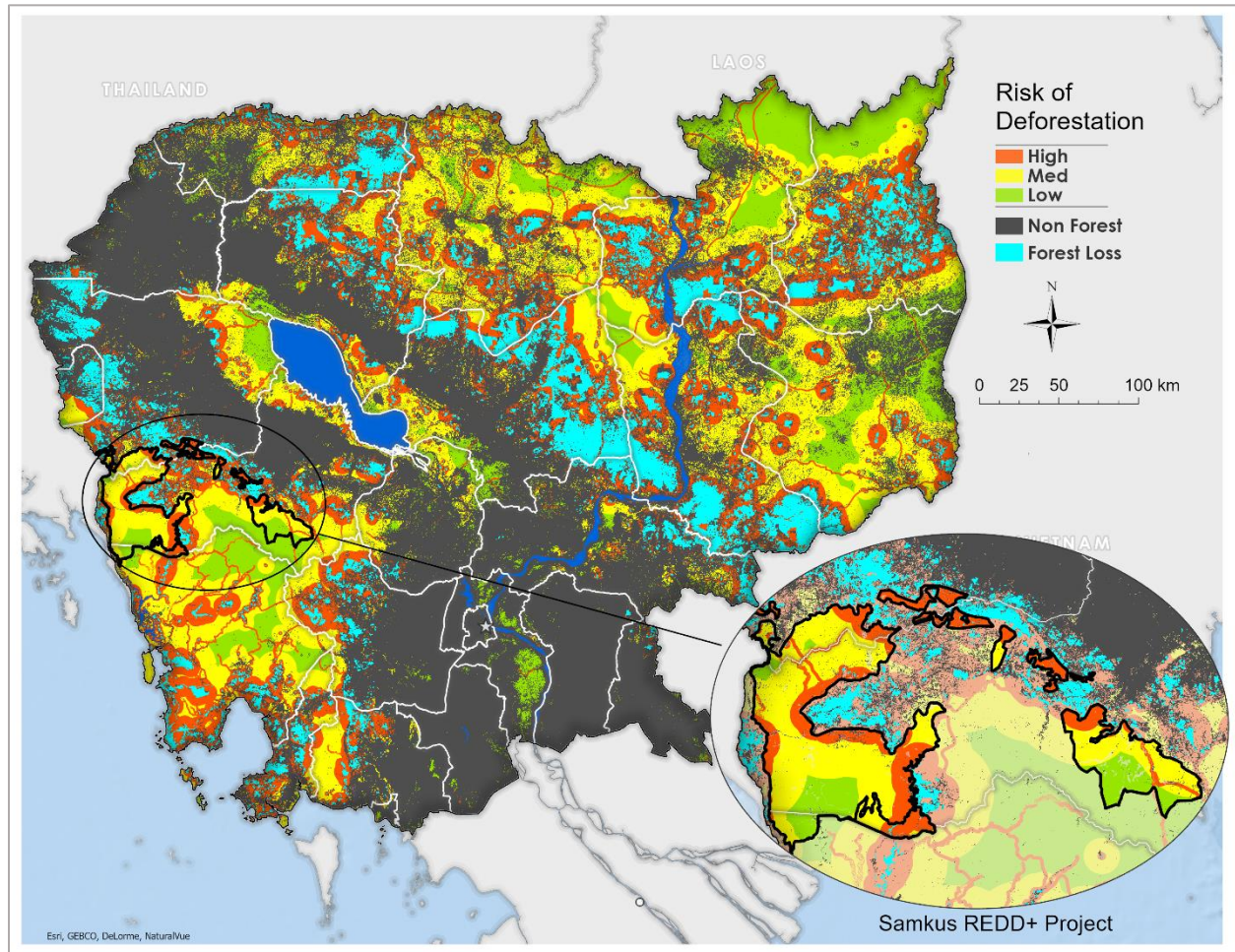
Figure 15. Selected Risk Map Indicating Risk of Deforestataion for Cambodia and the Samkus REDD+ Project

Project Reference Level

Results from the allocation of the national FREL to the SRP according to the selected risk map are presented as follows:

Table 16. Samkus REDD+ Project Nested Reference Level.

Activity	Project Accounting Area (ha)	Nested Project Reference Emission Level (REL) -National FREL Distribution (t CO2e / yr)
The Samkus REDD+ Project	282,718	1,911,823

3.1.4.3.10 Estimating Uncertainty

The Cambodian national FREL calculation included an extensive uncertainty analysis, described in detail in MoE, 2022. The analysis includes the following identified sources of systematic error and corresponding mitigation measures:

Table 17. Sources of systematic error and corresponding minimization for the national FREL.

Systematic Error Source	FREL Element	Error minimization technique
wall to wall maps	AD	Users and Producers error recorded
reference data (samples)	AD	Reference label protocol, QA Procedure
forest Inventory sample distribution	EF	Plots from very high value forests (protected areas) discarded
forest inventory missing data	EF	H-D model developed, validated and applied

PDR.66 The estimated uncertainty σ$_{EM}$ from [F.13] and statistical summaries from model fitting software, if available.

This PDR is not applicable because the national FREL has been applied to the SRP.

PDR.67 Reference to uncertainty calculations.

Confidence intervals for activity data and emission factors were calculated were combined to propagate total uncertainty for the national FREL. Propagation was conducted according to Approach 1 from IPCC, 2006 Volume 1: General Guidance, Chapter 3: Uncertainties (IPCC, 2006) which describes Uncertainty of an Annual Estimate. Activity data and emission factor uncertainties are combined according to equation 3.1 to yeild total FREL uncertainty:

$$\text{EQUATION 3.1}$$
$$\text{COMBINING UNCERTAINTIES – APPROACH 1 – MULTIPLICATION}$$
$$U_{total} = \sqrt{U_1^2 + U_2^2 + ... + U_n^2}$$

Where:

U_{total} = the percentage uncertainty in the product of the quantities (half the 95 percent confidence interval divided by the total and expressed as a percentage);

U_i = the percentage uncertainties associated with each of the quantities.

Table 18below summarizes uncertainties, calculated on yearly emission estimates for the FREL, yielding an overall FREL uncertainty of **11.07%**.

Table 18. FREL Emissions and Uncertainties (MoE, 2022)

Year	Emissions (t CO2e / yr)	Uncertainty (%)
2011	71,840,311	9.40%
2012	71,840,311	9.40%
2013	71,840,311	9.40%
2014	71,840,311	9.40%
2015	56,818,352	12.14%

2016	56,818,352	12.14%
2017	40,531,030	15.51%
2018	40,531,030	15.51%
FREL	60,257,501	11.07%

PDR.78 The project shift parameter γ as the number of days between the beginning of the historical reference period and the project start date.

This PDR is not applicable because the national FREL has been applied to the SRP.

PDR.79 The parameter q as the number of days between the onset of degradation and the beginning of conversion.

This PDR is not applicable because the national FREL has been applied to the SRP.

3.1.4.4   Baseline Scenario for Selected Carbon Pools

PDR.39 A qualitative description of the baseline scenario for each selected carbon pool.

3.1.4.4.1 Project Accounting Area

Above-ground other tree (AGOT): The above-ground portion of the tree carbon pool is assumed to be completely removed from the forest ecosystem during the conversion process for the baseline scenario. The trees in this pool are assumed to have immediate loss to CO_2 emissions, with no wood used for long-lived wood products. Conversion of this pool is carried out either in-situ via combustion or by removal and direct combustion for fuel wood.

Below-ground other tree (BGOT): The below-ground component of the tree carbon pool is assumed to be minimally impacted by the activities of the agents of deforestation. Emission from this pool are determined using different root:shoot ratios defined for the different Cambodian forest types (MoE, 2022)

3.1.5   Additionality

Step 1. Identification of alternative land use scenarios to the proposed VCS AFOLU project activity

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

   i.   Continuation of the pre-project land use;

The entirety of the Project Area is gazetted as a protected area (Phnom Samkus Wildlife Sanctuary (PSWS), the Cardamom Biodiversity Conservation Corridor(s) (CBC), and the northern zone of Southern Cardamom National Park (SCNP)), and therefore has formal protection against deforestation. WA has been operating in the Project Area for the last 3 years, and their efforts in forest protection and community engagement are the primary reasons that the Project Area is still forested. Although the Project Area has been designated as a protected area, the MOE is unable to fund forest protection activities, supply needed equipment or the training needed to successfully conserve the forested areas under their jurisdiction. In the past various international NGOs operated in this landscape providing funding for protection from donations and grants, however these organizations left the area approximately 7 years ago and without their presence the area lacked adequate resources to continue protection. With the success of the neighboring Southern Cardamom REDD+ Project, WA began to expand their support into

these areas, providing funding, training, and logistical and managerial support which has been instrumental in the protection of the Project Area. Wildlife Alliance's existing activities include enforcement of forest boundaries and reduction of illegal logging and forestland clearing activities. Therefore, the pre-project land use was primarily that of conservation, but with in-sufficient funding or resources resulting in significant amounts of incursion and forest loss.

Despite this, threats to the forest are steady or increasing along the network of newly created and updated roadways. According to the information gathered at the biodiversity impact assessment workshop (Section 5) all of the unplanned drivers of deforestation that lead to the creation of new land for farming are present in the SRP; this includes land encroachment, illegal logging, illegal camps, forest fires, and charcoal production. The drivers of deforestation are still present because of the opportunity cost of the most profitable alternative land-use, mixed vegetable farm, is 2,571% more profitable than if the forests of the SRP are left standing. The protection activities to-date have been funded from the WA's general funds, including revenue from the SCRP and donations. However, the SCRP revenue is not able to support the scale of activities needed to protect the project area. It is certain, based on the amount of consistent threat observed since 2019, that without new sources of revenue there will be an increase in illegal logging and conversion of the forest area into agricultural land.

ii. Project activity on the land within the project boundary performed without being registered as the VCS AFOLU project;

Conservation is a widespread practice in Cambodia, with conservation sites run by the Government with support of non-governmental organizations (NGOs). However, many of them are under much less threat than the Greater Cardamom ecosystem or receive additional funding from donors. With the exception of the existing REDD+ projects within the country they generally do not have access to financial returns from project activities. Wildlife Alliance, a project partner in the SRP, has been performing conservation activities within the PSWS and Northern Cardamom Mountains since 2019. Furthermore, donor funding was unsustainable and inconsistent over the long term, this limited the expansion Project activities to the scale required to stop ecosystem conversion. There is no other sustainable source of funding available at the scale required to support the necessary protection activities outside of the VCS AFOLU program. Therefore, while this scenario is plausible, we do not believe it is credible. Funds from the sale of emissions reductions garnered by the REDD+ Project will be instrumental in the development of an independent, long-term sustainable revenue stream. This will in turn support Project activities that protect the Project Area and expand WA's reach to all affected communities.

iii. Activities like the proposed Project activity on at least part of the land within the project boundary of the proposed VCS AFOLU project at a rate from legal requirements;

The entirety of the Project Area is owned by the Royal Government of Cambodia and administered by the RGC's Ministry of Environment, the Project Proponent. The land within the Project Area is under legal protection with a legal requirement to perform activities similar to the proposed project activities, i.e. conservation of the forest and protection from deforestation and degradation activities. The Project Area landscape, and the rest of the Project Zone, has been protected under national legislation and managed for conservation purposes off and on for 16 years, however, it has still undergone significant forest degradation and deforestation. This is largely due to a lack of funding for MOE, limiting their ability to enforce the forest boundaries and patrol the areas to stop the unsustainable activities that lead to forest degradation and deforestation. The primary source of revenue for the protection of the forest has been the general budget allocation of the Ministry of Environment through the national budget. All areas under the Ministry of Environment's jurisdiction (>6,000,000 hectares of Protected Areas plus additional Conservation Corridors, Souter et al. 2016) must compete for the limited funds available to support their protection, leaving most underfunded.

PDR.99 A list of alternative land use scenarios to the project

a) Identify realistic and credible alternative land-use scenarios to the proposed REDD+ project activity.

Below is a list of the potential alternative land-use scenarios that have been identified for the Project Area. These differ from the pre-project land use and are based on identified deforestation agents and drivers.

- Illegal land clearing

- Illegal logging

- Smallholder agroforestry

- Smallholder farming

The drivers of deforestation are still present because of the opportunity cost of the most profitable alternative land-use, mixed vegetable farming, is 2,571 % more profitable than if the forests of the SRP are left standing. This analysis was conducted as part of the non-permanence risk report opportunity cost assessment.

Sub-step 1b. Consistency of credible land use scenarios with enforced mandatory applicable laws and regulations

The scenarios listed above that were found to be credible (i and iii) are consistent under enforced applicable laws and regulations. These, however, both include elements (illegal logging and forest land conversion) which are not consistent with the laws and regulations of protected areas. Scenario iv is additionally comprised of 4 alternative land use scenarios that are not consistent with mandatory applicable legislation, which requires conservation of the Project Area as natural forest. However, despite being illegal, these land use scenarios are consistent with common practice for this region and for Cambodia at large. Local expert knowledge, historical satellite imagery and WA's enforcement data document that these illegal activities have been commonly occurring in the regions around the Project Area, despite being illegal, especially in the time before WA began their activities in the area.

Forest degradation and deforestation are major threats to all land units in the Project Area, despite the presence of official legal protection. In addition to small-scale agriculture, tree harvesting for firewood and timber from state-owned lands are illegal under Cambodian Law. There is considerable evidence that the boundaries of many Cambodian forested areas and protected areas are not enforced, and furthermore that there is a substantial amount of uncontrolled access into protected areas that leads to their conversion (i.e. Seima Protection Forest REDD+ Monitoring and Implementation Report; http://database.v-c-s.org/sites/v-c-s.org/files/CCB_IMP_REP_C0047_29Apr16.pdf). This gap in enforcement is largely caused by a lack of funding, limiting MOE's ability to patrol the forested area with enough frequency and efficacy to deter forest conversion activities, as detailed in the above section Sub-Step 1a. An analysis of the land cover / land use in Battambang and Pursat provinces, in which the Project Area is located, showed that greater than 40% of the land area has been converted to agriculture or for development. This study showed that conversion to agriculture is a prevalent scenario in this area, and further demonstrates that land use laws and regulations are systematically ignored.

Even though some of the above listed land use scenarios, none of the above have been removed from consideration even though some are not in compliance with applicable laws and regulations. As discussed above, there is a general and systematic lack of enforcement of these applicable laws and regulations regarding the conservation of forests in Cambodia.

Sub-step 1c. Selection of the baseline scenario:

PDR.100 Justification for the selected baseline scenario. This justification can include expert knowledge, results from the participatory rural appraisal and ex-ante estimates of avoided emissions

VM0009, 'Methodology for Avoided Ecosystem Conversion' v3 provides a step-wise approach for selecting the most plausible baseline scenario. For the SRP, this was determined to be illegal clearing for small-scale agriculture. This is a result of the fact that with the lack of grant and donor funding, the pre-project conservation efforts would not be plausible. Thus, in the absence of REDD+ funding, WA would be unable to maintain their current level of financial, logistical and managerial support to the protection of the forest in the Project Area. There is continual evidence of encroachment into the Project Area, demonstrating the level of threat. The surrounding areas, including additional protected areas, have seen significant levels of ecosystem conversion from forest to agriculture, demonstrating that clearing forest for small-scale agriculture is the primary driver of unplanned ecosystem conversion in this region, and it therefore the identified scenario that would occur in the absence of a REDD+ project.

Step 2. Investment analysis

PDR.101 An investment or barriers analysis proving that the project is not the most economical option.

Sub-step 2a. Determine appropriate analysis method

The SRP, a VCS AFOLU project, generates no financial or economic benefits other than VCS-related income derived from the sale of carbon credits. Therefore, simple cost analysis (Option I) applies.

Sub-step 2b. Apply simple cost analysis

The proposed project activities are not revenue-generating (other than VCS-related carbon income) and the physical protection of the Project Area and provision of deforestation mitigation activities are projected to cost the Project Proponent and Project partner WA an average of $4,250,000 USD per annum. There exists no significant income from other Project Activities or other sources from the land to offset these costs. In the absence of active protection, both physical, and that created by collaborating with the communities to create new economic alternatives, it is evident that the land in the Project Area would be cleared aggressively for subsistence agricultural and land speculation purposes. This is observed throughout the Project Zone currently. Small-scale clearing for agriculture faces no economic barriers and is therefore clearly identified as the most likely land use in the baseline (without-project) scenario.

Step 4. Common Practice Analysis

PDR.102 A common practice analysis including a list of project activities and the drivers of conversion that they address.

While some of the Project Activities in the SRP have been attempted, or in some cases implemented by the Project partner WA in portions of the Project Area (notably forest patrols and protection), they were funded by WA. Wildlife Alliance's forest protection activities have shown initial success at protecting the Project Area. However, the cost of the activities are unsustainable for Wildlife Alliance to continue in the absence of a new, consistent source of funding. The SRP aims to utilize the revenue from emission reduction sales to provide a sustainable, consistent source of funding with which to maintain WA's protection activities and increase the number and size of project activities and their geographic influence. The SRP will operate Project activities throughout the entirety of the Project Zone, and work to engage communities and address the agents and drivers of deforestation and degradation across this incredibly important landscape. It is common practice to protect forests in Cambodia, and to provide sustainable development support for rural Cambodian communities, but that common practice is typically funded by governments or donor agencies, and not by financial return from Project activities. There are 5 existing

REDD+ projects in Cambodia; two are operating on lands under the jurisdiction of the Forestry Administration and operated by the FA (Oddar Meanchey REDD+ Project and the Tumring REDD+ Project), and three are under the jurisdiction of MoE and operated by MOE (Reduced Emissions from Deforestation and Degradation in Keo Seima Wildlife Sanctuary, The Southern Cardamom REDD+ Project and the Prey Lang REDD+ Project in Prey Lang Wildlife Sanctuary). However, these projects represent a distant minority of the forested land in Cambodia, and are still in the early stages of their operation. In the case of the SRP, the funding provided by VER sales will be used to continue a proven and successful forest protection program with a sustainable source of funding, and provide viable economic alternatives for local communities, reducing their need for unsustainable extraction of natural resources.

PDR.103 Evident compliance with the minimum requirements of the aforementioned VCS tool. This evidence may be the same as the evidence provided to meet reporting requirements listed in section 4.

The Project Proponent has demonstrated that the project complies with the applicability conditions of the methodology (see Section 3.1). Further, the Project Proponent has demonstrated that the SRP complies with all applicable local and national laws (see Section 2.5). Finally, the method for determining the baseline scenario (described in section 3.1.4) is consistent with that prescribed in VM0009 methodology version 3.0. Thus, the Project Proponent has fully complied with the minimum requirements of the VCS demonstration of Project additionality.

3.1.6   Methodology Deviations

Describe and justify any methodology deviations. Include evidence to demonstrate the following:

Activity-Shifting Leakage Area

The SRP deviates from VM0009 v3.0, Section 8.3.2 "Estimating Emissions from Activity-Shifting Leakage" as it utilized the "Estimation of emissions from activity shifting for avoiding unplanned deforestation (LKUD-AS)" version 1 module prepared by Climate Focus and published by Verra. The SRP also deviates from "Delineating the Activity-Shifting Leakage Area" from the same Section. This new leakage monitoring and quantification methods under this module rely on a leakage belt (LB) that surrounds the PA rather than a leakage area, and uses remote sensing rather than ground truth sampling. The activity-shifting leakage area, therefore also does not conform to the criteria in the first paragraph of VM0009 v3.0, Section 8.3.2, which states "The project proponent must establish leakage plots per the requirements in this section". This deviation also relates to Section 9.3 "Description of the Monitoring Plan" as the phrase "All leakage plots…must be remeasured at least every five years" is no longer applicable. Furthermore, this newly adopted leakage module calculates total leakage emissions as the sum of leakage from within the LB, from outside the LB and GHG emissions from leakage prevention activities.. Conservativeness in this newly adopted module is based on the nature of the LB, which surrounds the PA in all directions. Furthermore, the pixel-based analysis approach will in theory, capture all deforestation in the LB as opposed to the plot-based area approach of VM0009 v.30. Hence, the deviation will not negatively impact the conservativeness of the quantification of GHG emission reductions or removals.

The deviation relates the calculation of total emissions from activity-shifting leakage represented by $E_{L\ ASF}^{[m]}$ in VM0009 v3.0 and calculated by [F.46] and [F.48]. As emissions are now directly quantified through the LB module, the mentioned parameter will henceforth be calcuted using the LB module as opposed to the procedure detailed in VM0009 v3.0 . The deviation pertains only to the criteria and procedures for monitoring and measurement, and does not relate to any other part of the methodology, VM0009 v3.0.

3.2   Quantification of GHG Emission Reductions and Removals

3.2.1   Baseline Emissions

As described above in Section **Error! Reference source not found.**, a nested reference level was a llocated from the national FREL via a risk map. The justification for this choice is also described above in Section **Error! Reference source not found.**. The FREL calculation method applied uses the emissions c alculation approach for forest conversion stated in the IPCC 2006 guidelines, which multiplies activity data (A) by emission factors (EF) to achieve the FREL.

FREL = Activity Data (A) × Emission Factor (EF)

3.2.1.1   Calculating Baseline Emissions from Biomass

The national FREL is based on the historical average emissions from 2011 to 2018. Annual CO2 Emissions and Removals (tCO2e / 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;

ΔC_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-1

$C\ t_2$ = 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)

3.2.1.2   Calculating Carbon Not Decayed in DW

The SRP does not include planned forest harvesting in the baseline scenario. Therefore, the deadwood carbon pool has been conservatively excluded from Project carbon accounting.

3.2.1.3   Calculating Carbon Not Decayed in BGB

The SRP applied the national FREL. A BGB decay model therefore does not apply.

3.2.2   Project Emissions

Describe the procedure for quantification of project emissions and/or removals in accordance with the applied methodology. Include all relevant equations, and explain and justify all relevant methodological choices (e.g., with respect to selection of emission factors and default values).

3.2.2.1   Calculating Emissions from Changes in Project Stocks

PDR.122 Summary of sampling procedures for the project accounting areas, with a copy of a sampling protocol used to carry out measurements.

To accurately estimate the biomass in the Project Area, a *stratification analysis* is done based on the different land cover types present. Random sample plots are generated for and placed within each of the strata to account for variance within each stratum. The number of sample plots needed to meet the

uncertainty and error requirements of the VM0009 are determined using equation [B.2]. The UTM coordinates associated with the plots are generated using a geo-referenced map and then distributed to the field crews. Extra plots are often generated for each stratum in the event that some of the original plots are not accessible due to slope, terrain, rivers, landslides, ravines and other such environmental issues.

Sampling procedures are described in detail in the document 'Standard Operating Procedure Samkos - Forest Inventory v1_20230501', provided as Annex 1 with this document. While this document has been provided to the auditor for review, it is not publicly available due to the proprietary knowledge within. A summary of the procedures is provided as follows:

A nested circular sample plot design was used for the SRP. The larger plot has a radius of 15 m and the smaller a radius of 5 m. Trees are measured in the larger plot and shrubs in the smaller. The minimum diameter for considering an individual plant as a tree for the SCRP is 10 cm diameter measured at 1.3 m above the ground (DBH). All smaller woody plants are considered shrubs.

The SOP provides a checklist for plot sample teams to ensure full preparedness before initiating any work. Sample teams then navigate to the coordinates of the plot center using a GPS device. If the team is establishing a new sample plot, then a monument is to be driven into the ground to permanently mark the plot center. If the team is remeasuring an existing plot than the center monument must be found. The SOP describes several methods to help discover the monument. Sample plot teams must navigate to the original plot center coordinates as provided by project management, there are only a few instances for team safety or other reasons in which a team may move a plot center or abandon a plot location, this process is described in detail in the SOP. The sample plot locations for the SRP are shown in Figure 16 below.

Changes in project carbon stocks are calculated as the difference in project stocks in each stratum for each PAA between the current and prior monitoring periods, as determined from in-situ measurement of biomass plots:

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

Carbon stocks that are lost to burning, wood products, and leakage are accounted for using the procedures and equations listed below.
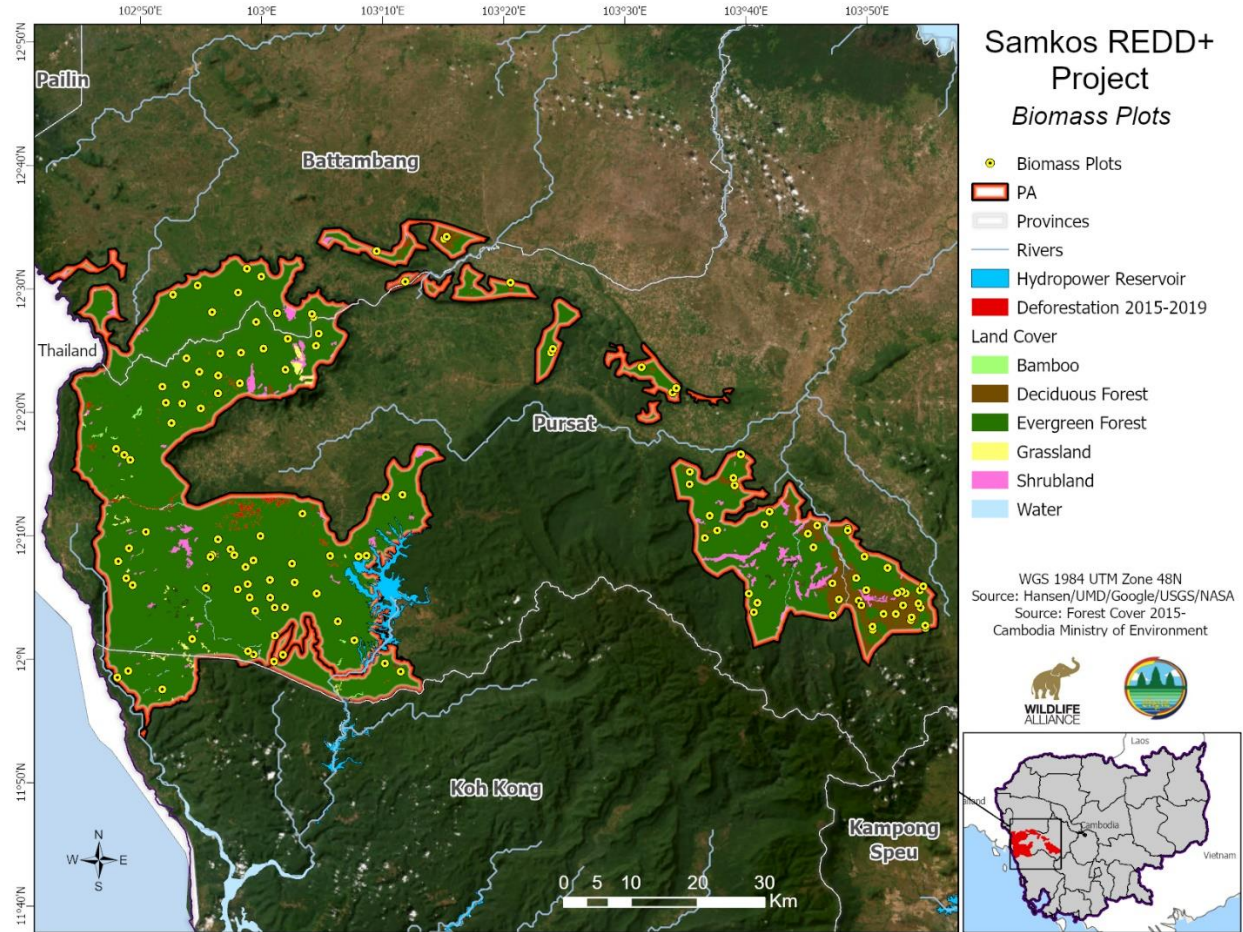
Figure 16. Biomass sample plot locations in the Samkos REDD+ Project

3.2.2.2 Calculating Emissions from Burning

Currently, no planned project activities involve the burning of biomass burning in any manner. As such, emissions from burning are included in carbon accounting. However, 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.

3.2.3 Leakage

PDR.104 A list of project activities designed to mitigate leakage.

The intention of the proposed activities is that poverty alleviation and sustainable development will reduce and mitigate leakage across the region. Activities such as conservation agriculture, community-based ecotourism, and job creation have the potential to uplift local populations, reducing deforestation from a variety of drivers.

A primary driver is land tenure rights. Local villagers/families (not migrants) were promised 5 ha of land following the fall of the Khmer Rouge; an additional 3 ha of land was promised to the families over the summer of 2020, driving rampant land grabbing. The Cambodian Government has set up working groups to review claims and to demarcate boundaries. The Project will be part of these working groups, focusing on demarcation and strengthen the understanding of the value of standing forests to mitigate further

leakage outside of the PA. Of specific note, land speculation, especially from foreign investors, is a driver of deforestation across Cambodia. Building on recent trends in sustainability and the creation of national parks in China, the Project will mitigate this risk within the Project Zone and beyond, through additional workshops with key foreign investors to enhance the understanding of the need to leave forests standing.

For a comprehensive and detailed list of all Project Activities please refer to Section 2.2. A brief overview of the significant Project Activities is provided below:

Table 19. Brief Overview of leakage mitigation strategies in the Samkos REDD+ Project.

Leakage Management Activity	Description
Improved and Intensified Agriculture	Training will be provided to the communities on the methods and best practices involved in conservation agriculture. This program will aim to increase yields on existing farms and decrease the rate of land conversion. It will also build and support produce storage facilities and value-added technologies to take advantage of market price fluctuations and aid in achieving high sale prices.
Employment of a Ranger Force	This Project will hire and equip a ranger force that provides direct protection of the land from conversion. This force acts as a deterrent to the conversion of the project area but also a powerful outreach tool to the local communities, providing assistance with wildlife issues and information.
Alternative-Income Generation	The Project has several programs to help develop new income generating activities for members of the communities in the Project Area. This includes a variety of individual activities such as promoting and supporting animal husbandry.

3.2.3.1   Activity-Shifting Leakage

3.2.3.1.1 Delineation of Activity-Shifting Leakage Area

PDR.105 A map of the delineated boundaries.

Activity shifting leakage, as described in detail by PDR.107 below, is measured in the activity-shifting leakage area, which is shown below:
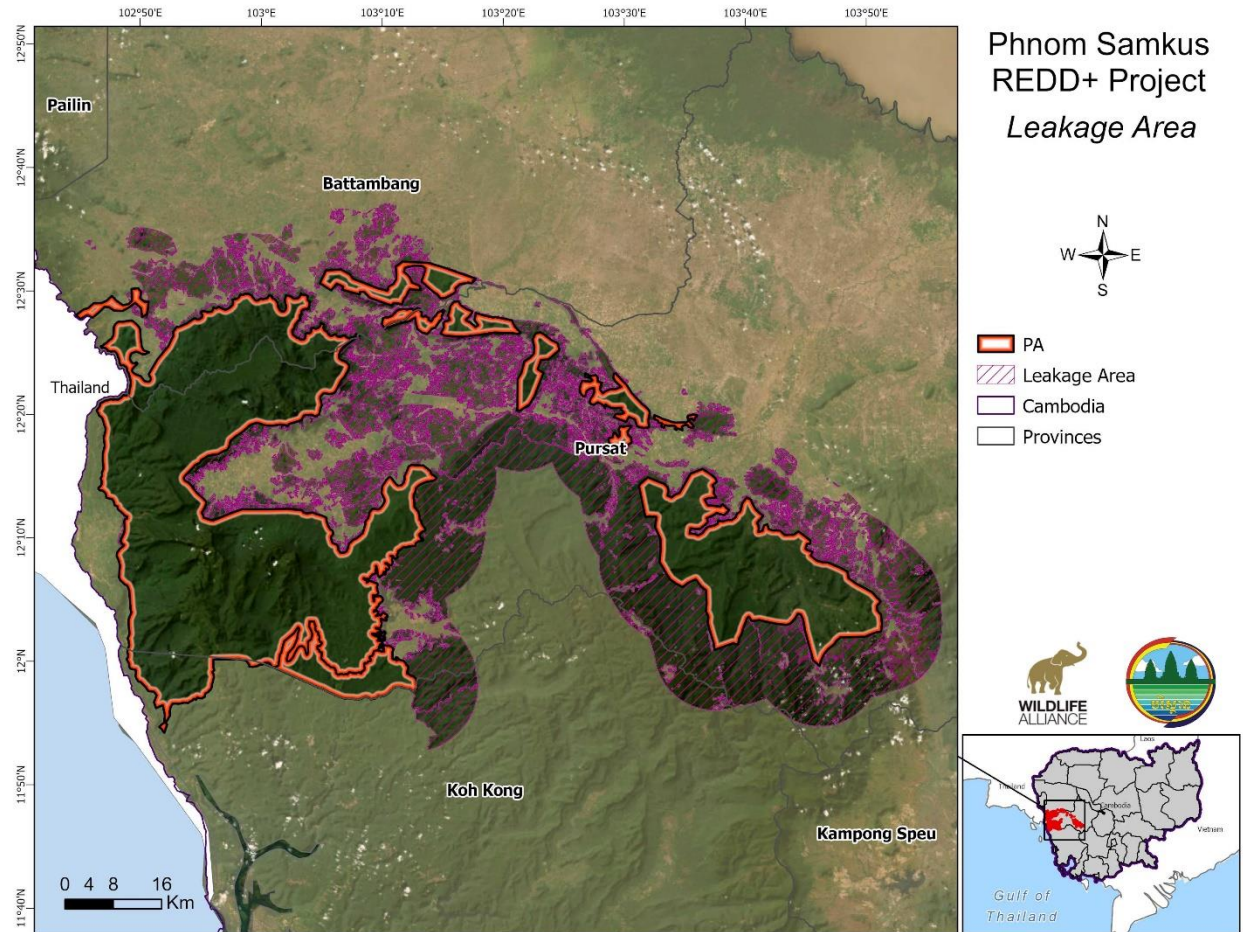
Figure 17. Leakage areas for the Samkos REDD+ Project

PDR.106 Maps of the landscape configuration, including:

a. Topography (elevation, slope, aspect);

Please see Appendix 4. 'Map of Activity-Shifting Leakage Areas'. The maps of the two leakage areas in this appendix depict a digital elevation map of the leakage areas (DEM), a map of the leakage areas slopes' and a map of the leakage areas' aspects.

b. Recent land use and land cover (either a thematic map created by the project proponent or publicly available map);

Please see Appendix 4. 'Map of Activity-Shifting Leakage Areas Land cover and Soil class'.

c. Access points;

Please see Appendix 4. 'Map of Activity-Shifting Leakage Area's Infrastructure' for a map of the primary points of access for the Leakage Areas.

d. Soil class maps (if available);

Please see Appendix 4. 'Map of Activity-Shifting Leakage Areas Land cover and Soil class'.

e. Locations of important markets;

Please see Appendix 4. 'Map of Activity-Shifting Leakage Area's Infrastructure' for a map of the important markets in the Leakage Areas.

f. Locations of important resources like waterways or roads; and

Please see Appendix 4. 'Map of Activity-Shifting Leakage Area's Infrastructure' for a map of important resources in the Leakage Areas.

g. Land ownership/tenure boundaries.

Please see Appendix 4. 'Map of Activity Shifting Leakage Area's Infrastructure' for a map of the landownership/land tenure boundaries in the Leakage Areas.

PDR.107 A narrative describing the rationale for selection of activity-shifting leakage area boundaries. If the activity-shifting leakage area is smaller than the project accounting area or cannot be defined, justification for the size of the area. If foreign agents have been identified as an agent of conversion, justification that they are unlikely to shift their activities outside the activity-shifting leakage area.

A leakage belt was derived from a 10km buffer around the Project Area in accordance with the "Estimation of emissions from activity shifting for avoiding unplanned deforestation (LKUD-AS)" version 1 module published by Verra. Areas that were considered forested by the MOE landcover, which was updated with Global Forest Change (loss year 2015-2018);(Hansen et al. 2013), were used to further define the leakage belt. Under the requirements of this module, all currently forested area within this 10km buffer, which is outside of pre-existing registered projects with Verra are included in the leakage belt.

PDR.108 Results of a spatial analysis to demonstrate the activity-shifting leakage area is entirely in a non-converted state (e.g. forested or native grassland) as of the project start date.

The leakage area for the PAA was selected to include only areas that are currently forested. The MOE landcover data from 2015, checked against Global Forest Watch (Loss Year 2015-2018), was used to select areas that met the criteria for the leakage area. Please refer to Appendix 4 for maps demonstrating and cover within the selected leakage areas.

PDR.109 Results of a spatial analysis to demonstrate the activity-shifting leakage area is no larger than the project accounting area.

The leakage areas were selected to contain the same area of non-converted land as the PAA. The leakage area is 275,593 ha, while the Project Accounting Area is 282,718 ha.

Table 20. Results of spatial analysis to demonstrate validity of the leakage areas

Activity shifting leakage area	Leakage area (ha)	PAA area (ha)
Forest	275,593	282,718

3.2.3.1.2 The Leakage Emissions Model

Activity leakage is estimated using the "Estimation of emissions from activity shifting for avoiding unplanned deforestation (LKUD-AS)" version 1 module published by Verra. This leakage monitoring and quantification methods under this module rely on a leakage belt (LB) that surrounds the PA rather than a

leakage area, and uses remote sensing rather than ground truth sampling. Furthermore, this leakage module calculates total leakage emissions as the sum of leakage from within the LB, from outside the LB and GHG emissions from leakage prevention activities. Furthermore, the pixel-based analysis approach will in theory, capture all deforestation in the LB. Please see Section 3.1.6 for a detailed description of the Methodological Deviation associated with the application of the leakage module.

3.2.3.1.3 Sampling Conversion and Forest Degradation to Build the Leakage Model

PDR.124 Summary of sampling procedures for the activity-shifting leakage areas, with a copy of a sampling protocol used to carry out measurements.

Activity leakage is estimated using the "Estimation of emissions from activity shifting for avoiding unplanned deforestation (LKUD-AS)" version 1 module published by Verra. This method relys on remote sensing methods to measure any deforestation occurring in the leakage belt at each monitoring period. The difference in carbon stocks changes between the Baseline Scenario and the Monitoring period within the Leakage Belt since the Project Start Date to year t* is calculated as $\Delta C_{LK-ASSU-LB}$.

3.2.3.2 Market Leakage

Market leakage can occur if a project reduces the supply of market goods, such as timber, relative to the baseline. As described in Section 2.1.1, 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, as discussed in Section 4.1.1, in 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. The VCS Tool, VMD0037 Global Commodity Leakage Module: Production Approach (LM-P) was used to determine the market effects leakage resulting from the SRP. 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).

3.2.4   Net GHG Emission Reductions and Removals

The process used to calculate the net GHG emission reductions resulting from the SRP project activity is described below. Please see Section 3.3.1 and 3.3.2 for a description of each parameter listed below and its value.

3.2.4.1   Determining Reversals

A Project reversal can occur if during any monitoring period throughout the project crediting period, quantified gross emission reductions (GERs) are negative (as a result of a carbon stock loss). The procedure for identifying Project reversals within the SRP meets all VCS procedures and requirements as listed in the VCS methodology VM0009 v3. Please refer to Annex 4 – 'Disturbance Monitoring Standard Operating Procedure' for a detailed description of the monitoring methods proposed to identify any potential significant conversion events within the Project Area, and subsequently quantify emissions from any potential Project disturbance / reversal.

3.2.4.2   Determining Reversals as a Result of Baseline Re-evaluation

In the event that a reversal occurs due to a baseline re-evaluation, the project proponent shall document the cause of reversal, quantify the emissions from the reversal and supply all supporting data for the in the respective monitoring report, following all guidance and requirements from section 8.4.2.1 in the VCS methodology VM0009 v3.0.

3.2.4.3   Quantifying Net Emission Reductions for a PAA

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

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

NERs are calculated for the PAA for each monitoring period.

3.2.4.4   Determining Deductions for Uncertainty

A potential confidence deduction is determined from NERs, based on a linear combination of the weighted standard errors associated with estimates from baseline emissions and carbon stock measurements from the Project Area and Proxy Area. Equation [F.57] from the methodology VCS VM0009 v3.0 is used to calculate the confidence deduction, if any, to be applied to Project NERs. Confidence deductions are documented for each monitoring event for each PAA.

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

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 nested Project REL allocation;

$U_B^{[m]}$ 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

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

An example calculation follows:

$$E_U^{[m1]} =$$

$$6,374,489 \ tCO2e \left[\frac{1.64}{6,374,489 \ tCO2e + \ 282,718 \ ha \cdot 455.6 \frac{tCO2e}{ha} + 6,535.7 \ ha \cdot 0 \frac{tCO2e}{ha}} \sqrt{(211,638.81)^2 + (\ 4,344,770 \ tCO2e)^2 + (\ 6,923 \ tCO2e)^2} - 0.15 \right] = 0$$

3.2.4.5 Determining Buffer Account Allocation

The quantity of NERs to be allocated to the VCS buffer account is determined annually for the Project using the VCS AFOLU Tool for Non-permanence Risk and Buffer Determination. The Project Proponent used this tool to assess all relevant risks to the SRP Project from natural, economic and management sources. It was determined that the overall risk level is moderate. Many risks can be minimized through the efficacy of Project Activities, community outreach, involvement in Project design and operation and experienced management. The Project Proponent has significant experience in the design and operation of REDD+ projects and Jurisdictional REDD+ approaches. These experiences will drawn upon to mitigate potential risks to the SRP throughout the Project lifetime.

Non-permanence risk assessment for the SRP was performed using the VCS Non-Permanence Risk Tool v3.2 and Risk Report Calculation Tool v3.0. Please refer to Annex 29 – 'Samkos Non-Permanence Risk Tool'.

3.2.4.6 Quantifying Net Emission Reductions Across PAAs

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

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

insulting

An example calculation follows:

$$E_{\Delta \ NER}^{[m1]} = \ 6,313,294 \ tCO2e - \ 637,449 \ tCO2e = \ 5,675,845 \ tCO2e$$

3.2.4.7 Ex-Ante Estimation of NERs (CL2.2)

Ex-Ante NERs are calculated for Project Accounting Area according to the guidance and process detailed in various sections above. Please refer to Annex 9 – 'Samkos REDD Project FREL Allocation_v1.2.xlsx' for detailed NER calculations. The Ex-Ante NERs presented here are based on an initial ecosystem inventory performed on the two PAAs. All parameter values have been identified at the time of validation. Ex-ante estimates for NERs are assumed to be conservative, as they fail to consider additional emission reductions due to forest growth within the Project Accounting Areas or further degradation within the proxy area.

In the case when *ex-ante* estimates are used to prove the significance of emissions sources or estimate the quantity of NERs over the project crediting period, the project description must include the following:

PDR. 118 The projected avoided baseline emissions, project emissions and leakage for each monitoring period and vintage year over the lifetime of the project.

Year	Estimated baseline emissions or removals (tCO$_2$e)	Estimated project emissions or removals (tCO$_2$e)	Estimated leakage emissions (tCO$_2$e)	Estimated net GHG emission reductions or removals (tCO$_2$e)
2019	639,020	0	6,135	568,984
2020	1,911,823	0	18,354	1,702,287
2021	1,911,823	0	18,354	1,702,287
2022	1,911,823	0	18,354	1,702,287
2023	1,911,823	0	18,354	1,549,341
2024	1,911,823	0	18,354	1,549,341
2025	1,911,823	0	18,354	1,549,341
2026	1,911,823	0	171,299	1,549,341
2027	1,911,823	0	171,299	1,549,341
2028	1,911,823	0	171,299	1,549,341
2029	1,911,823	0	171,299	1,549,341
2030	1,911,823	0	171,299	1,549,341
2031	1,911,823	0	171,299	1,549,341
2032	1,911,823	0	171,299	1,549,341
2033	1,911,823	0	171,299	1,549,341
2034	1,911,823	0	171,299	1,549,341
2035	1,911,823	0	171,299	1,549,341
2036	1,911,823	0	171,299	1,549,341
2037	1,911,823	0	171,299	1,549,341

2038	1,911,823	0	171,299	1,549,341
2039	1,911,823	0	171,299	1,549,341
2040	1,911,823	0	171,299	1,549,341
2041	1,911,823	0	171,299	1,549,341
2042	1,911,823	0	171,299	1,549,341
2043	1,911,823	0	171,299	1,549,341
2044	1,911,823	0	171,299	1,549,341
2045	1,911,823	0	171,299	1,549,341
2046	1,911,823	0	171,299	1,549,341
2047	1,911,823	0	171,299	1,549,341
2048	1,911,823	0	171,299	1,549,341
2049	1,272,803	0	114,043	1,031,479
Total	57,354,690	0	4,170,184	47,449,037

PDR.119 A narrative description of sources used to estimate the leakage rate and demonstration that the estimated rate is conservative.

Activity shifting leakage areas for the Project Accounting Area were delineated as part of the Project development process. All Project activities detailed in the above sections are designed to mitigate potential Project leakage. The Project Proponent contends that there will be little to no leakage associated with the Project, due to their extensive prior experience working with communities and project stakeholders to mitigate leakage. However, in the absence of actual measurements of potential leakage or any precedent in this area for the estimation of ex-ante leakage emissions, a conservative estimate of an 10% annual leakage rate has been applied for the purposes of ex-ante NER estimates. This estimate Is derived based on the extensive REDD+ experience of Wildlife Alliance. We conclude that that an 10% Ex-ante estimate for activity-shifting leakage represents a fair and conservative estimate for the SRP.

The market leakage rate was determined using the process described in Section 3.2.3.2. This was done in accordance with the methodology VM0009 and VCS guidance using the VCS tool VMD0037 Global Commodity Leakage Module: Production Approach (LM-P). This tool uses the planted area of the primary agricultural crops in the jurisdiction in which the Project Area is located and potential volume of timber that would have been cut to estimate potential emissions from the market leakage of those crops and timber. Public data sources were used to determine the primary crops in the 3 provinces in which the PAA is located (Battambang, Pursat and Koh Kong), their yield, and the total area in which these crops are planted within the provinces, and nationally. Public data sources were also used to determine the total timber production in Cambodia and forest area, while the volume of timber in the PA was determined from

the Project's forest inventory. Data on the primary crops grown in the provinces, the total area planted of these crops in the provinces and nationally, and crop yields was obtained from The Census of Agriculture in Cambodia 2013 (NIS, 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).

The VCS tool calculates a leakage deduction as a percent for a Project based on the procedures and inputs cited above. For this tool public sources of data or values measured in the Project Area were utilized for all inputs, providing a high degree of accuracy in this analysis. Where an input was unknown, conservative estimates were always used. The conservative assumptions that were made are that 100% of the Project Area would be converted to agriculture and 100% of the trees in the Project would be harvested for timber in the baseline scenario. Additionally, to calculate the volume of standing timber in the Project Area, due to limitations in the data available, it was assumed that 100% of the estimated height of the tree was harvestable timber and that the bole did not contain any taper.

The market leakage deduction calculated by this tool is 1.06%. We believe that this is an accurate estimate of market leakage calculated by an approved VCS tool using Cambodia and Project specific parameters, and therefore meets the principles of conservatism.

3.3 Monitoring

3.3.1 Data and Parameters Available at Validation.

PDR.121 The value for each variable in the Methodology VM0009 Appendix G

Data Unit / Parameter:	FREL
Data unit:	t CO2e / yr
Description:	Cambodia National Forest Reference Emission Level (FREL)
Source of data:	Reference area and historic reference period
Value applied:	60,257,501
Justification of choice of data or description of measurement methods and procedures applied:	Data source is the Royal Government of Cambodia Ministry of Environment Second Forest Reference Level for Cambodia under the UNFCCC Framework Modified Submission to the UNFCCC technical committee (Ministry of Environment, 03 February 2022)
Purpose of Data:	Determination of baseline scenario
Any comment:	Based on Cambodian national forest reference emission level (FREL) data.

Data Unit / Parameter:	RL

Data unit:	t CO2e / yr
Description:	Project reference level allocation
Source of data:	Reference area and historic reference period
Value applied:	1,911,823
Justification of choice of data or description of measurement methods and procedures applied:	Data source is the Royal Government of Cambodia Ministry of Environment Second Forest Reference Level for Cambodia under the UNFCCC Framework Modified Submission to the UNFCCC technical committee (Ministry of Environment, 03 February 2022)
Purpose of Data:	Determination of baseline scenario
Any comment:	Based on Cambodian national forest reference emission level (FREL) data.

Data Unit / Parameter:	α
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:	β
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:	γ
Data unit:	days
Description:	Time shift from beginning of historic reference period to project start date
Source of data:	Historic reference period
Value applied:	N/A
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:	θ
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:	λ_{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

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	As the BEM is not used for the determination of the baseline scenario this parameter cannot be calculated.

measurement methods and procedures applied:	
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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023
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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023

Purpose of Data:	Calculation of baseline emissions
Any comment:	

Data Unit / Parameter:	$\mathcal{I}$
Data unit:	set
Description:	The set of all observations of conversion. When superscripted with a monitoring period, the conversion observations are taken for leakage analysis.
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:	$\mathcal{M}$
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:	$\mathcal{T}$
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 measurement methods and procedures applied:	N/A
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:	282,718
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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023
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:	6,536
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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023
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:	275,593
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was measured in accordance with the "Estimation of emissions from activity shifting for avoiding unplanned deforestation (LKUD-AS)" version 1 module prepared by Climate Focus and published by Verra. All measurements were made during 2023.
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:	$c_{L\,p}$
Data unit:	tCO$_2$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:	N/A
Purpose of Data:	Calculation of baseline emissions
Any comment:	Parameter not used

Data Unit / Parameter:	$f_{LS\,i}$
Data unit:	kg CH_4 head^{-1} yr^{-1}
Description:	Emission factor for the defined livestock population, i
Source of data:	IPCC default values
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 emissions
Any comment:	Parameter not used

Data Unit / Parameter:	m
Data unit:	tCO$_2$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:	N/A
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:	Parameter not used as BEM was not used.
Any comment:	Parameter not used

Data Unit / Parameter:	o_i
Data unit:	unitless
Description:	State observation for the ith 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:	N/A
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:	1.06%
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 and the SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023
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:	N/A
Purpose of Data:	Determination of baseline scenario
Any comment:	Parameter not used

Data Unit / Parameter:	$r_{CF\,b}$
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:	40.86%
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 SRP's standard operating procedures. All measurements were made during 2023
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 as BEM 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	N/A

measurement methods and procedures applied:	
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:	1,460
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 and the SRP's standard operating procedures. All measurements were made during 2023
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 ith 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:	Parameter not used as BEM not used

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 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_i

Data unit:	geographic coordinates
Description:	Latitude of the ith 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 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:	y_i
Data unit:	geographic coordinates
Description:	Longitude of the ith 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:	2.441

Justification of choice of data or description of measurement methods and procedures applied:	This parameter was estimated using literature from the Royal Government of Cambodia. The literature resource used was published in 2019 . 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:	Literature
Value applied:	4.4119
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was estimated using literature from the Royal Government of Cambodia. The literature resource used was published in 2019 . 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 Aromatic Paddy Rice
Source of data:	Literature
Value applied:	3.912
Justification of choice of data or description of measurement methods and procedures applied:	This parameter was estimated using literature from the Royal Government of Cambodia. The literature resource used was published in 2019 . 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^3 / 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. All measurements were made during 2023. 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:	*H*
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 measurement methods and procedures applied:	The project's historical reference period is 2011-2018. The commodity yield data sources were limited to that of 2012 and 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. All measurements were made during 2023. 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 2019, 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. All measurements were made during 2023. 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 2019, 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. All measurements were made during 2023. 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 2019, 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. All measurements were made during 2023. 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. All measurements were made during 2023. 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:	*IS*
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:	*NL*

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:	*NLD*
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:	

Data Unit / Parameter:	d_d
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, 2021)
Value applied:	3,052,442
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. All measurements were made during 2023. 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_d
Data unit:	ha
Description:	Global deforestation 2010-2018
Source of data:	FAOSTAT, Food and Agriculture Organization
Value applied:	95,844,613.4
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. All measurements were made from the period 2010 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, 2021)

Value applied:	131,470,911.27
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. All measurements were made during 2023. 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:	29,039,400,888
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. All measurements were made from the period 2010 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 from VMD0037 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:	0
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 from VMD0037 used

3.3.2 Data and Parameters Monitored

Data Unit / Parameter:	$\mathcal{W}^{[m]}$
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:	$A_{P\,1}^{[m=0]}$
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. All measurements were made during 2023. 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:	265,525
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:	$A_{P\,2}^{[m=0]}$
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. All measurements were made during 2023. 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:	17,193
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 b
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 15
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:	$c_B^{[m]}$
Data unit:	tCO_2e/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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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 15
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 Samkus" 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:	tCO_2e
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:	N/A

Frequency of monitoring/recording:	Every monitoring period
Value applied:	
Monitoring equipment:	Equipment list in Annex 15
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.32]
Any comment:	Parameter not included as decay models are not used to align with the FREL carbon accounting methods.

Data Unit / Parameter:	$C_{B\,DW}^{[m]}$
Data unit:	tCO_2e
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 15
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [F.36]
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 15
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Subtraction
Any comment:	Carbon pool not included

Data Unit / Parameter:	$C_{B\,WP}^{[m]}$
Data unit:	tCO₂e
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 15
QA/QC procedures to be applied:	Review of monitoring records
Purpose of data:	Calculation of baseline emissions
Calculation method:	Equation [C.1]
Any comment:	Carbon pool not included

Data Unit / Parameter:	$C_{B\,AGMT}^{[m]}$
Data unit:	tCO_2e/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 15
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$_2$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 15
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$_2$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 15
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_2e
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 15
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:	tCO₂e / 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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording:	Baseline revision
Value applied:	See Annex 11 – Carbon Inventory – Proxy Area
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	tCO₂e / 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	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 SRP's standard operating procedures "Standard Operating

and procedures to be applied:	Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	455.60
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	tCO_2e/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 15

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:	tCO$_2$e / 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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	455.60
Monitoring equipment:	Equipment list in Annex 15
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" 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:	tCO$_2$e / 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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	455.60
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	tCO$_2$e / 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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	455.60
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	$c_{P\,1\,BM}^{[m=0]}$
Data unit:	tCO_2e / 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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	461.65
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	$C_{P\,2\,BM}^{[m=0]}$
Data unit:	tCO$_2$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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	362.15
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	$C_{P\ AGMT}^{[m=0]}$
Data unit:	tCO_2e / 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 15
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:	$C_{P\ BM}^{[m=0]}$
Data unit:	tCO_2e
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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	128,806,566.06
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	$c_{P\,b}^{[m]}$
Data unit:	tCO_2e / 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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	455.60
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	$c_{P\,SOC}^{[m=0]}$
Data unit:	tCO_2e/ha
Description:	Project soil carbon stocks prior to first verification event in the Forest 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 15
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:	tCO_2e
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 15
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:	tCO_2e
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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos –

	Proxy Area". All measurements were made during 2023. 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:	6,313,294
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	tCO_2e
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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	6,313,294
Monitoring equipment:	Equipment list in Annex 15

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 Samkus" 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:	tCO$_2$e
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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	5,675,845
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	tCO$_2$e
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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	6,374,489
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	$E_B^{[m-1]}$
Data unit:	tCO$_2$e

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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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 15
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 Samkus" 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:	tCO_2e
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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	6,374,489
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	$E^{[i]}_{B \, \Delta \, BGB}$
Data unit:	tCO_2e
Description:	Change in baseline emissions from below-ground biomass during monitoring period i
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 15
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:	tCO$_2$e
Description:	Baseline emissions from dead wood in monitoring period i
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 15
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	VCS Methodology VM0009 Section 8.1.2.1, 8.1.2.2, 8.1.2.3 and Appendix B.2.6

and procedures to be applied:	
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:	$E_{B\,\Delta\,SOC}^{[i]}$
Data unit:	tCO_2e
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:	tCO$_2$e
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:	N/A
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 15
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 carbon pool is not included

Data Unit / Parameter:	$E_{B\ BGB}^{[m]}$
Data unit:	tCO$_2$e
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 15
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 BGB decay models are not used

Data Unit / Parameter:	$E_{B\ BGB}^{[m-1]}$
Data unit:	tCO_2e
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 15
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 BGB decay models are not used

Data Unit / Parameter:	$E_{B\ BM}^{[m]}$
Data unit:	tCO$_2$e
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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023.
Frequency of monitoring/recording:	6,374,489
Value applied:	N/A
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	$E_{B\ DW}^{[m]}$
Data unit:	tCO$_2$e
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$_2$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$_2$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:	tCO$_2$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	VCS Methodology VM0009 Section 8.1.2.1, 8.1.2.2, 8.1.2.3

and procedures to be applied:	
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:	tCO_2e
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 SRP's standard operating procedures. All measurements were made during 2023. 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:	637,449
Monitoring equipment:	Equipment list in Annex 15
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 Samkus" 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:	tCO$_2$e
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 VCS module Estimation of Emissions From Activity Shifting for Avoiding Unplanned Deforestation (LK- UD-AS) or the VCS tool Global Commodity Leakage Module: Production Approach VMD0037. All measurements were made during 2023. 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:	61,195
Monitoring equipment:	Equipment list in Annex 15
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of the VCS module Estimation of Emissions From Activity Shifting for Avoiding Unplanned Deforestation (LK- UD-AS).
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 VCS module Estimation of Emissions From Activity Shifting for Avoiding Unplanned Deforestation (LK- UD-AS) or the VCS tool Global Commodity Leakage Module: Production Approach VMD0037. All measurements were made during 2023. 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 15
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of the VCS module Estimation of Emissions From Activity Shifting for Avoiding Unplanned Deforestation (LK- UD-AS).
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 VCS module Estimation of Emissions From Activity Shifting for Avoiding Unplanned Deforestation (LK- UD-AS) or the VCS tool Global Commodity

	Leakage Module: Production Approach VMD0037. All measurements were made during 2023. 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:	61,195
Monitoring equipment:	Equipment list in Annex 15
QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of the VCS module Estimation of Emissions From Activity Shifting for Avoiding Unplanned Deforestation (LK- UD-AS).
Purpose of data:	Calculation of leakage
Calculation method:	Equation [F.44]
Any comment:	

Data Unit / Parameter:	$E_{L\,AS\,F}^{[m]}$
Data unit:	tCO_2e
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, the VCS module Estimation of Emissions From Activity Shifting for Avoiding Unplanned Deforestation (LK- UD-AS). All measurements were made during 2023. 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 15

QA/QC procedures to be applied:	QAQC procedures are in line with the requirements of the VCS module Estimation of Emissions From Activity Shifting for Avoiding Unplanned Deforestation (LK- UD-AS).
Purpose of data:	Calculation of leakage
Calculation method:	Equation [F.46]
Any comment:	

Data Unit / Parameter:	$E_{LME}^{[m]}$
Data unit:	tCO_2e
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 SRP's standard operating procedure "Standard Operating Procedure Samkos – Densiometer Forest Leakage" or the VCS tool Global Commodity Leakage Module: Production Approach VMD0037. All measurements were made during 2023. 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:	61,195
Monitoring equipment:	Equipment list in Annex 15
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 Samkos" 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:	tCO_2e
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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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 15
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 Samkus" 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:	tCO_2e

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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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 15
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 Samkus" 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:	$E^{[m]}_{P\,\Delta\,LS}$
Data unit:	tCO$_2$e
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 15
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

Data Unit / Parameter:	$E_{P\,\Delta\,SF}^{[m]}$
Data unit:	tCO_2e
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 15
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 is used in project area

Data Unit / Parameter:	$E_U^{[m]}$
Data unit:	tCO_2e
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 SRP's standard operating procedures. All measurements were made during 2023. 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 15
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 Samkus" 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:	$n_{LS\,i}$
Data unit:	count
Description:	The number of head of livestock species/ category i 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

Data Unit / Parameter:	$$p_{L\,DEG}^{[m]}$$
Data unit:	proportion (unitless)
Description:	Portion of leakage due to degradation in forest at the end of the current monitoring period
Source of data:	Monitoring in the leakage area
Description of measurement methods and procedures to be applied:	N/A
Frequency of monitoring/recording:	N/A
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	N/A

Purpose of data:	Calculation of leakage
Calculation method:	Summation across leakage plots
Any comment:	Parameter not used

Data Unit / Parameter:	$p_{L\,DEG}^{[m=0]}$
Data unit:	tCO$_2$e
Description:	proportion (unitless)
Source of data:	N/A
Description of measurement methods and procedures to be applied:	N/A
Frequency of monitoring/recording:	N/A
Value applied:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	N/A
Purpose of data:	Calculation of leakage
Calculation method:	Summation across leakage plots
Any comment:	Parameter not used

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 SRP's standard operating procedures. All measurements were made during 2023. 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

	Samkus" 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 SRP's standard operating procedures. All measurements were made during 2023. 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:	1218
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 Samkus" 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 SRP's standard operating procedures. All measurements were made during 2023. 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:	365
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 Samkus" 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_2e / 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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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 Samkus" 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_2e
Description:	Total uncertainty in FREL allocation for the Project Accounting Area
Source of data:	Literature
Description of measurement methods and procedures to be applied:	Data source is the Royal Government of Cambodia Ministry of Environment Second Forest Reference Level for Cambodia under the UNFCCC Framework Modified Submission to the UNFCCC technical committee (Ministry of Environment, 03 February 2022)
Frequency of monitoring/recording:	Every monitoring period
Value applied:	211,638.81
Monitoring equipment:	N/A
QA/QC procedures to be applied:	Review of Literature
Purpose of data:	Calculation of baseline emissions
Calculation method:	Taken from literature

Any comment:	Parameter calculated by the national FREL

Data Unit / Parameter:	$U_P^{[m]}$
Data unit:	tCO$_2$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 SRP's standard operating procedures "Standard Operating Procedure Samkos - Forest Inventory" and "Standard Operating Procedure Samkos – Proxy Area". All measurements were made during 2023. 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:	43.28
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 Samkus" 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:	$wc_{Pi}^{[m=o]}$
Data unit:	tCO$_2$e

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. All measurements were made during 2023. 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:	N/A
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:	LM

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

3.3.3   Monitoring Plan

A plan has been developed to monitor the SRP's impact on its climate related objectives, namely the reduction in the emissions of tCO2e 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 SRP. These activities, and their frequency are shown in **Error! Reference source not found.**. Please refer to Section REF _Ref98316738 \w \h * MERGEFORMAT **Error! Reference source not found.** to view the organizational structure, responsibilities and competencies of the personnel that carried out the monitoring activities.

Table 21. Primary monitoring activities

Activity	Frequency	Method

Forest Patrols and Perimeter Observation	Weekly	Patrol teams inspect perimeter of project area via ground-based assessments
Plot Measurements	Annually	Sampling teams visit a portion of forest plots in the project area.
Identification of significant disturbance	Annually or after major disturbance event	Periodic inspection of aerial imagery or videography, satellite imagery or other remote sensing product with ground inspection when necessary

Descriptions of these monitoring activities are described in Annex 14 – 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.

Organizational Structure

Wildlife Alliance has dedicated plot sampling teams. The teams are under the supervision of Romica Grosu, the GIS/Monitoring Manager from Wildlife Alliance. Each sampling team is directed by a team leader, who is trained in GPS operation and forest sampling techniques. Th team leaders include Sour Neang and Aung Srang. The team leader must additionally demonstrate proficiency in species identification and biometric estimation techniques (calculating DBH, height, measuring angle from north, etc.). These team leads have typically grown into their position with experience and proven acumen in the field, and the positions are coveted within the Wildlife Alliance hierarchy. The team leaders names are attached to each soil and biomass plot data sheet. All discrepancies can be easily traced back to date and time of collection, as well as team members who collected the data. To minimize any conflict between team members, or job burn-out, plot team members continuously change positions, and the team members switch teams often.

Data Collection, Storage and Aggregation

Data collected in the field is systematically translated into the carbon. The carbon model contains dropdown lists and pre-filled formulas to ensure accuracy of entry and minimize human translation error. Data for this monitoring period were entered by the staff archivist. Data entry is crosschecked internally. Data goes through a final check where any outlying or otherwise inconsistent or unusual data is identified and rectified.

Field Training

The field protocols (SOPs) for biomass and soils were produced using the experiences and expertise of field techniques by the initial plot sampling team. Whenever necessary, the biomass and soil sampling SOPs are revised to encompass new techniques, methods or metrics. Sampling teams have been trained

using this procedure and undergo several checks to ensure consistency in method. Before each monitoring event, plot teams undergo field training to refresh their knowledge and incorporate any additions to the SOP.

Internal Auditing

Internal checks are routinely performed on biomass, soil and leakage plots. Project Management embark on "check cruises" to evaluate the employees' work and management often audits individual measurements on an as-needed basis. The Project has instituted an official Quality Assurance and Quality Control (QA / QC) system for biomass plots, which has been reviewed by the validators (see QA / QC Standard Operating Procedure). As mentioned above, after the data is translated into electronic format, various internal checks are performed to eliminate errors. Wildlife Alliance management continually reviews the work done by other members of management to ensure there are no outlying data or unexplained inconsistencies. The Project's policy is that all work products shall be internally reviewed by at least a second person before publication.

The following is a summary of the plans to monitor Climate, Community and Biodiversity (CCB) impacts on the environment as a result of the carbon Project's direct influence. For details, please refer to the CCB Project Monitoring Plan (PMP), which was provided to the CCB validation auditors. Please also refer to Sections CL3, CM3 and B3 for Climate, Community and Biodiversity monitoring plans, respectively, in the Project's CCB PDD.

Climate Monitoring

As this Project seeks full CCB/VCS accreditation, all climate monitoring is assumed to fall under the VCS monitoring plan, which is fully described in the Project Monitoring Plan sections above. Additional specific monitoring information can be found in the Standard Operating Procedures for Forest Inventory.

The following Carbon Pools are monitored for SRP, as specified under the VCS methodology VM0009 V3.0.

Table 22. Selected carbon pools in the PAA (REDD+ baseline type)

Pool		Required	Included in Project	Justification
AGMT	Above-ground merchantable tree	Yes, if baseline scenario or project activity(ies) include the harvest of long-lived wood products. Otherwise, accounting for this carbon pool is not required	No	No commercial tree harvesting or production of long-lived wood products included in baseline
AGOT	Above-ground other (non-merchantable) tree	Yes	Yes	Major pool considered
AGNT	Above-ground non-tree	Yes, if the baseline scenario includes perennial tree crops. Otherwise, accounting for this carbon pool is optional.	No	Major pool considered

BGMT	Below-ground merchantable tree	Optional	No	No commercial tree harvesting or production of long-lived wood products included in baseline
BGOT	Below-ground other (non-merchantable) tree	Optional	Yes	Major pool considered
BGNT	Below-ground non-tree	Optional	No	Major pool considered
LTR	Litter	No	No	Conservatively excluded
DW	Dead wood	Yes, if AGMT is selected	No	Conservatively excluded
SD	Standing dead wood	Optional	No	Conservatively excluded
LD	Lying dead wood	Optional	No	Conservatively excluded
SOC	Soil organic carbon	Optional	No	Conservatively excluded
WP	Long-lived wood products	Yes, if AGMT is selected	No	Conservatively excluded

Several optional carbon pools have been conservatively excluded from the Project's baseline, as is shown in Table 22. *Selected carbon pools in the PAA (REDD+ baseline type)*. The exclusion of these optional carbon pools is conservative in all cases, as their exclusion from the project will result in fewer emission reductions. Section 8.4.7 of the methodology VM0009 states that ex-ante estimates are required to demonstrate that the exclusion of a carbon pool is conservative only if a carbon pool is expected to increase in the baseline scenario. The carbon pools which have been excluded, including AGMT, BGMT, SD, LD, and SOC will all decrease under the baseline scenario, which is detailed in Section **Error! R eference source not found.**. The Project's baseline scenario is the complete conversion of the forest to non-forest, with most if not all above-ground living and dead carbon pools being removed, and additionally the below ground and soil carbon pools being reduced through the resulting agricultural activities. AGMT, BGMT, SD, LD and SOC carbon pools were excluded additionally to ensure that the SCRP's included carbon pools are consistent with those used in the RGC's FRL program.

3.3.4   Dissemination of Monitoring Plan and Results (CL4.2)

The Project partner WA will have the climate monitoring plan available for public review at the Project Office. The full results of the initial climate monitoring are included in this project document, which is being made publicly available in the Project Zone. Additionally, a project document summary has been

written and provided to communities throughout the Project Zone in English and Khmer. This project document and the project document summary have additionally been posted to Wildlife Alliance's Facebook page and on the CCB website (http://www.vcsprojectdatabase.org) for public review and comment.

3.4 Optional Criterion: Climate Change Adaptation Benefits

3.4.1 Regional Climate Change Scenarios (GL1.1)

Cambodia has been identified as one of the most vulnerable countries to climate-change change (Yusuf and Francisco, 2009). The Royal Government of Cambodia National Strategic Development Plan Update 2009-2013 (NSDP) listed the current climate change projections and the anticipated implications of these changes (NCCC, 2013). Temperature is expected to increase, especially at lower altitudes, with the mean monthly temperature expected to increase between 0.013° C and 0.036° C per year by 2099. It is expected that mean annual rainfall will generally increase for Cambodia, with an increase seen in seasonal rainfall between June and August in the northwest of the country, but a decreasing trend in rainfall for the northeast. Cambodia is additionally a coastal country, so the projected increases in sea level will result in the permanent inundation of approximately 25,000 ha of coastal lands within 90 years. In response to questions during community meetings held by project staff it was noted that the dry season period has increased from 1 to 2 months in the last 5 years, causing more frequent droughts and/or dry spells and leading to a decrease in annual crop yields and profitability. Respondents stated that many resource-rich farmers have switched their annual crops to fruit orchards in the last 5 years, while the majority of resource-poor farmers continue to cultivate corn and cassava-thereby needing to clear more state-owed forest lands to maintain declining crop yields. These environmental changes, coupled with the planting of nutrient depleting crops like corn and cassava, have become a driver of deforestation.

The implications of these climate change scenarios show significant effects on communities and therefore land use. One major impact would be a drastic decline in agricultural productivity. Each 1 C rise in the minimum (night) temperature in the dry season could result in a 10% reduction in rice grain yield. Additionally, as only 7-8% of the total agricultural production area is irrigated, Cambodia will struggle to meet the increasing food needs of the growing population considering the expected increases in droughts. Despite this expected increase in droughts, there is additionally an expected increase in flooding from the projected increases in seasonal rainfall. These floods will result in economic losses. One of the primary reasons causing Cambodia's vulnerability to climate change is it's low ability to adapt Yusuf and Francisco, 2009). This may be the result of its predominantly rural population that is highly dependent on small-scale agriculture for livelihoods.

In the absence of the SRP, more people will be driven to increase the size off their agricultural lands or move to new agricultural lands to compensate for lower yields and decreased soil fertility. Additionally, people may need new sources of income, increasing the unsustainable extraction of resources from the Project Area. These would all increase deforestation in the Project Area.

3.4.2 Climate Change Impacts (GL1.2)

Due to uncertainties inherent in any climate change model, it is difficult to predict precise impacts of climate change on the landscapes and the communities. Nevertheless, given the above scenario, we assume a number of risks to the climate, community and biodiversity benefits, which are outlined below. Several mitigation methods are suggested.

Increased temperatures and risk of drought

Increased temperatures and drought caused by climate change will impact on food security and water availability for both communities and wildlife. The project will increase the resilience of the community to such issues by providing water wells and introducing improved agricultural methods, technologies and crop varieties. Such activities will assist communities in their ability to adapt to such climate risks by maintaining agricultural yields and therefore their income despite observed temperature increases or increases in droughts. As the SRP is an Avoided Deforestation project, with no climate benefits being claimed for net carbon stock increase from year to year in the with-Project scenario, we do not anticipate any negative impacts on the emissions benefits of this Project. Afforestation and reforestation projects may face the risk of lower carbon stock increases if rainfall levels were further reduced as climate change continues. Therefore, the communities would not face risks to the success of the project, and therefore the revenue support to project activities, due to temperature increase or increases in drought.

Low capacity of local population to adapt to more extreme weather patterns

Climate change studies generally all agree that the people most likely to face adverse affects from climate change will typically be the poorest and most vulnerable communities who may have little information about impending hazards and are often the least capable of rebuilding their lives and livelihoods after having suffered a setback. The many communities in the SRP Project Zone meet the definitions of poor and vulnerable, and therefore it is a great risk to community benefits if they fail to adapt to climate change induced stress, such as more frequent droughts, less available food sources and grazing for livestock, water scarcity, and increased incidence of disease. It is a primary project priority to build capacity, diversify income generating activities and create a more sustainable income flow. This will allow local communities to build resilience to more extreme weather patterns.

A high degree of uncertainty is associated with predicting the effects of climate change on biodiversity. However, it is thought that climate change could have an impact on biodiversity and related species distributions. On a continent-wide scale, biodiversity of indigenous plants and animals in Asia, and more specifically Southeast Asia, is likely to be affected by all the major environmental changes from climate change. These include changes in ambient air temperature, rainfall and air vapor pressure deficit (which combine to cause altered water balance), rainfall variability and atmospheric CO2e. The IUCN rates climate change as one of the top five threats to biodiversity (IUCN, retrieved on 15 February 2014). These impacts could include changes in timing of life cycles, such as blooming and migration; changes in species distribution and abundance; changes in morphology and reproduction of organisms; and changes in ecosystem processes such as species interactions (IPCC, 2007). The primary manner in which climate change impacts to the project's biodiversity benefits can be mitigated is through active protection measures, ensuring landscape connectivity, healthy populations, diverse and increasing access to water sources.

3.4.3 Measures Needed and Designed for Adaptation (GL1.3)

Table 23: Project climate change adaptation benefits

Climate change risks	Potential effects	Potential mitigative/adaptive strategies
More intense and longer droughts	Low land productivity or complete crop failure, less pasture for livestock and wildlife, more severe fires	Improved agricultural techniques will promote cultivation of drought resistant crops, improve storage facilities and management of crops and diversification of farms. Water wells will increase access to water.

Increased flood risk	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.
Low capacity of local populations to adapt to frequent natural disasters	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
Decreased biodiversity, loss of forest cover to drought, temperature change	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

4   COMMUNITY

4.1   Without-Project Community Scenario

4.1.1   Descriptions of Communities at Project Start (CM1.1)

There are 26 villages and 11 sub-villages included in the SRP Project Zone with a total population estimated to be 67,106 villagers (16,016 families). There are an estimated 3,041 ID Poor families in the Project Zone that will benefit directly from the Project activities. Almost 100% of Project Zone villagers depend on agriculture activities to support their families, especially in the wet season. From the results of the questionnaire surveys, villagers inside the Project Zone said that the current size of their farmland was insufficient for supporting their growing family sizes and needed to clear more land to meet basic needs. Based on the RGC's General Population Census of 2019, the average family size in Battambang province is 4.5, 4.0 in Pursat and 4.6 in Koh Kong. In the dry season, while some farmers from PSWS and surrounding areas cross the border into Thailand for work, most villagers stay and harvest timber and/or other forest products from inside the protected areas to sell to external parties to support their families. Income streams for a majority of upland farmers come from fruit trees, corn, soya and mung beans, sesame and cassava. Fruit trees offer a main source of income for many upland farmers. In the last 5 to 10 years, villages expanded, and sub-villages were established in all protected areas by the flow of intra and inter-provincial migration. Still today, migrants are pulled by the protected areas' natural resources and the markets they can supply both domestically and internationally. While approximately half of the total migrants did permanently settle in the villages, the others only came to harvest and sell the evergreen and mangrove forests. The villagers perceived migrants as agents of deforestation in both sanctuaries.

The underlying causes of deforestation in both the Northern and Southern Zones, and the major challenges for the sustainable development of the rural communities located inside the Project Zone,

include rural poverty, which directly affects the lack of key quality social services in health and education, land tenure rights, and insufficient park protection resources.

Over the past decade, Cambodia has managed to successfully grow and sustain its economy with incredible strength and drastically reduce poverty. Cambodian and international records all show that incidence of poverty under the national poverty line fell from 47.8 per cent in 2007 to 13.5 per cent in 2014. In 2018, using data from the Asian Development Bank (ADB), only 12.9 per cent of Cambodians lived below the national poverty line. But most Cambodians who are not in extreme poverty are, by international standards, either moderately poor or economically vulnerable, with two-thirds of the population, mostly in rural communities, living under USD 5.50 a day (World Bank 2019). Based on figures from UNICEF, over 75% of Cambodians continue to live in rural areas, one of the highest amongst ASEAN (Association of South East Asian Nations) member states.

With the COVID-19 outbreak and the closing of the nation's borders and economic engine, Cambodians who are living in the near-poor category, approximately 4.5 million people, are now vulnerable to falling back into poverty. Although malnutrition prevalence has declined over the past two decades, poverty will certainly push more families to ration food supplies (low dietary intake) and may even incentivize others to hunt wildlife in protected areas. It must be noted that in 2018, about 33 per cent of Cambodian children under the age of five were stunted and 10% wasted (not weighing enough for their height), some of the highest rates in the region. In addition, Cambodia still has one of the highest maternal mortality rates in the region (160 per 100,000 live births in 2018), which points to problems in quality and access to healthcare.

To assist the Government in addressing the needs of rural Cambodians, the NGO community has been very active in delivering poverty alleviation activities. NGOs, however, have never been given guidelines on how to operate inside protected areas, like Phnom Samkus Wildlife Sanctuary. From the focus group discussions with NGOs, employees working for at least seven international NGOs have spent decades executing health, agricultural and education interventions inside the Project Zone without understanding the meaning of a protected area. These NGOs could have helped raise awareness and created a conservation movement. Moreover, some NGOs funded small farmers to create or maintain agriculture practices that did not support biodiversity protection or conservation agriculture. To add to the situation, park officials in both sanctuaries had never been invited to review the design of these agriculture projects to reduce the ecological impacts. Constructive dialogue between the local park officials, the NGO and the farmers at a deep technical level could have been very useful in creating alternative and more nature-friendly practices and techniques.

Climate change is another driver of deforestation. Many farmers complain that drought or dry spells and/or salinity continue to affect their crops in the Project Zone. Decreasing agricultural yields will only create food insecurities for vulnerable populations. If forests are available, families will clear them for their survival, which will cause more environmental destruction.

4.1.2   Interactions between Communities and Community Groups (CM1.1)

There were two categories of community groups identified as key stakeholders in the SIA workshop having contrasting relationships with the SRP. On the one hand, there are those directly exploiting forests and other natural resources including poachers, illegal loggers, and NTFP collectors. Also included here are the secondary users to whom the first group sells these items including middlemen. Other groups in this category are those that benefit by taking advantage of the situation, including people receiving bribes to allow these illegal activities to happen, local community members who gain some form of employment e.g., as loggers, exploitative employers paying low wages, and micro-lenders lending at exorbitant interest rates.

On the other hand, there are those who stand to lose due to the activities by groups in the first category. They include the community in general losing access to or suffering diminished quality of many ecosystem goods and services – now or in the future. Additionally, the Government and Local Authorities also lose out on potential tax and other income from resource exploitation in their areas of jurisdiction. Finally, are workers (including immigrants) who are unable to negotiate good terms due to the nature of the jobs while credit seekers suffer the high interest rates. This is likely to affect the youth and women most adversely, as they have been found to have higher unemployment rates than men in this area.

4.1.3   High Conservation Values (CM1.2)

The PSWS fulfils an important ecological role in regulating rainfall and supplying fresh water to all upland villages in the western half of Cambodia. All upland farmers depend on freshwater flow to irrigate their crops. The forests protect the watershed and keep water flowing. Additionally, the Por indigenous people are connected spiritually to the forests of Phnom Samkus and the existence of the forests is central to the cultural identify of the Por.

High Conservation Value	Forests perform the critical ecosystem service of maintaining the watersheds of PSWS and SPKNP.
Qualifying Attribute	Forests perform the critical ecosystem service of maintaining the watershed of Stung Atay river basin.
Focal Area	PSWS

High Conservation Value	Forests of Phnom Samkus ("Samkos Mountain") are areas that are critical for the traditional cultural identity of communities
Qualifying Attribute	**The forests and individual trees of Phnom Samkus are critical for the traditional cultural identity of the Por indigenous people, as their gods are linked to the forest. If the forest disappears, the spirits disappear.**
Focal Area	PSWS

4.1.4   Without-Project Scenario: Community (CM1.3)

During the SIA community workshop, after the working groups identified and prioritized the Focal Issues, they analyzed them further to establish the causal logic leading to the problems and produced a Problem Flow Diagram (also termed Conceptual Model) for each of the Focal Issues: a) logging and land grabbing; b) lack of community participation in forest protection, and c) poverty of local communities (Figures 18-20). A Problem Flow Diagram (PFD) is a situation analysis of the issue that represents stakeholders' understanding of what drives the existence of the focal issue; it identifies economic, political, institutional, social and/or cultural factors that contribute to existence of the issue.
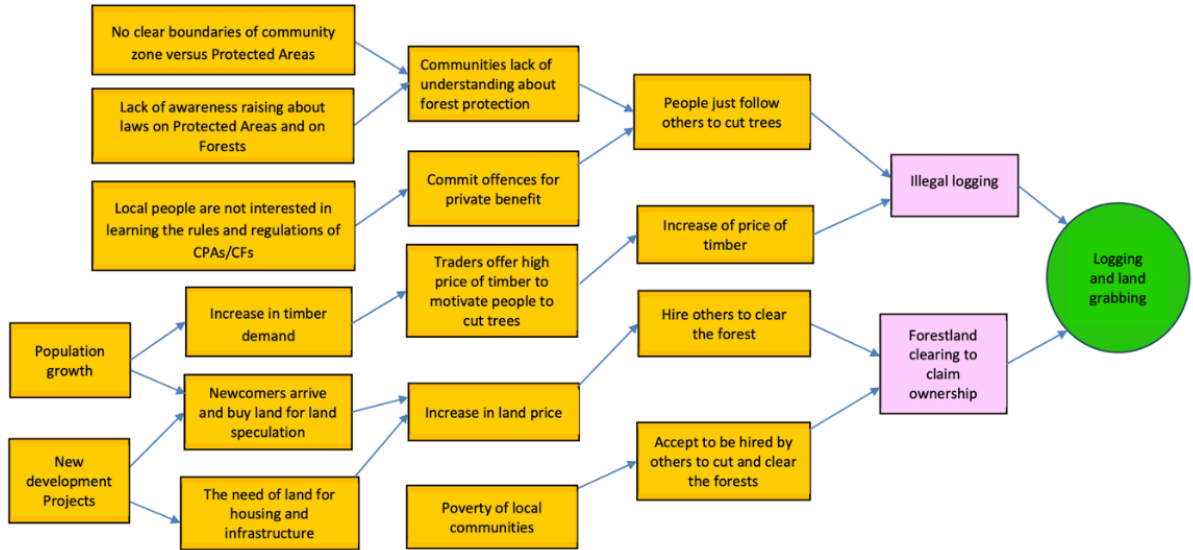
Figure 18. Problem flow diagram for focal issue 1: logging and land grabbing
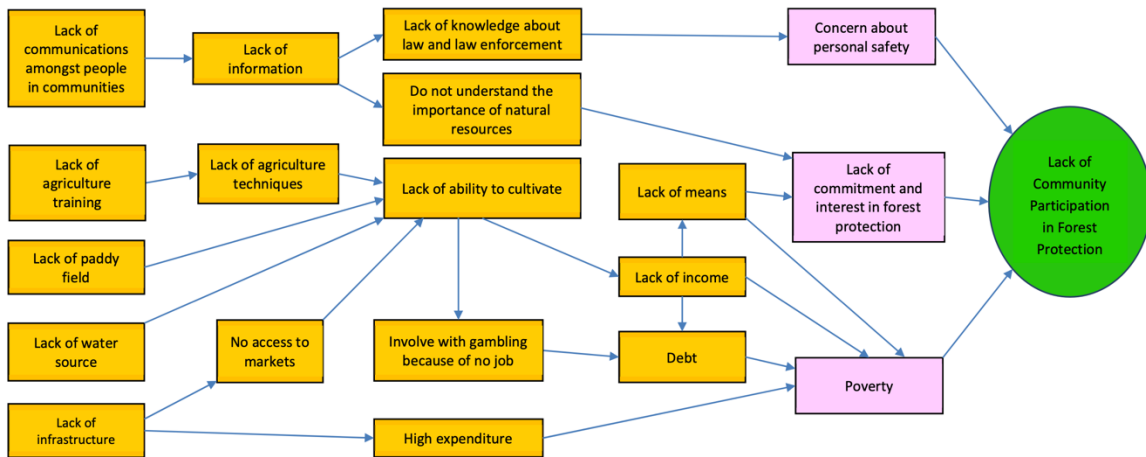
Figure 19. Problem flow diagram for focal issue 2: lack of community participation in forest protection
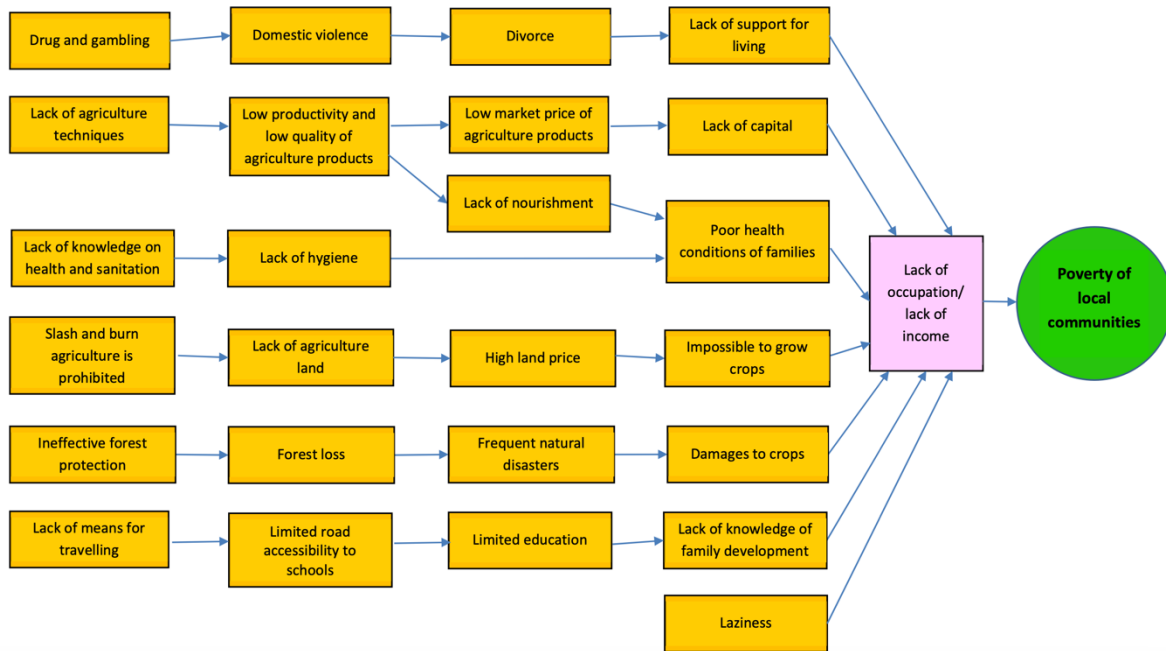
Figure 20. Problem flow diagram for focal issue 3: poverty of local communities

Next, the work groups projected what would happen with the major direct threats (in pink on the PFDs) identified for each Focal Issue in the short-to-medium term (5-10 yrs.) in the absence of the REDD+ project (Table 24).

Table 24. Future without-project projections of the key contributing factors to the Focal Issues identified during the SRP SIA community workshops.

Focal issue 1: Logging and land grabbing

Focal issue aspect	5-10 years	What will drive the change
Illegal logging	Much worse	Population growth leads to more house construction and demand for timber. No clear preventative measures taken by authorities. No clear forest boundaries delineated (conservation zone versus community zone). Increase in timber price and timber demand lead to more logging activities. Poverty causes more people to commit illegal logging.
Forest clearing for land grabbing	Much worse	Lack of land for housing and agriculture causes people to clear forest for crops and housing. Increase in land price motivates people to encroach forestland for sales.

		Economic/social land concession inside protected area for people and companies cause opportunistic people to grab land.

Focal issue 2: Lack of community participation in forest protection

Focal issue aspect	5-10 years	What will drive the change
Lack of commitment to participate in forest protection	Worsen	Lack of conservation information dissemination in the communities. Lack of job training and motivation for communities to participate in conservation activities. Lack of financial support to cover expenses for conducting conservation activities.
Concern about personal safety	Worsen	Lack of support from other projects Lack of training and capacity building Lack of motivation from authorities and other concerned stakeholders
Poor living standard	Worsen	Climate change (drought, floods and storms) cause problems for crop growth. Decrease in agricultural yield due to drought. Climate change causes negative impact on human and wildlife health. Air pollution causes increase in expenses for health care.
Lack of support	Worsen	No support or motivation from authorities and other institutions.

Focal issue 3: Poverty of local communities

Focal issue aspect	5-10 years	What will drive the change
Lack of occupations and incomes	Worsen	Lack of jobs Increase in family size leads to increase in expenses while elderly members will not have financial support for nutritious food, healthy lifestyle and quality healthcare

	Lack of job skills (no money to pay for vocational training or job skills to not meet demand of labor market)
	Lack of capital, lack of income and lack of collateral for loans
	Limited agricultural techniques to combat insect damage
	Decrease in NFTP collection
	Unstable market price for agricultural products
	High interest rate of loans
	Outbreaks of new diseases
	High spending on healthcare services
	Frequent natural disasters
	Increase in drug usage leads to more health problems, robbery and domestic violence
	Increase in alcohol consumption leads to more health problems, joblessness, domestic violence, and community conflict
	High inflation
	Lack of agricultural land

4.2   Net Positive Community Impacts

4.2.1   Expected Community Impacts (CM2.1)

Theory of Change Statements

Based on the extensive experience of the Project partner WA in working on biodiversity conservation and community projects in the SRP landscape, 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 of the three Focal Issues (see details in the Result Chains under Section **Error! Reference source not found.**).

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 4.4) will enable measuring progress towards achieving the desired project activity outcomes and impacts from project activities and strategies.

Focal Issue 1: Logging and land grabbing

IF environmental education is included in the school curriculum and awareness raising about laws is conducted for local people, **IF** agriculture sector is improved through capital and training and linked to market, **IF** social land concessions are provided to local people, jobs are created, and livelihoods of local people improved, and **IF** effective law enforcement is supported by local people with clear delineation of

boundaries and strict legal measures, **THEN** illegal logging and forest clearing for land grabbing will be reduced and eventually halted.

Focal Issue 2: Lack of Participation from Communities in Forest Protection

IF good infrastructure is in place and expenditure is decreased, **IF** good education is in place with innovation and information is circulated widely to communities and freedom of speech and decision-making power are given to the community members, and **IF** there is support from concerned institutions and NGOs to enhance forest management in the community protected areas, **THEN**, local communities will appreciate nature more, collaborate with relevant institutions, and participate in forest protection and conservation.

Focal Issue 3: Poverty of Local Communities

IF villages and communes are safe from gambling, drugs and domestic violence, **IF** good strategy to promote agriculture development is in place and training on agriculture techniques is provided, **IF** clear land use planning and policy (including zonation) are in place allowing communities access to social land concessions, **IF** forest is well protected reducing natural disasters, and **IF** human resource development exists, with improved education and social welfare, access to diverse income-generating activities, **THEN** livelihoods will be improved and poverty reduced.

Community Group	Community in general – present and future
Impact(s)	Enhanced ecosystem goods and services and improved livelihoods through better livelihoods and food security
Type of Benefit/Cost/Risk	Predicted direct benefit
Change in Well-being	Potentially major improvement in livelihoods including education, health and food security

Community Group	Government & Local Authorities
Impact(s)	Better execution of their mandate, revenue collection and improved relations with the citizens
Type of Benefit/Cost/Risk	Predicted direct benefit
Change in Well-being	Potentially moderate gains in revenue but major gains in community relations

Community Group	Poachers and illegal loggers
Impact(s)	Reduced income
Type of Benefit/Cost/Risk	Predicted direct cost

Change in Well-being	Potentially significant loss of livelihood sources

Community Group	Traders and middlemen (including employers & lenders)
Impact(s)	Reduced profits due to increased costs of goods or services
Type of Benefit/Cost/Risk	Predicted indirect cost
Change in Well-being	Potentially minor to moderate reduction in profits

4.2.2   Negative Community Impact Mitigation (CM2.2)

Three main community groups are predicted to suffer potential costs from implementation of project activities. The SRP will mitigate for these negative impacts as follows:

- *Poachers and illegal loggers*: although these are illegal activities for the large part, those genuinely undertaking them for basic livelihood support will be offered or considered for direct employment when job opportunities arise e.g., as eco-guards. Nonetheless, they will also enjoy the other general community benefits like access to community educational grants schemes, improved health access and agricultural training to help move them away from illegal activities.

- *Traders, middlemen and employers*: while this group might see diminished profits in the short term, we believe they will enjoy greater stability in the long-term from conducting legitimate business, reduced run-ins with the law, employees and community, and overall greater social capital and license to operate in the area.

- *In-migrants*: similar to the traders above, this group might suffer some costs in the short term through increased scrutiny and fewer chances for accessing 'free' land and jobs, but will also gain from greater stability by being recognized and accepted as legitimate members in the community once they come in through legal avenues.

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

The Project's causal model is shown in 2.1.11. These results chains demonstrate the how the Project activities will achieve the Project's stated adaptation benefits. Furthermore, most of the activities initiated during the Project lifetime will have lasting positive impacts on a large segment of the communities under the SRP. The potential costs or negative impacts from implementing the proposed Project activities are minimal. 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.

4.2.4   High Conservation Values Protected (CM2.4)

- *HCV on areas meeting the basic needs of local communities*: HCV identified under this category is fisheries regulation services from waterways emanating from the SRP forests. Conservation of these forests – hence services – is the main priority of the SRP

- *HCV on provision of critical ecosystem services*: HCVs under this category include forests critical to water catchment. Again, conservation of these services is the main priority of the SRP, and activities are designed to ensure greater protection. This inherently provides positive effects on these high conservation values, and no negative effects are anticipated because of the project.

The SRP will monitor for negative impacts on HCVs.

4.3   Other Stakeholder Impacts

4.3.1   Impacts on Other Stakeholders (CM3.1)

The activities undertaken during the reporting period lay crucial ground for the long-term protection of the watershed that is important for the fisheries of the Gulf of Thailand as it provides freshwater to the largest contiguous mangrove forest left in the Gulf, Peam Krasop Wildlife Sanctuary, a critical nursery for the region's fisheries.

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

The activities of the SRP do not result in any negative well-being impacts on other stakeholders. Therefore, there is no mitigation needed.

4.3.3   Net Impacts on Other Stakeholders (CM3.3)

The long-term protection of the SRP Project Area and its watershed will have positive impacts on other stakeholders.

4.4   Community Impact Monitoring

4.4.1   Community Monitoring Plan (CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)

The Social Impact Assessment Monitoring Plan monitors for indicators that fall under each of the three focal issues identified in the SIA workshop. The indicators, who will collect them, how often, and where, are shown in Table 25.

Table 25. Community impact monitoring plan. Social impact indicators are coded with SIA and a number. Biodiversity indicators that are shared with the community impact monitoring plan are referred to in this table (coded as BIA and a number), but see the Biodiversity impact monitoring plan for a full explanation.

Key results	SMART Objective	Code	Indicator	Indicator type	Data collection method	Who collects data	When	Where
Focal issue 1: Logging and land grabbing								
Decrease in illegal logging	By 2027, reduce the number of illegal logging incidents by half in the SRP	SIA001	# of land use planning meetings held with participation and support from local authorities	Output	Internal report	Samkos livelihood team	Bi-annually	PZ
		SIA002	# participants in land use planning meetings	Output	Internal report	Samkos livelihood team	Bi-annually	PZ
		SIA003	# Km covered by SRP patrol rangers	Outcome	Internal report	Samkos conservation law enforcement team	Quarterly	PAA
		SIA004	# of chainsaws confiscated from loggers	Outcome	Internal report	Samkos conservation law enforcement team	Quarterly	PAA

		BIA008	# charcoal kilns confiscated by SRP patrol rangers	Outcome	Internal report	Samkos conservation law enforcement team	Quarterly	PAA
Decrease in encroachment and land-grabbing	By 2025, have signboards in the REDD+ Project Zone zoned and demarcated	SIA005	# of demarcation posts installed zoning forest and community areas	Output	Internal report	Samkos conservation and livelihood teams	Annually	PZ
		SIA006	# of forest fires in the SRP extinguished by SRP rangers	Output	Internal report	Samkos conservation law enforcement team	Quarterly	PAA
		SIA007	# of illegal fences and signs removed by SRP rangers	Output	Internal report	Samkos conservation law enforcement team	Quarterly	PAA
		SIA008	# of land encroachment cases stopped	Output		Samkos conservation law enforcement team		
		BIA002	# ha of forest in the SRP cleared for cultivation or settlement	Impact	RS/GIS survey	Samkos conservation law enforcement team	Annually	PAA

		BIA003	# of land use maps created and made available to community	Outcome	Internal report	Samkos conservation and livelihood teams	Annually	PZ
Focal issue 2: Lack of community participation in forest protection								
Greater appreciation and awareness of wildlife benefits	By 2022, 25% more community members demonstrate greater appreciation for wildlife and conservation	SIA009	# of awareness and sensitization meetings	Output	Internal report	Samkos livelihood team	Bi-annually	PZ
		SIA010	# of community members attending awareness and sensitization meetings	Output	Internal report	Samkos livelihood team	Bi-annually	PZ
		SIA011	# households with greater awareness about importance or conservation	Outcome	Household survey	Samkos livelihood team	Annually	PZ
Increase in wildlife populations	By 2027, reduce the number of wildlife poaching	BIA 014-BIA021	See Biodiversity Monitoring Plan.					

including HCVs	incidents by half in the SCRP							
		SIA012	# and type of equipment provided, including ranger outposts	Output	Internal report	Samkos conservation management team	Annually	PAA
		SIA013	# of illegal flyhuts (tarp-based shelters for poaching) in the project area and removed by SRP rangers	Outcome	Internal report	Samkos conservation law enforcement team	Annually	PAA
Focal issue 3: Poverty of local communities								
Reduce food insecurity and malnutrition	By 2028, families in PZ should have food security for 12 months of the year	SIA014	% of families who are food insecure for ≥ 3 months of the year	Output	Household survey	Samkos livelihood team	Quarterly	PZ
		SIA015	# of families who have received chickens	Output	Household survey	Samkos livelihood team	Annually	PZ
		SIA016	# of families who have received frogs	Output	Household survey	Samkos livelihood team	Annually	PZ

		SIA017	# of children under 5 who are malnourished	Outcome	Health center	Samkos livelihood team	Annually	PZ
Reduction in poverty	By 2033, reduce the percentage of ID Poor families in the project zone by half	SIA018	% of families in Project Zone with ID Poor status	Outcome	Local authorities	Samkos livelihood team	Annually	PZ
Higher income levels	By 2027, 10% of community members earning income directly from the SRP and associated activities	SIA019	# community members who have undergone agricultural training	Output	Household survey/ Internal report	Samkos livelihood team	Annually	PZ
		SIA020	# water wells built	Output	Engineering company	Samkos livelihood team	Annually	PZ
		SIA021	# of villages with water wells implemented	Output	Engineering company	Samkos livelihood team	Annually	PZ
		SIA022	# water well management committees	Output	Household survey/ Internal report	Samkos livelihood team	Annually	PZ

		SIA023	% increase in yields and sales in local and external markets	Impact	Household survey/ Internal report	Samkos livelihood team	Annually	PZ

4.4.1.1 Development of Community HCV Monitoring Plan (CM4.2.).

High Conservation Values related to CCB indicators G1.8.4-G1.8.5 are expected to be positively impacted by the increased conservation-focused activities. The major community-related HCV ecosystem services were water provisioning and erosion control, both of which are captured in the Monitoring Plan above.

4.4.2 Monitoring Plan Dissemination (CM4.3)

The SRP will disseminate the monitoring plan and the results summaries of the monitoring within 12 months of validation. These documents will be made publicly available at the field office, on the internet and communicated to the communities and other stakeholders via Telegram group chats and through community leaders.

4.5 Optional Criterion: Exceptional Community Benefits

Not Applicable

5 BIODIVERSITY

5.1 Without-Project Biodiversity Scenario

5.1.1 Existing Conditions (B1.1)

The SRP is part of the larger Cardamom Mountains region, which forms part of the Indo-Burma biodiversity hotspot (Myers et al. 2000) and is a ridge-to-reef conservation landscape comprising 18,000 km^2 of largely contiguous forest cover. The landscape forms a Global 200 Ecoregion (Cardamom Mountains Rain Forests) and includes a secondary Endemic Bird Area (i.e. an area containing at least one restricted-range endemic bird species). The length of the Cardamom Range is approximately 300 kilometers. It is separated from the nearest other rainforest by the vast, dry Khorat Plateau in central Thailand to the north and east and by the Gulf of Thailand in the west.

Location and general description

The mountain range rises from sea level to more than 1500m to intercept and extract the moisture from the monsoon winds. The orientation of their topography along the Gulf of Thailand produces unusually wet conditions of 3000-4000mm annual rainfall on the southwestern slopes of these ranges; only a short dry season occurs. These ranges rise rapidly from the coast, leaving only a narrow coastal plain. They gently grade down into the interior lowlands to the north and northeast. Upper elevation areas above about 900 meters in the Cardamom and Elephant Mountains contain a distinct montane forest community. These forests are structured with dense evergreen tree canopies reaching up to 30 meters in height. The proposed project zone is located in the north western Cardamom Mountain that covers lowland-hills forest and portion of mangrove (wetland) forest in the west, by the gulf of Thailand.

Biodiversity features

The North Western Cardamom Mountains rainforests, as part of Cardamom Mountains, are amongst the most significant landscapes for biodiversity conservation in mainland South East Asia. The landscape supports numerous endemic bird (e,g, Green peafowl [*Pavo muticus]*), amphibian (e.g. *Chiromantis samkosensis*), reptile (e.g. *Crocodilus siamensis*), and plant species (e.g. *Nepenthes holdenii* and *Dalbergia spp.*). While the largest megafauna has either been extirpated or live in extremely very low density (i.e. tiger *Panthera tigris*, rhinoceros *Dicerorhinus / Rhinoceros* spp.) or heavily impacted by historic hunting (i.e. Asian elephant *Elephas maximus*, gaur *Bos gaurus*) populations of smaller

carnivores (e.g. dhole *Cuon alpinus*, mainland clouded leopard *Neofelis nebulosa*, Malayan sun bear *Helarctos malayanus*, greater hog badger *Arctonyx collaris*, large-spotted civet *Viverra megaspila*) are significant (Gray et al. 2017) and the landscape supports the largest global population of the Endangered pileated gibbon (*Hylobates pileatus*). A minimum of 35 IUCN Threatened species of bird (9), mammal (18), and reptile (8) occur within the Project Zone with globally significant populations of at least 11 and regionally (Cambodia, Laos, and Vietnam) significant populations of 18.

The elephant population in the Cardamom and Elephant ranges, though heavily impacted by hunting during the late 20th and early 21st centuries, is one of only two in Cambodia with >40 individuals.

Significant reptiles include the Siamese crocodile *Crocodylus siamensis* which is globally critically endangered and has confirmed breeding populations within the Project Zone. In 2009, FFI helped to identify 35 pure-bred Siamese crocodiles in a local wildlife rescue center and has since developed the first conservation breeding program in the country – a vital source of genetic diversity for the reintroduction of the species into new areas. In 2012, the Cambodian Crocodile Conservation Project launched a program to release pure-bred individuals back into the wild in suitable sites in the Cardamom Mountains, under the National Siamese Crocodile Reintroduction and Reinforcement Action Plan.

SRP comprises of two regional: northern and southern zones, which consists offive dominant vegetation types (four in the northern and one in the southern zone): evergreen forest, dry dipterocarp forest, pine forest and grassland, and mangroves that only occur in the southern zone.

Northern Zone

1. PSWS Battambang covers 30,590 hectares of evergreen forest, dry dipterocarp forest, pine forest, and grasslands, with an elevational range of approximately 200 to 1146 meters.

2. PSWS Pursat covers 161,747 hectares of evergreen forest, dry dipterocarp forest, pine forest, and grasslands, with an elevational range of approximately 200 to 1717 meters.

3. PSWS Koh Kong covers 9,588 hectares of evergreen forest, dry dipterocarp forest, pine forest, and grasslands, with an elevational range of approximately 200 to 997 meters.

4. CBC Battambang covers 9,931 hectares of evergreen forest, dry dipterocarp forest, pine forest, and grasslands, with an elevational range of approximately 290 to 806 meters.

5. CBC Pursat covers 72,804 hectares of evergreen forest, dry dipterocarp forest, pine forest, and grasslands with an elevational range of approximately 57 to 804 meters

6. SCNP Pursat covers 12,211 hectares of evergreen forest, dry dipterocarp forest, pine forest, and grasslands with an elevational range of approximately 200 to 738 meters

Southern Zone

PKWS Koh Kong covers 12,426 hectares of mangrove forest and evergreen forest with an elevation rage of 0 to 257 meters. Whereas mangroves account for approximately 73% of the total area, or 9,103 hectares, evergreen forest accounts for 23%, or 3,323 hectares. Additionally, a total of 4,976 hectares of the area was estimated to be peatlands, with an average depth of 115cm.

Types of threats

Inconsistent and poor law enforcement

Despite some level of formal protection, very few reserves in the region have effective management and workforces; they are essentially "paper parks". Several are now under threat from illegal logging operations and from adjacent concessions that encroach on the unprotected protected areas. The wildlife trade has also resulted in widespread hunting throughout Cambodia, taking a heavy toll on endangered

wildlife populations. The widespread presence of anti-personnel land mines continues to pose severe threat to both wildlife and humans.

Habitat reduction, degradation and fragmentation

Besides loss of forest which leads to habitat loss and fragmentation, for some of the water-dependent species like the crocodile, factors causing loss of habitat include: conversion of wetlands for aquaculture, use of chemical fertilizers and pesticides in rice production, and an increase in the population of cattle in the landscape. Moreover, many river systems, including those in protected areas, have hydroelectric power dams approved or planned (three out of seven dams was built in the project accounting area), which are likely to cause the loss of wetlands plus altered flooding cycles. Moreover, when populations fall to extremely small levels dependent on highly isolated habitats, as is the case for *C. siamensis*, they become too fragmented leading to both reduced reproduction (due to the difficulty of locating mates), and genetic problems from inbreeding.

Exploitation and fragmentation

Illegal poaching for meat and wildlife trade is still an important threat in these forests. For instance, capture of wild crocodiles for skins and to stock commercial crocodile farms remains an ongoing threat, as well as incidental capture/drowning in fishing nets and traps. Snares are perhaps the biggest threat to the Project Areas globally significant mammal diversity with WA supported forest rangers removing 21,589 in 2017. These indiscriminate killers have caused significant declines in many threatened species throughout South East Asia (Gray et al. 2017).

From the Biodiversity Impact Assessment workshop held for the proposed SRP (See 5.1.3), the leading threats identified across the greater SRP landscape were:

- Land encroachment

- Wildlife poaching and illegal wildlife

- Illegal logging

5.1.2   High Conservation Values **(B1.2)**

The entirety of the SRP Project Area is of High Conservation Value. Within the SRP, the protected areas contain a wide range of habitats, including lowland dry dipterocarp forest, lowland dry evergreen forest, gallery forest (along rivers), bamboo forest, lower and upper hill evergreen forest, extensive pine forest, and some marshes and grassland. Studies by Conservation International and Flora and Fauna International (Starling Resources, 2008) estimate PSWS provides habitat for some 341 species, including 41 species of mammal, 173 bird species, 41 reptile species, 44 amphibians, and 42 fish species. More than 10% of these species are listed by the IUCN as threatened or endangered (IUCN Red List, 2021).

A total of 32 High Conservation Value Species, all present within the Project Area were identified by workshop participants. These included 15 globally threatened (and one Near Threatened) species of mammal, two bird species/groups, one amphibian, three reptile species (two of which are globally Critically Endangered), four plant species/groups, and five landscape features. The HCV species (plants and animals) represented the biodiversity values within the project area which should be the focus of the project.

High Conservation Value	**The HCV #1** of Rare, Threatened and Endangered species (RTE) that are of plants that are globally, regionally, and

	nationally significant for conservation. Camera trap studies have found a wide range of threatened and endangered mammals, including the critically Endangered Sunda pangolin (*Manis javanica*), the Endangered Asian elephant (*Elephas maximas*) and dhole (*Cuon alpinus*), and the Vulnerable Asiatic black bear (*Ursus thibetanus*), Malayan sun bear (*Helarctos malayanus*), gaur (*Bos garus*), clouded leopard (*Neofelis nebulosa*), hog badger (*Arctonyx collaris*), binturong (*Arctictis binturong*) and sambar deer (*Rusa unicolor*) (Daltry and Momberg, 2000; Gray et al., 2017). All forests at least contain five species of primate, all of which are threatened: the Endangered Bengal slow loris (*Nycticebus bengalensis*), Indochinese langur (*Trachypithecus germaini*), and pileated gibbon (*Hylobates pileatus*), and the vulnerable northern pig-tailed macaque (*Macaca leonina*), and long-tailed macaque (*Macaca fascicularis*) (Coudrat et al., 2011).
Qualifying Attribute	To date, there are 32 amphibian, and 75 reptile species are confirmed to occur in SRP, including the Endangered elongated turtle (*Indotestudo elongata*), the Vulnerable impressed tortoise (*Manouria impressa*), Amboina box turtle (*Cuora amboinensis*), and Asiatic softshell turtle (*Amyda cartilaginea*). The Pursat River flows through PSWS and contains Critically Endangered Siamese crocodiles (*Crocodylus siamensis*) and *Philautus cardamonus*, an Endangered frog species endemic to PSWS (Grismer et al., 2008). A recent herpetological survey of Dalai Mountain in SRP revealed 24 species (nine amphibians and 15 reptiles), 18 of which have only been found in the Cardamom Mountains. Of these, three are believed to be new to science (a caecilian *Ichthyophis* sp. and two lizards *Dibamus* sp. and *Lygosoma* sp.) and four were the first for PSWS (*Megophrys auralensis*, *Theloderma asperum, Philautus parvulus* and *Dasia olivacea*) (Thy et al., 2010).
Focal Area	The Samkos REDD+ Project three protected areas in the Kingdom of Cambodia. The three protected areas are: **1) Phnom Samkus Wildlife Sanctuary (PSWS)** in Battambang, Pursat and Koh Kong provinces; **2)** Phnom Kravanh Biodiversity Conservation Corridor (PKBCC), and **3) the northwestern sector of Southern Phnom Kravanah National Park (SPKNP Pursat)** in Pursat Province.

High Conservation Value	**HCV #2** represents large- intact ecosystem or mosaic of ecosystem at landscape scale that support long term such species survival, their natural dispersal and abundance.

Qualifying Attribute	Sites inside SRP are classified as an Important Bird and Biodiversity Area (IBA) by Birdlife (Birdlife International, 2021a), due to endemic bird species found at the site's higher elevations. The IBA supports both restricted-range species found in the Cambodia-Thailand-Mountains Endemic Bird Area: chestnut-headed partridge (*Arborophila cambodiana*). and Cambodian laughingthrush (*Garrulax ferrarius*).
Focal Area	PSWS areas of evergreen and semi-evergreen forest above 400 m asl

High Conservation Value	**HCV #3:** SRP area represents rare and threatened ecosystem of Indo-Burma ecosystem in the remaining forests.
Qualifying Attribute	The area is home to a wide variety of plants and animals and the last fortress of unique ecosystems in the landscape that both the Evergreen and Deciduous Dipterocarp Forests were recognized as #3 HCV: RTE of habitats, ecosystems, and wildlife refuges. • *Water provision and hydrological cycle regulation*: The monsoon rains fall heaviest on the Cardamom Mountains' plateau, which is the source of several nationally significant rivers, some flowing into the Tonle Sap Lake and others into the Gulf of Thailand supporting agriculture and aquaculture. • *Fisheries regulation*: especially as the backbone to the fisheries and aquatic life in the wider landscape. • *Corridor function*: connects several protected areas in the region including Phnom Samkus, Peam Krasop, Phnom Aural and Tatai Wildlife Sanctuaries, Central Cardamom, Botum Sakor Kirirom and Bokor National Parks (Gray et al. 2016).
Focal Area	PSWS, PKBCC and SPKNP Pursat

5.1.3   Without-project Scenario: Biodiversity (B1.3)

A workshop was held in Phnom Penh on 14th and 15th November 2022 to conduct the Biodiversity Impact Assessment for the Samkos REDD+ Project based on the CCB Guidelines. A total of 31 participants were involved representing both national and central Government (13) and conservation Non-Governmental Organizations (17). All participants had experience of conducting biodiversity work or conservation projects within the landscape.

Stakeholder	Institution	Number of Representatives
Royal Government of Cambodia	General Department of Natural Protected Area (GDNPA), Ministry of Environment	4
	Department for Inspection and Law Enforcement, Ministry of Environment	1
	Provincial Department of the Environment, Pursat Province	4
	Provincial Department of the Environment, Battambang Province	2
	Provincial Department of the Environment, Koh Kong Province	2
Conservation NGOs	Fauna and Flora International	2
	Maddox Jolie Pitt	1
	Conservation International	2
	Wild Earth Allies	2
	Wildlife Conservation Society	1
	Wildlife Alliance	7

Focal Issue

1. *Land Encroachment*: **driven by land speculation which increases the price of land and leads to land grabbing. A growing population also leads to immigration and growth of existing communities which encroach for agricultural land and housing. Both issues are exacerbated by ineffective law enforcement, a lack of knowledge of protected area boundaries and need for agricultural land for food and income.**

2. *Wildlife Poaching leads to illegal wildlife trade*: **lack of understanding about the benefits of wildlife and protected area and forestry laws results in a lack of local participation in law enforcement which, combined with high demands for wildlife meat and the easy access to cheap hunting tools (particularly snares) results in unsustainable levels of wildlife hunting.**

3. *Illegal Logging*: **increased demand for timber, both nationally and internationally, combined with livelihoods that rely solely on illegal logging and weak law enforcement, leads to illegal logging.**

Problem flows diagram

After establishing the fundamental issues that the project should focus on to achieve the overarching

REDD+ goals, the BIA workshop then delved deeper into these Focal Issues to establish the causal logic

leading to the problems, and produced a Problem Flow Diagram (also termed Conceptual Model) for each

of the Focal Issues. A Problem Flow Diagram (PFD) is a situation analysis of the issue that

represents stakeholders' understanding of what drives the existence of the focal issue; it identifies
economic, political, institutional, social and/or cultural factors that contribute to existence of the issue.

1. Land Encroachment
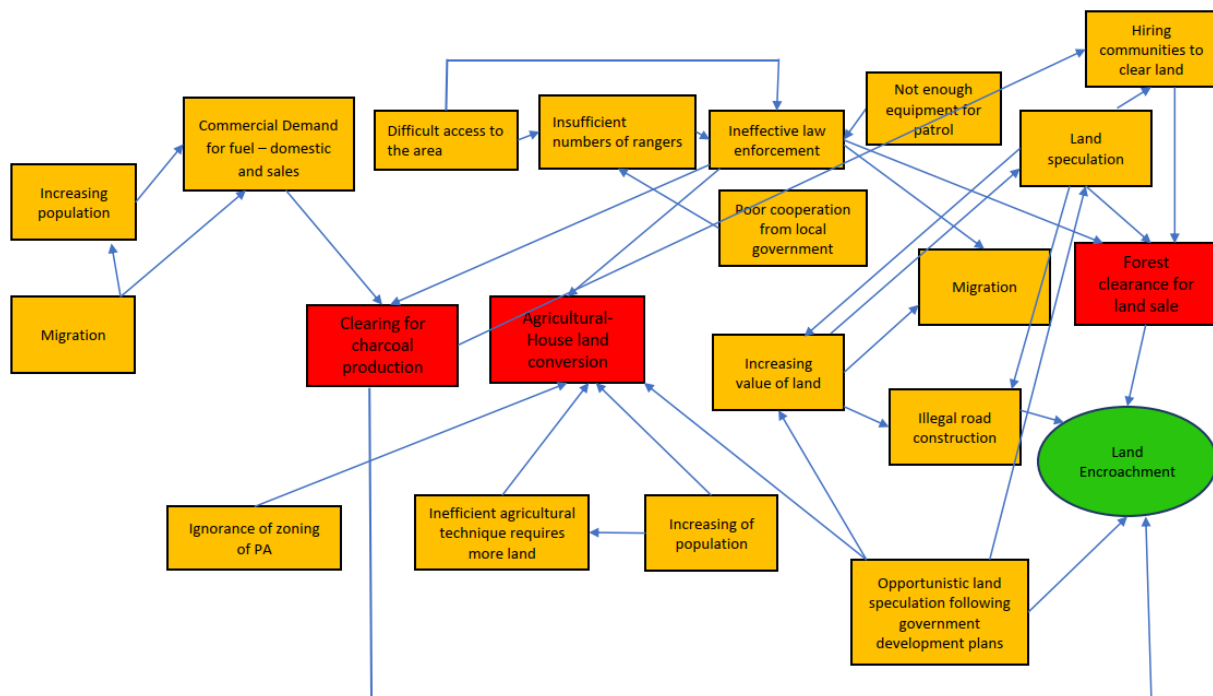
2. Wildlife Poaching
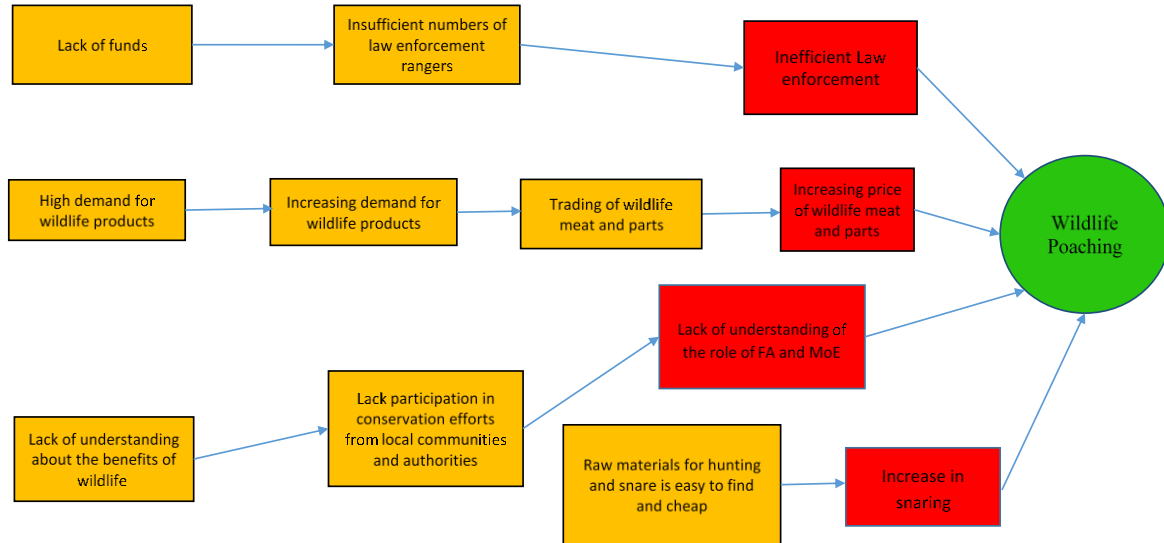
3. Illegal logging
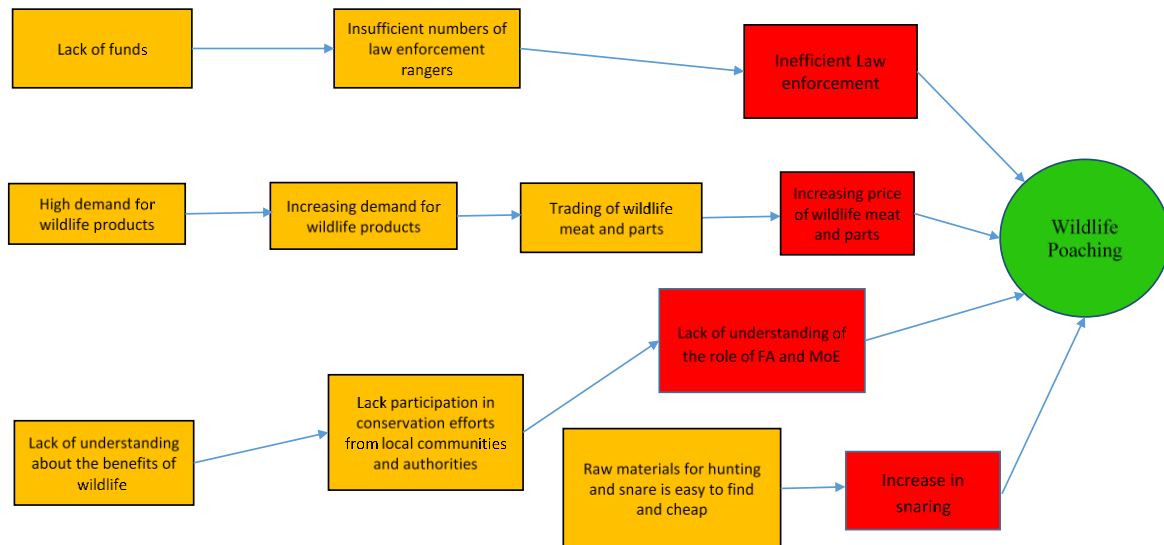
Without Project Analysis

Workshop participants then addressed the Direct Factors from the Conceptual Models and assessed how these are likely to change in the absence of the Southern Cardamom REDD+ Project.

Land Encroachment

Direct Factor	In 5-10 years, will condition improve, worsen, or remain unchanged?	What will drive the change?
Agriculture-House Land Conversion	Worsen	• Increasing population/ migration • Not enough fund support to rangers • Limited knowledge on environment issues • Increase demand for food and agricultural land • Lack of demarcation/ land use planning
Forest clearance for land sale	Worsen	• Increasing land price • Increasing population/migration • Not enough fund support to ranger • Continuing need for employment (thus hired to clear land) • National/ international investment attract attention of land speculators
Clearing for charcoal production	Remain unchanged	• Demand will remain for domestic consumption • Not enough fund support to ranger • Whilst some commercial facilities will continue to use charcoal others may change to other energy supplies such as solar, gas, hydropower etc.

Wildlife Poaching

Direct Factor	In 5-10 years, will condition Improve, Worsen or Remain unchange?	What will drive the change?
Inefficient law enforcement	Improve	• Iincreased budget from central government and MoE for enforcement • New technical trainings for rangers to increase capacity • Greater environmental awareness • Better livelihood of local communities and rangers due to national economic growth
Increasing price of wildlife meat and parts	Remain unchanged	• Hhigh demand for wildlife parts continues • Ccultural and societal preferences for wildlife meat consumption for health and social status continue
Lack of understanding of the role of FA and MoE	Improve	• Ooutreach to local community about the law • Aaccess to comprehensive information through social networks such as Facebook
Increase in snaring	Improve	• Sstrong law enforcement • Ffully participate of local authorities and people • Rraw material for producing snare becomes more expensive

Illegal logging

Direct Factor	In 5-10 years, will condition improve, worsen, or remain unchanged?	What will drive the change?
The Law enforcement did not deter the repeated offenders	Improve	- New policy/ Government strategy along with the new regulation (Environmental Code) will be promulgated.

		- Workplan/Management of the Protected Areas (Demarcation, Proper Zoning) will be improved due to the newly created Government Management Policy - The law enforcement will be strengthened alongside the economic development of the country.
People hired to log the forest	Improve	- Economic development in Cambodia in the next 5-10 years, means people will earn more income. - Social media system will help in spreading/educating people on environmental awareness/knowledge. - Natural based ecotourism and alternative livelihoods will be created and become more common among the local communities. - In the next 5-10 years, people have a better living standard, which make the demand for woods/timbers for house/building construction become less common.

Based on the above analysis four Direct Factors were identified as being predicted to Worsen or Remain Changed (for at least one Focal Issue) in the absence of the Samkos REDD+ Project:

1. Agriculture-House Land Conversion (i.e. conversion of forest land for houses and adjacent smallholder agriculture)
2. Forest clearance for land sale
3. Clearing for charcoal production
4. Increasing price of wildlife meat and parts

Strategy Identification and Prioritisation

Workshop participants then brain-stormed strategies to potentially address these Direct Factors. The participants also voted on what they felt would be the most effective strategies for the SRP to deliver.

5.2 Net Positive Biodiversity Impacts

5.2.1 Expected Biodiversity Changes (B2.1)

Based on discussions in plenary Three Strategies were identified for developing Results Chains:

1. Increase number of well-planned and intelligence driven law enforcement patrols
2. Awareness raising about the law to local communities.

3. State land registration, and protected area zoning and demarcation

Increase number of well-planned and intelligence driven law enforcement patrols
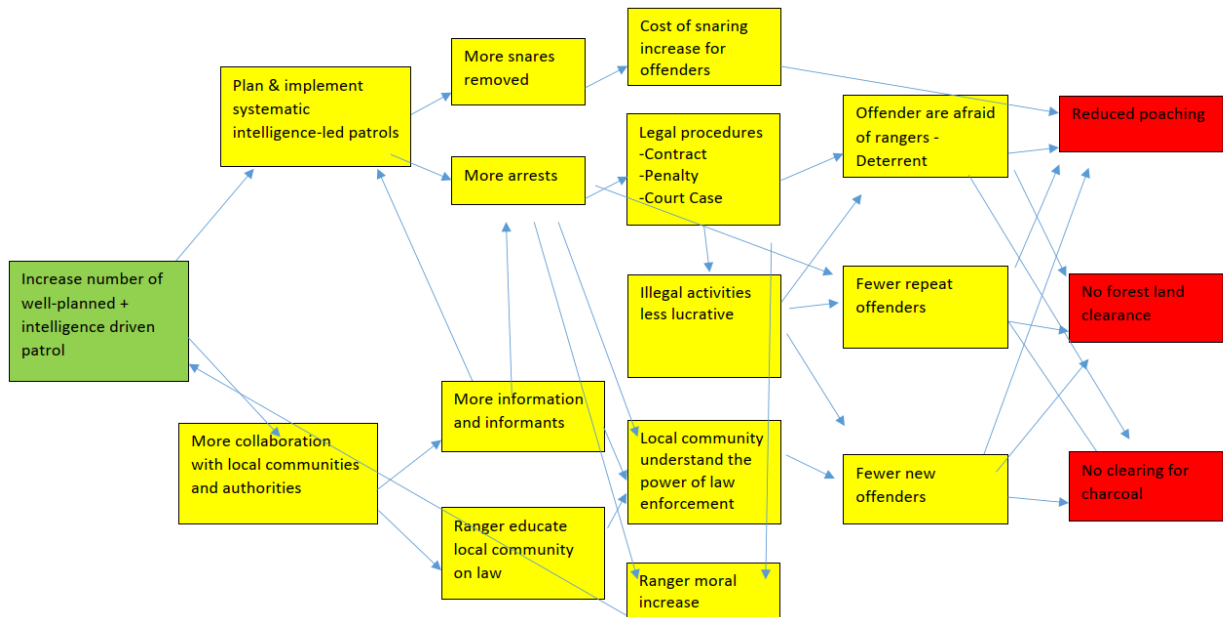
Theory of Change: IF we plan systematic/intelligence patrol, more snare will be removed, more offenders arrested, cost of snaring is increased for offenders, more legal procedure will succeed, offenders are afraid of rangers, fewer repeated and new offenders due to arrest and less money made and running illegal activities, ranger moral increase, **AND IF** we facilitate more collaboration with local communities and authorities, rangers will be received more information and more informants, leading to more arrest, rangers also educate community on law, so local community understand power of law enforcement, which lead to fewer offenders, **THEN** there will be reduced poaching, forest land clearance and clearing for charcoal.

Awareness raising about the law to local communities

Theory of Change: IF people understand, participate and implement the law AND put governments sign to stop land encroaching, logging for charcoal, eating wildlife, poaching AND report the local authorities when seeing the forestry crime THEN, there would be no forest clearing for agriculture, sale, charcoal production and no poaching.

State land registration, and protected area zoning and demarcation
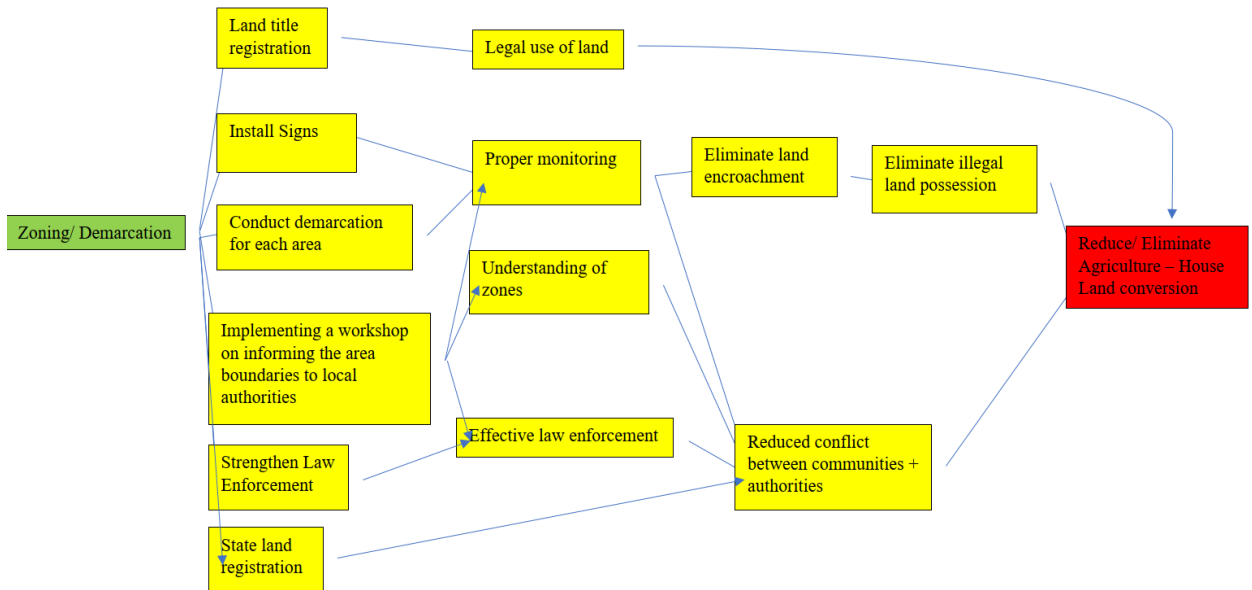
Theory of Change: IF there are clearly defined management areas, an accurate demarcation along the area boundary, the installation of signs, the registration of state land and land tiles, and the sharing of information on each management area boundary with local authorities, communities, and other relevant parties to be informed and properly implemented, THEN the law enforcement will become more effective, people will have legal rights to their lands, and they will gain a better understanding of each management area, LEADING to the reduction of a conflict between communities and law enforcement officers and eliminating illegal land encroachment and illegal land grabbing for houses, RESULTING in a reduction or perhaps the elimination of agriculture-to-house land conversion

Biodiversity Element	Mammals: Asian elephant, Sunda pangolins, banteng, dhole, Malayan sun bears, Mainland clouded leopard, and pileated gibbon Birds: green peafowl Fish: Asian arowana Reptiles: Siamese crocodile and elongated tortoise Plants: Rosewoods and orchids (general species)
Estimated Change	Increasing mammals, birds and reptiles' detections (sightings) with consistent expanding distribution of all priority species across the landscape and reduced incidences of poaching and illegal harvesting.
Justification of Change	The most likely without-project scenario would include increasing poaching and fewer sightings across the SCRP (see Gray et al. 2016). This is a result of the predicted increased deforestation in the baseline, resulting in forest fragmentation and reduced forest area. This would lead to easier access by humans into the forest area, leading to poaching and illegal harvesting, and reducing significant habitat of priority species.

Change in Biodiversity	Reduction in pressure (threats)
Estimated Change	Positive direct change
Justification of Change	Several of the Project Activities are designed to result in a reduction in the amount of deforestation pressure on the forests of the Project Area. This includes: 1. <u>Increase number of well-planned and intelligence driven law enforcement patrols</u> that through systematic forest patrols could lead to increasing detections of illegal activities that lead to more prevention of it, which resulting illegal incidents are curbing.

| | 2. Awareness raising about the law to local communities with regular village visitations, community discussion through interactive ways, could lead to escalating participation from local communities towards wildlife protection. |
| | 3. State land registration, and protected area zoning and demarcation will create certainty of state/non state land thus improve management of the protected area but also gain local community support as their right to their own land is legally acknowledge both by law and on the ground. |

5.2.2 Mitigation Measures (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 partner's decade-long experience with conservation in this landscape, thus we the precautionary principle was not explicitly applied here.

5.2.3 Net Positive Biodiversity Impacts (B2.2, GL1.4)

Comparison of without-project and with-project scenarios

Based on the situation and without-project analyses (Section **Error! Reference source not found.**), most of the Direct Factors across 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 planned under Mitigation Measures (B2.3) will result in clear biodiversity benefits compared to a without-project scenario where all these key factors get worse.

Gold Level for climate change adaptation benefits

The tropical monsoon climate in Cambodia is characterized by two major seasons: May to October monsoon season has heavy rains, high humidity and strong winds, while November to April is the dry season, with little rain, low humidity and not much wind. While modelling climate impacts is complex and difficult to do with any precision, it is clear is that the climate in Cambodia will be increasingly variable and that the impacts of climate change will be evident primarily through extremes in the water resource sector, which will have significant implications for other sectors (Johnston et al. 2010). According to the Cambodian Ministry of the Environment, the direct impacts of climate change will be reflected in changes

to the natural rainfall pattern, higher temperatures and the rising sea level, which result in flooding or drought. The direct impacts of climate change – rising temperatures, changing rainfall patterns and sea level rise – generate secondary effects on ecosystems and natural resources (MoE 2002, 2006).

Cambodia's forests will also be affected by climate change impacts. The likely 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 decreased income security for forest-dependent communities.

Similarly, wildlife dependent on these forest and aquatic habitats would be adversely affected by these changes. Thus, the project directly helps the biodiversity by both mitigating for these effects by reducing emissions, but also adapt to these anticipated changes by maintaining some habitats in good condition for these species, including corridors that make it possible for the wide-ranging species to move in case of drastic changes.

5.2.4   High Conservation Values Protected (B2.4)

1. <u>Landscape wide forest cover and watersheds</u>: this High Conservation Value Target represents the entire forest cover within the project area (and adjacent protected areas) which participants felt was critical for the maintenance of ecosystem service values across large areas of Cambodia. This conservation target included remote forest in the Core Zones of protected areas as well as multiple use forests heavily used by local communities.

2. <u>Specialist forest habitat for key threatened species</u>: this High Conservation Value Target was selected to encompass a variety of rare habitats within Cambodia – most particularly high-altitude forest on the plateau of Samkos and Tumpor mountains – which was felt to be both critical for specialist species (e.g. the endemic Samkos bush frog and certain orchids) as well as of cultural significance and natural beauty for Cambodians. A number of specialist species (including the endemic bush frog, Sunda pangolin, and Asian arowana were included within this Conservation Target).

3. <u>Asian elephant</u>: this High Conservation Value Target represents the population of Asian elephant within the project area. This population is of regional significance with the wider Cardamom Rainforest Landscape (which also includes areas of the adjacent Central and Southern Cardamom REDD+ projects) supporting one of the two largest elephant populations remaining in Indochina.

4. <u>Threatened large terrestrial mammals</u>: this High Conservation Value Targets represents populations of at least nine (Annex 1) IUCN Threatened or Near Threatened mammals including carnivores (clouded leopard), omnivores (black bear), and herbivores (gaur, serow). All of these species occur within the project area but are all impacted by poaching particularly capture (both accidental and targeted) in hunting snares.

The following biodiversity related HCVs have been identified per Section 1.3.6:

- G1.8.1 b) Endangered and Vulnerable plant and animal species

- G1.8.1 c) Endemic plant species and subspecies

- G1.8.1 d) Significant concentrations of a species during any time in their life cycle

- G1.8.2 Viable populations of plants and animals in natural patterns of distribution and abundance

- G1.8.3 Threatened ecosystems

By protecting habitats, safeguarding water availability and ensuring landscape connectivity, these high conservation values will be much better in the 'With Project' versus 'Without Project' scenario for the reasons noted above.

5.2.5 Species Used (B2.5)

No non-native species will be used in the Project Accounting Area. Any Project Activities that include any planting within the Project Area utilize native tree species that are gown in nurseries on site. All farms in the Project Zone have been excised from the Project Accounting Area a priori.

5.2.6 Invasive Species (B2.5)

No non-native species will be used in the Project Accounting Area. Any Project Activities that include any planting or reforestation within the Project Area utilize native tree species that are gown in nurseries on site. All farms in the Project Zone have been excised from the Project Accounting Area a priori.

5.2.7 Impacts of Non-native Species (B2.6)

Domestic chickens and frogs are being provided to families in the Project Zone but will not be introduced into the Project Accounting Area. No non-native plants will be introduced into the Project Area.

5.2.8 GMO Exclusion (B2.7)

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

5.2.9 Inputs Justification (B2.8)

To date, no fertilizers, chemical pesticides, biological control agents and other inputs have been used for the project.

5.2.10 Waste Products (B2.9)

5.3 Offsite Biodiversity Impacts

5.3.1 Negative Offsite Biodiversity Impacts (B3.1) and Mitigation Measures (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 particularly due to illegal wildlife trade and deforestation driven by many of the same factors as in the SRP. 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.

5.3.2 Net Offsite Biodiversity Benefits (B3.3)

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

5.4 Biodiversity Impact Monitoring

5.4.1 Biodiversity Monitoring Plan (B4.1, B4.2, GL1.4, GL3.4)

Indicators are important in impact assessment because they respond to the basic question "what should be measured in order 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 (Richards & Panfil, 2011). Thus, we used our theory of change logic in the Result Chain diagrams 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.

Further, the indicators will be analyzed 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: Security enhancement; employment of locals; alternative sources of income. **Pressure** indicators fall under: human population size and dynamics; and Incidences (OI) including poaching, encroachment, charcoal and logging. Finally, **State** indicators are grouped into three categories: wildlife (including species presence, diversity, distribution); vegetation (including species composition and diversity, distribution, disturbance and regeneration); and land-uses (including changes in various vegetation/habitat types, encroachment and fire).

The biodiversity impact monitoring plan is shown in Table 26.

Table 26. Biodiversity Impact Assessment Monitoring Plan

Focal Issue	Key result	Indicator Code	Indicator	Indicator type
Land encroachment and land use planning	Reduced forest conversion for sale or into settlements or agricultural land	BIA001	Forest extent/size for the Project Accounting Area (PAA) included under Samkos RP	Impact
		BIA002	# ha of primary forest cleared within the Samkos PAA	Outcome
		BIA003	Land use plan developed for the public and community lands associated with the Samkos RP	Output
		BIA004	% of project area land units with appropriate titling	Outcome
		BIA005	# km of PA boundary with appropriate physical demarcation posts and entry warning signs	Outcome
		BIA006	% households moving away from use of firewood or charcoal for cooking	Outcome
		BIA007	# arrests made of illegal loggers	Outcome
	Decreased charcoal production	BIA008	# charcoal kilns confiscated	Outcome
Wildlife poaching	Greater appreciation and awareness of wildlife benefits	BIA009	# awareness-raising events e.g., meetings, seminars, videos etc. held across the project area	Output
		BIA010	# environmentally-reliant income-generating activities or enterprises established	Outcome
		BIA011	% families still dependent on wildlife meat as food	Outcome

		BIA012	# rangers employed and equipped	Output
		BIA013	# ranger training sessions undertaken	Output
		BIA014	# patrols undertaken by rangers in the Project Area	Outcome
		BIA015	# of offenders sent to the courts of justice	Impact
	Increase in wildlife populations, especially HCV species	BIA016	# snares extracted	Outcome
		BIA017	Meters of wildlife nets	Outcome
		BIA018	# wildlife individuals rescued	Outcome
		BIA019	# wildlife individuals killed by poachers	Outcome
		BIA020	# court cases and transactional fines	Impact
		BIA021	Presence, Abundance and Distribution of key HCV species	Impact

5.4.1.1 Development of a plan for assessing the effectiveness of measures to maintain or enhance biodiversity HCVs (B4.2.).

Biodiversity HCVs, such as critically endangered species, key threatened ecosystems and ecosystem services, biome, corridor function, are captured in the Monitoring Plan above.

5.4.2 Biodiversity Monitoring Plan Dissemination (B4.3)

The PSWS will disseminate the biodiversity monitoring plan and the results of the monitoring within 12 months of validation. These documents will be made publicly available on the internet on CCB and VCS websites and linked to Wildlife Alliance website too. They will also be communicated to the communities and other stakeholders (including the Government and Local Authorities) using diverse media including presentations, reports, brochures and orally during community awareness and sensitization meetings, and annual SIA workshops.

5.5 Optional Criterion: Exceptional Biodiversity Benefits

5.5.1 High Biodiversity Conservation Priority Status (GL3.1)

One species of critically endangered reptiles occurs in the project zone: the Siamese crocodile (*Crocodylus siamensis*). The landscape supports the largest global population of the Endangered pileated gibbon (*Hylobates pileatus*). There is also an endangered frog species endemic to the PSWS, *Philautus cardamonus*, that occurs in the project zone (IUCN SSC Amphibian Specialist Group 2016)*.

5.5.2 Trigger Species Population Trends (GL3.2, GL3.3)

As mentioned in section 5.1.1, this landscape is poorly studied and apart from a few scattered studies, no comprehensive work has been undertaken to estimate the abundance of endangered wildlife. As such, apart from some signs of species recovery in specific areas (e.g., see Daltry et al. 2000, 2003; Gray et al. 2016) it is not possible at present to either provide current numbers or trends, and consequently, estimates for the end of the project.

However, based on a pressure-response-state framework, general without-project trends are possible to project, mainly potentially declining due to a combination of habitat loss, habitat fragmentation and poaching largely for the illegal wildlife trade (including animals caught as by-catch in snares; Gray et al. 2017). Given the currently poor or limited levels of law enforcement across the landscape, coupled with minimal livelihood and job opportunities for the local communities, loss of critical forest and wetland habitats is likely to continue without the SCRP intervention, whether from community encroachment or economic/social land concessions. Coupled with the associated logging and poaching activities, this is likely to lead to a reduction in most, if not all, of these threatened species.

Given this likely scenario, the proposed activities under our theory of change (Expected Biodiversity Changes (B2.1)) will lead to an improved status for most of the threatened species. As detailed in Section High Conservation Values Protected (B2.4), critical ecological functions (e.g., watershed, fisheries and corridor) will also be conserved and improved, thereby providing additional benefits for the endangered biodiversity.

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APPENDICES

Appendix 1: Project Area Maps

Samkos REDD+ Project — Project Area
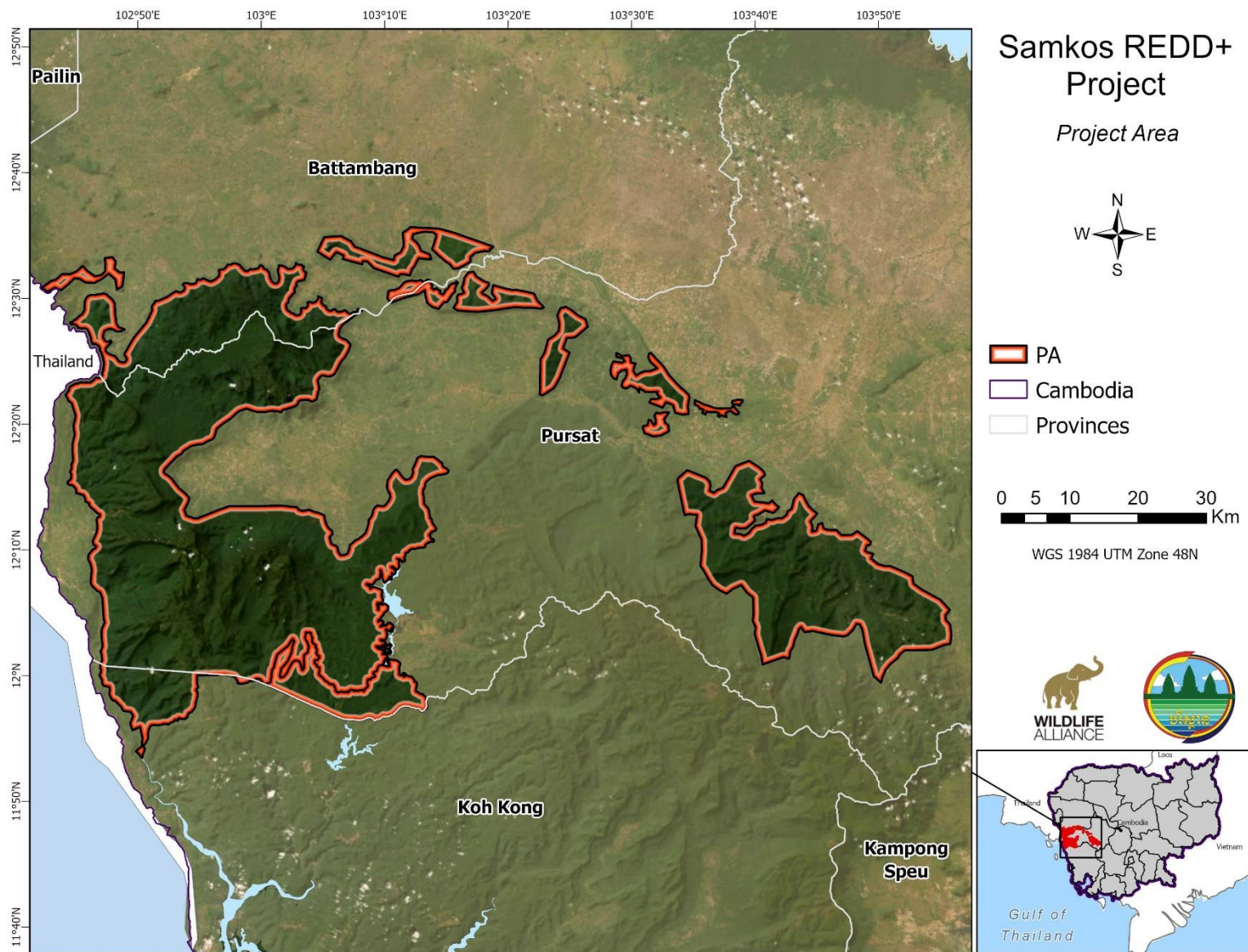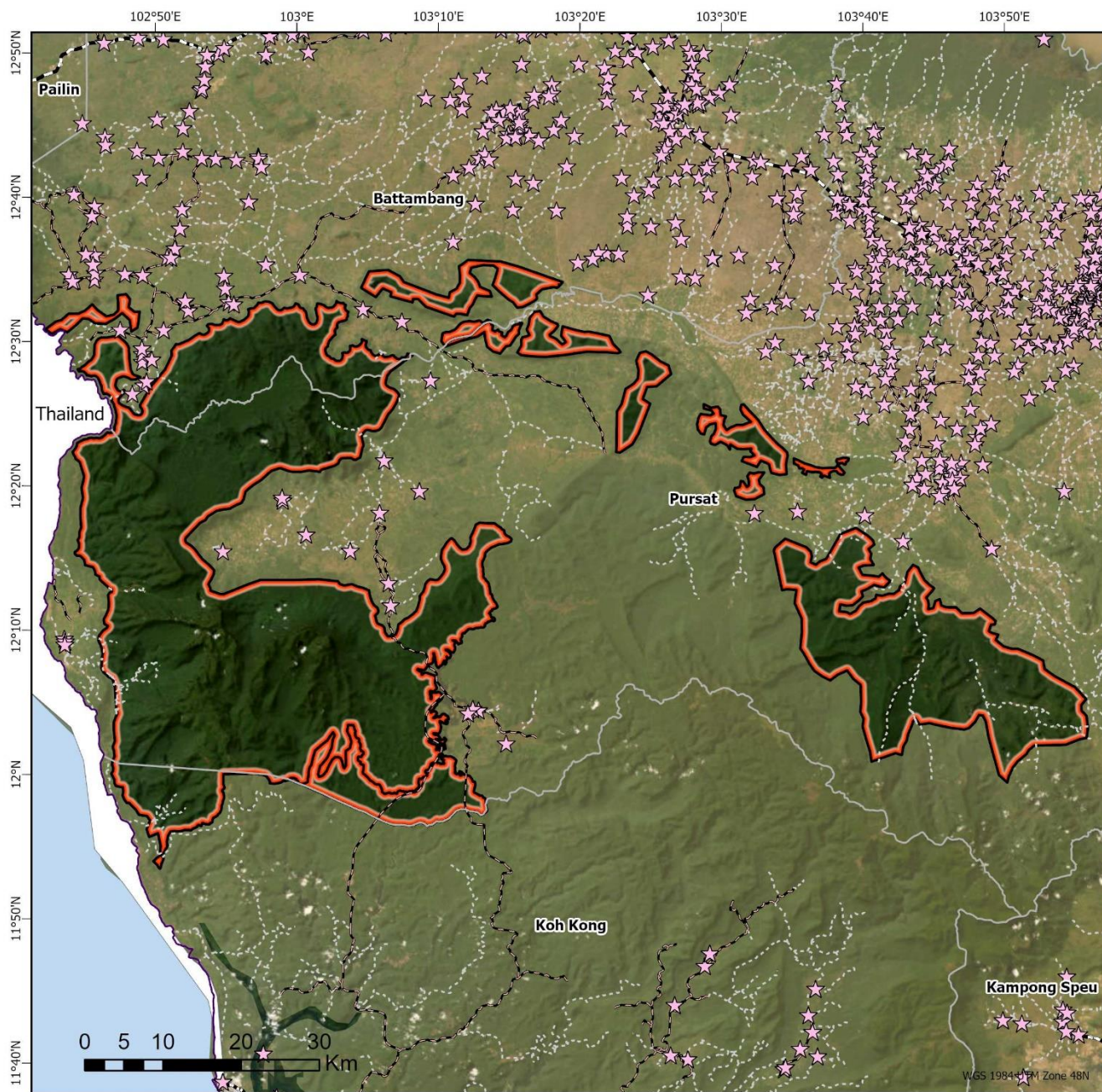
Phnom Samkus REDD+ Project

Project Area Infrastructure

Legend:
- ▭ PA
- ▭ Cambodia
- ▭ Provinces
- ✩ Villages
- — All weather Rd
- — Dry Weather Rd
- ---- Footpath

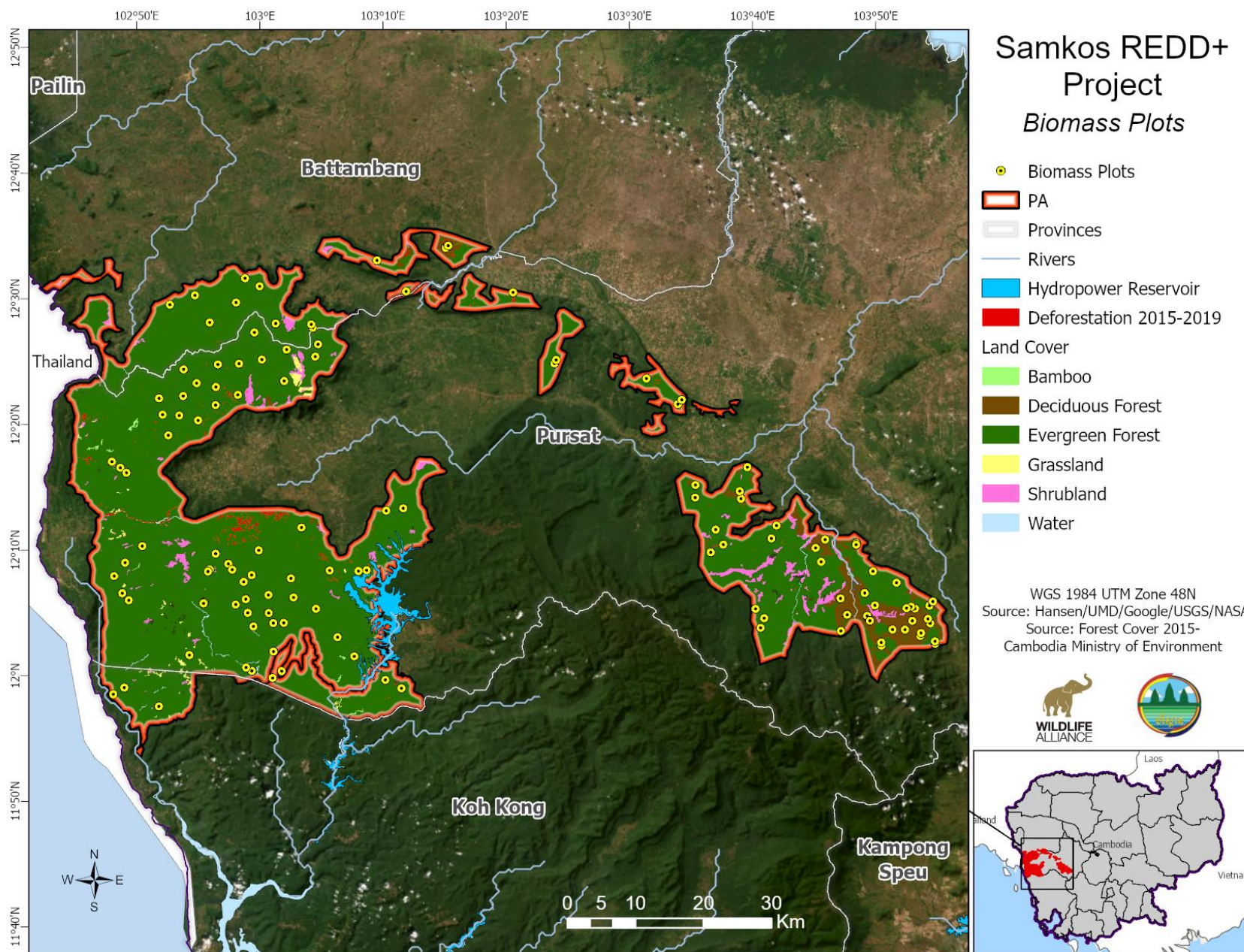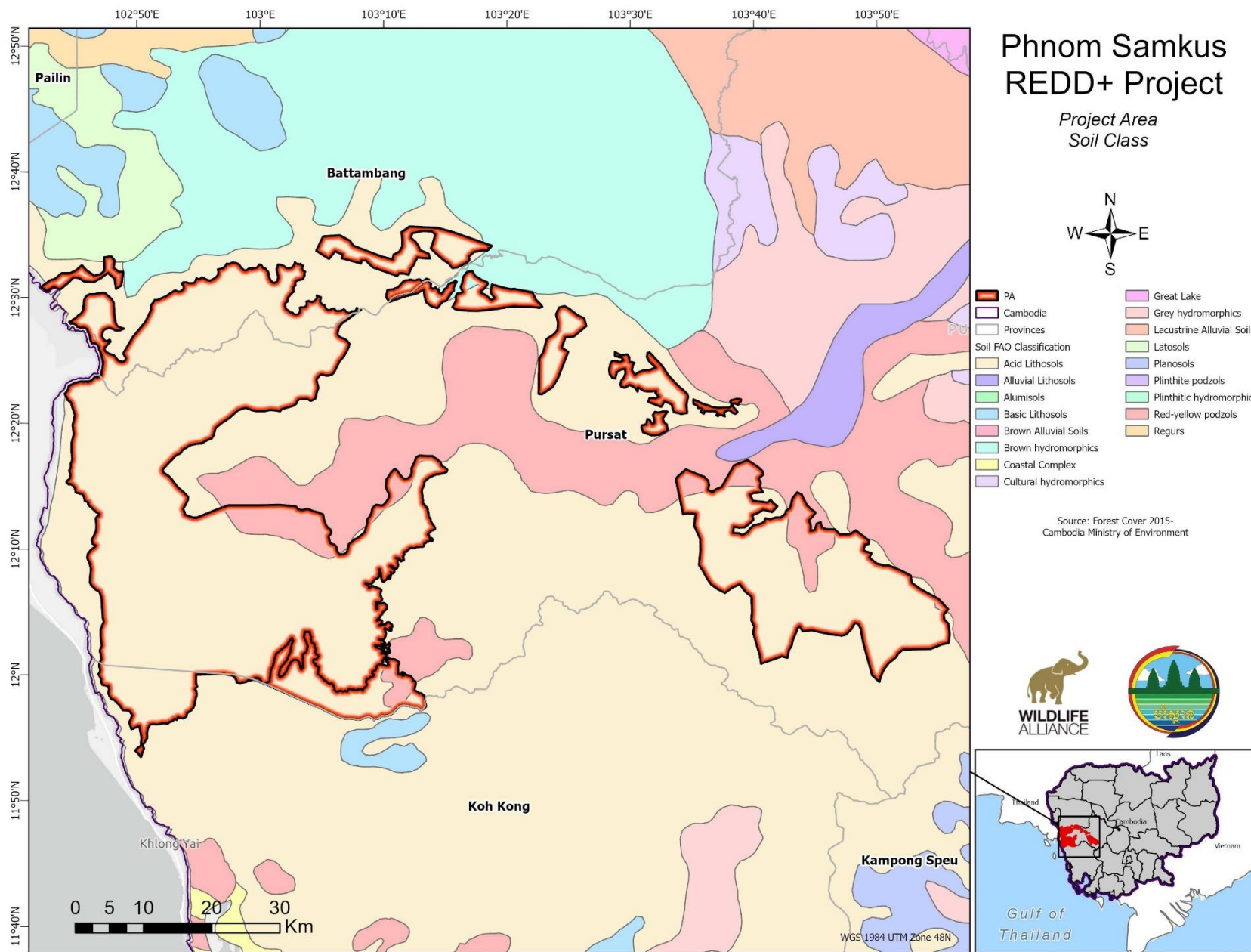## Phnom Samkus
REDD+ Project

*Project Area
Land Cover*

Pailin

Battambang

Thailand

Pursat

Koh Kong

Kampong Speu

Legend:

- PA
- Cambodia
- Provinces

Land Cover
- Bamboo
- Deciduous Forest
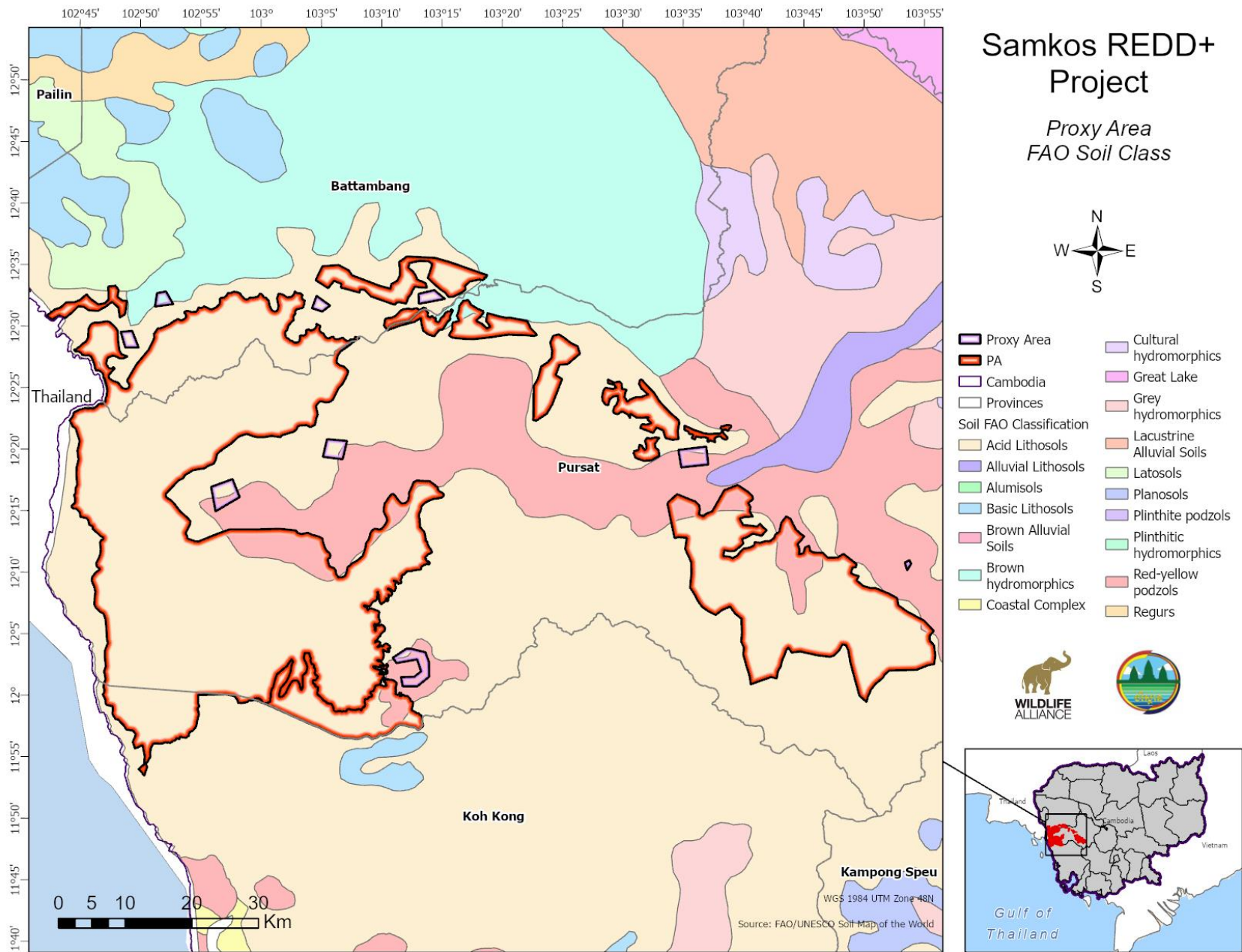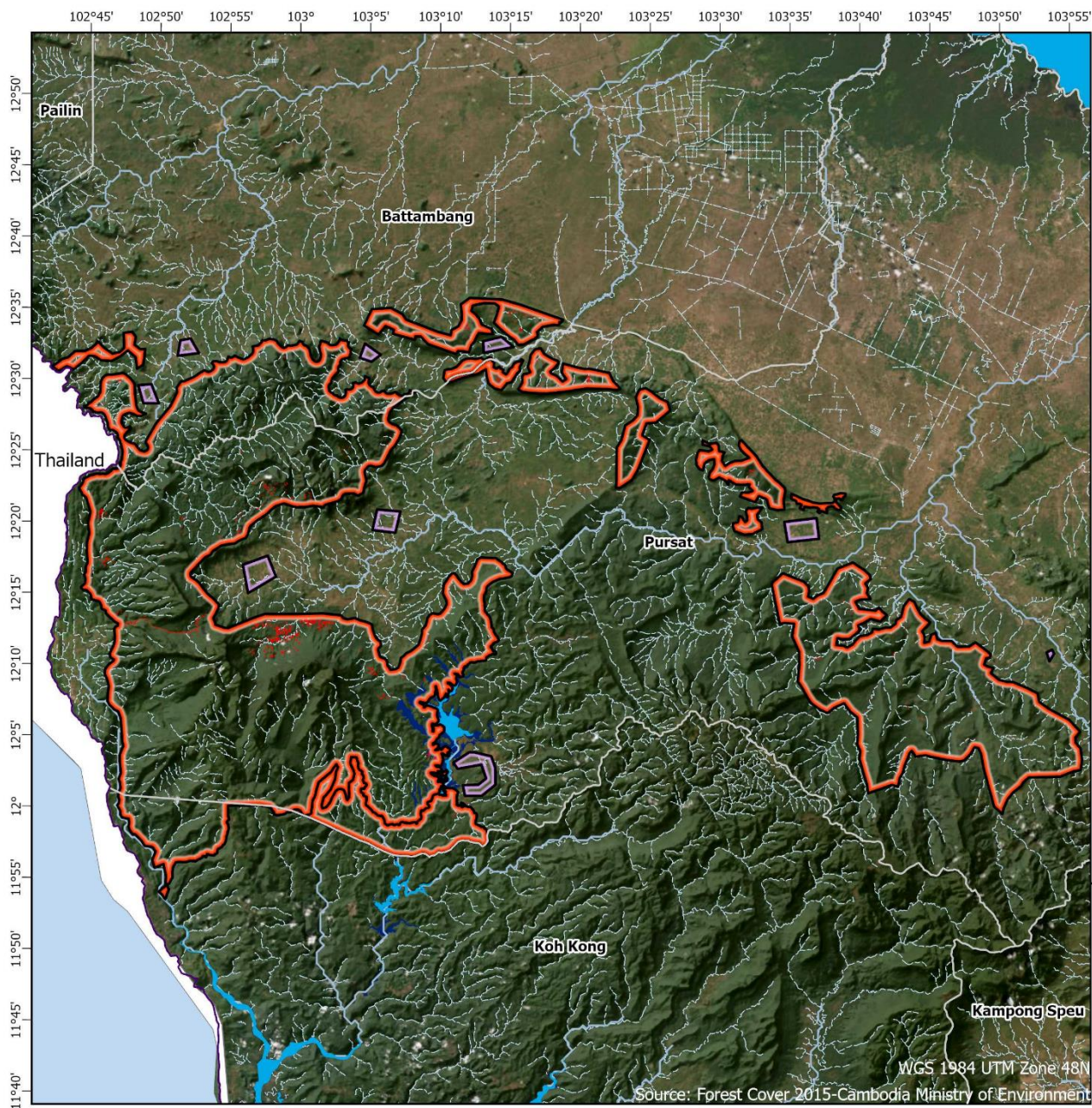- Evergreen Forest
- Grassland
- Shrubland
- Water
- Deforestation 2015-2019

Source: Forest Cover 2015-
Cambodia Ministry of Environment

Source: Hansen/UMD/Google/USGS/NASA

WILDLIFE ALLIANCE

0 5 10   20   30 Km

WGS 1984 UTM Zone 48N

Laos

Thailand

Cambodia

Vietnam

Gulf of
Thailand

Phnom Samkus
REDD+ Project

*Project Area
Rivers and Streams*

Legend:
- PA
- Cambodia
- Provinces
- Rivers
- Water Bodies
- Hydropower Reservoir
- Stream

Source: Forest Cover 2015-
Cambodia Ministry of Environment

Source: Hansen/UMD/Google/USGS/NASA

Samkos REDD+ Project — Project Accounting Area

Legend:
- PA
- PAA
- Non Forest
- Cambodia
- Provinces

WGS 1984 UTM Zone 48N
Source: Hansen/UMD/Google/USGS/NASA
Source: Forest Cover 2015-
Cambodia Ministry of Environment

Samkos REDD+ Project — Biomass Plots
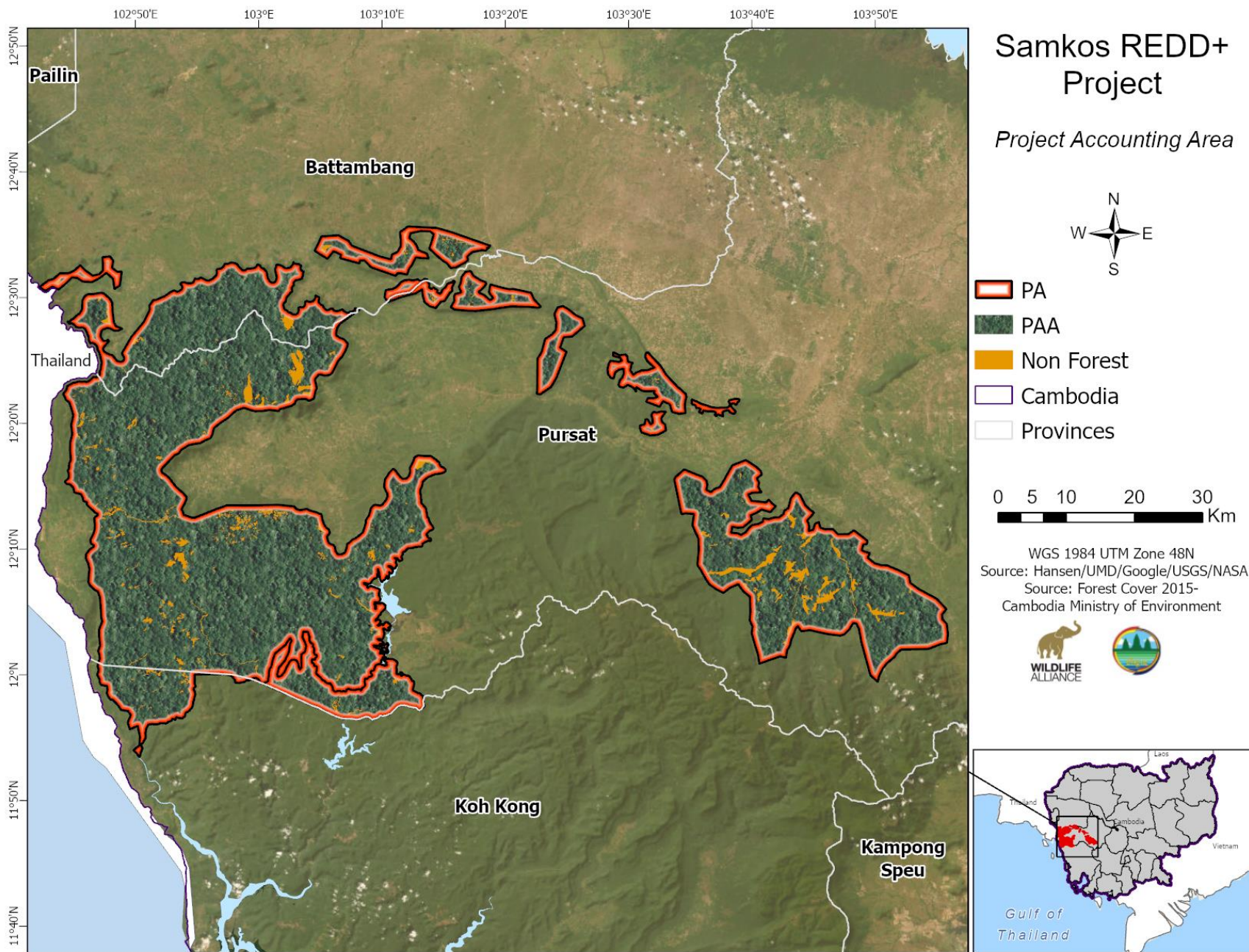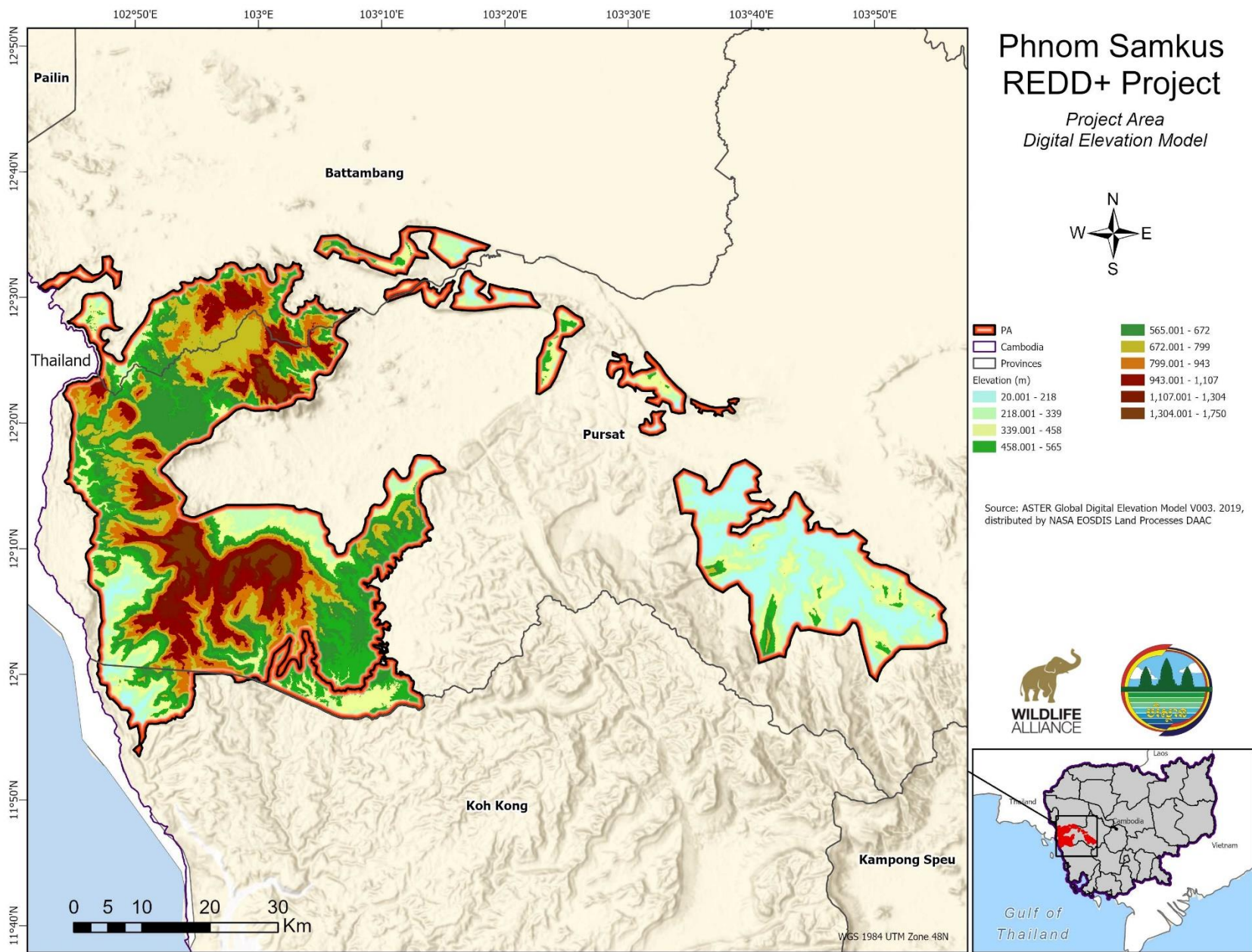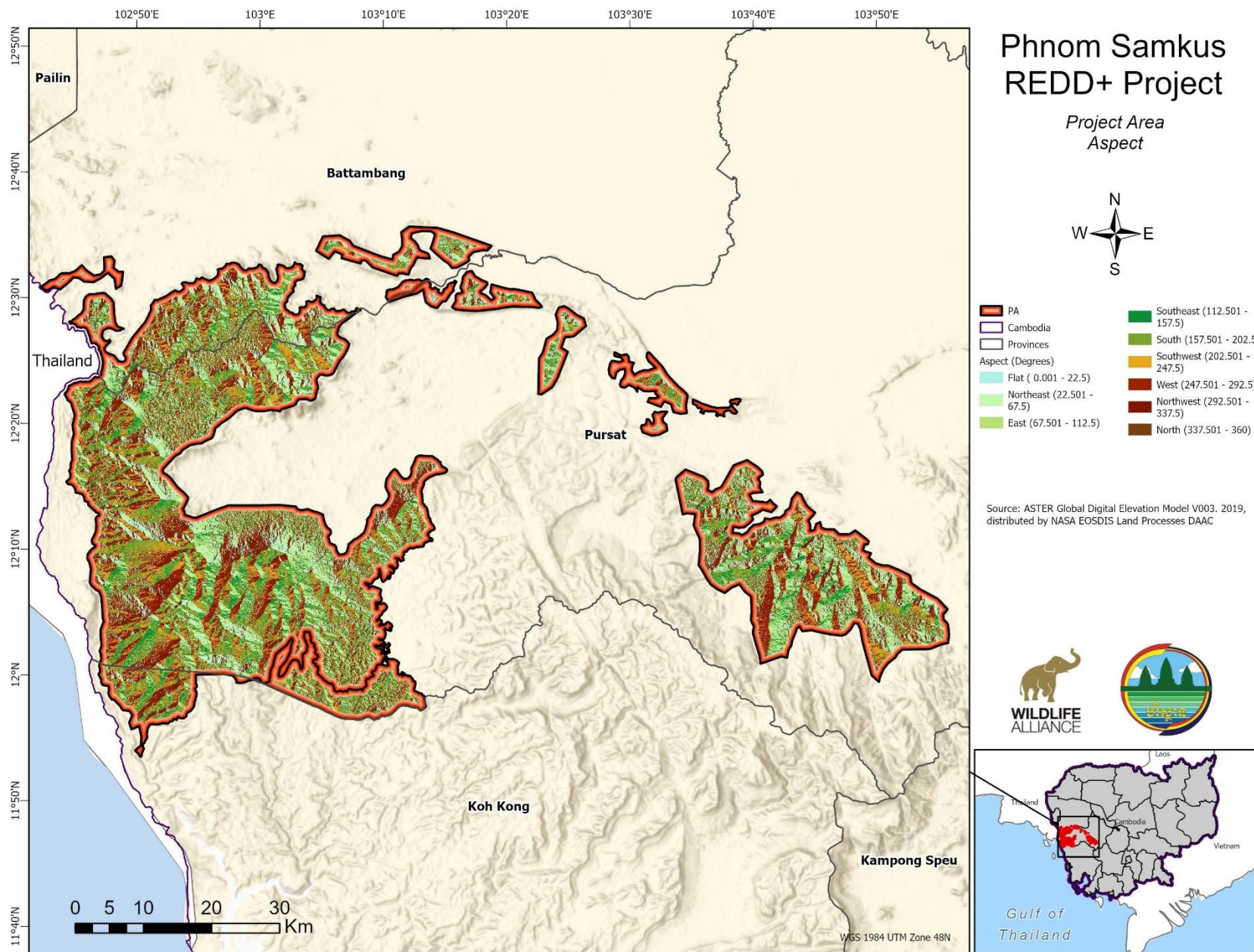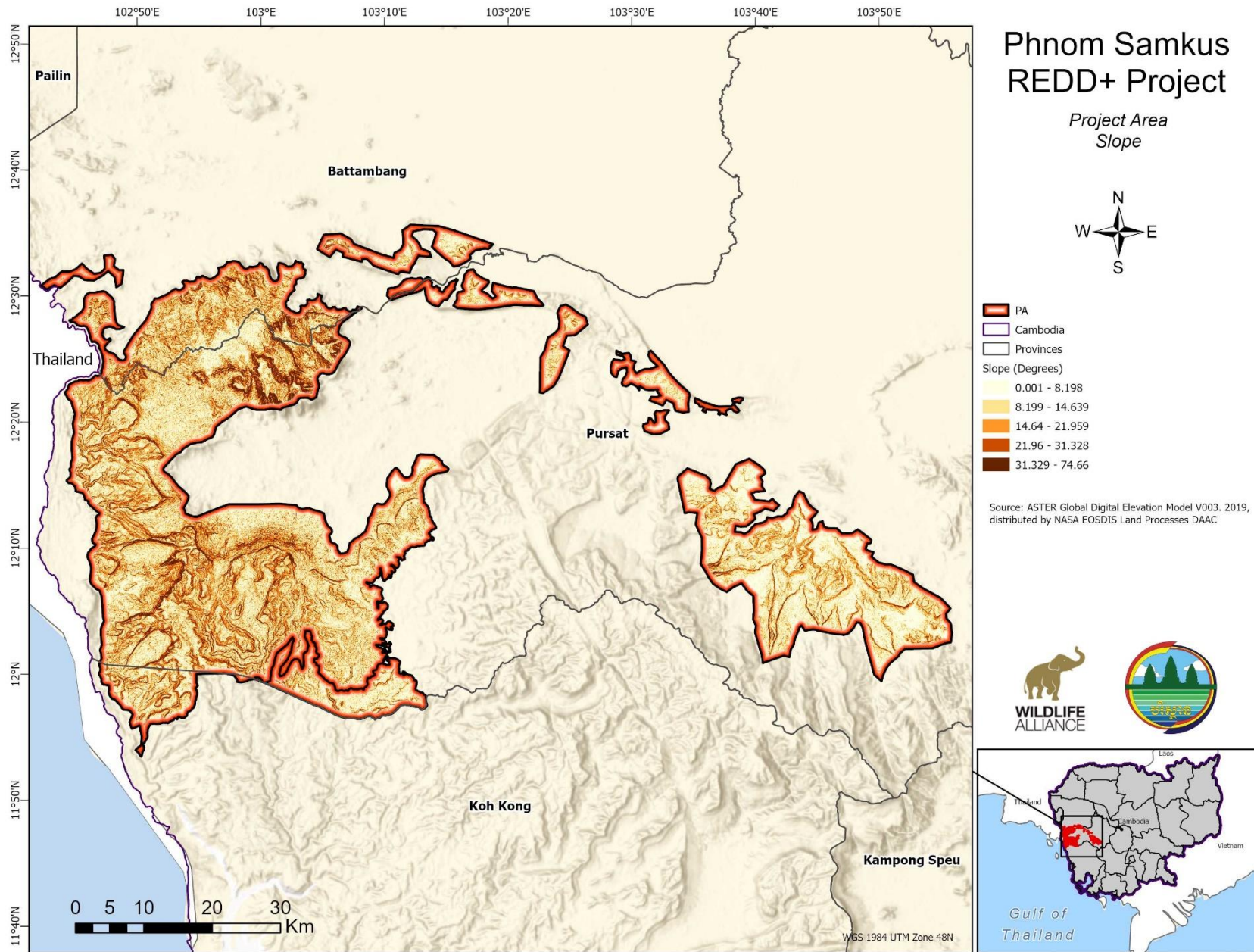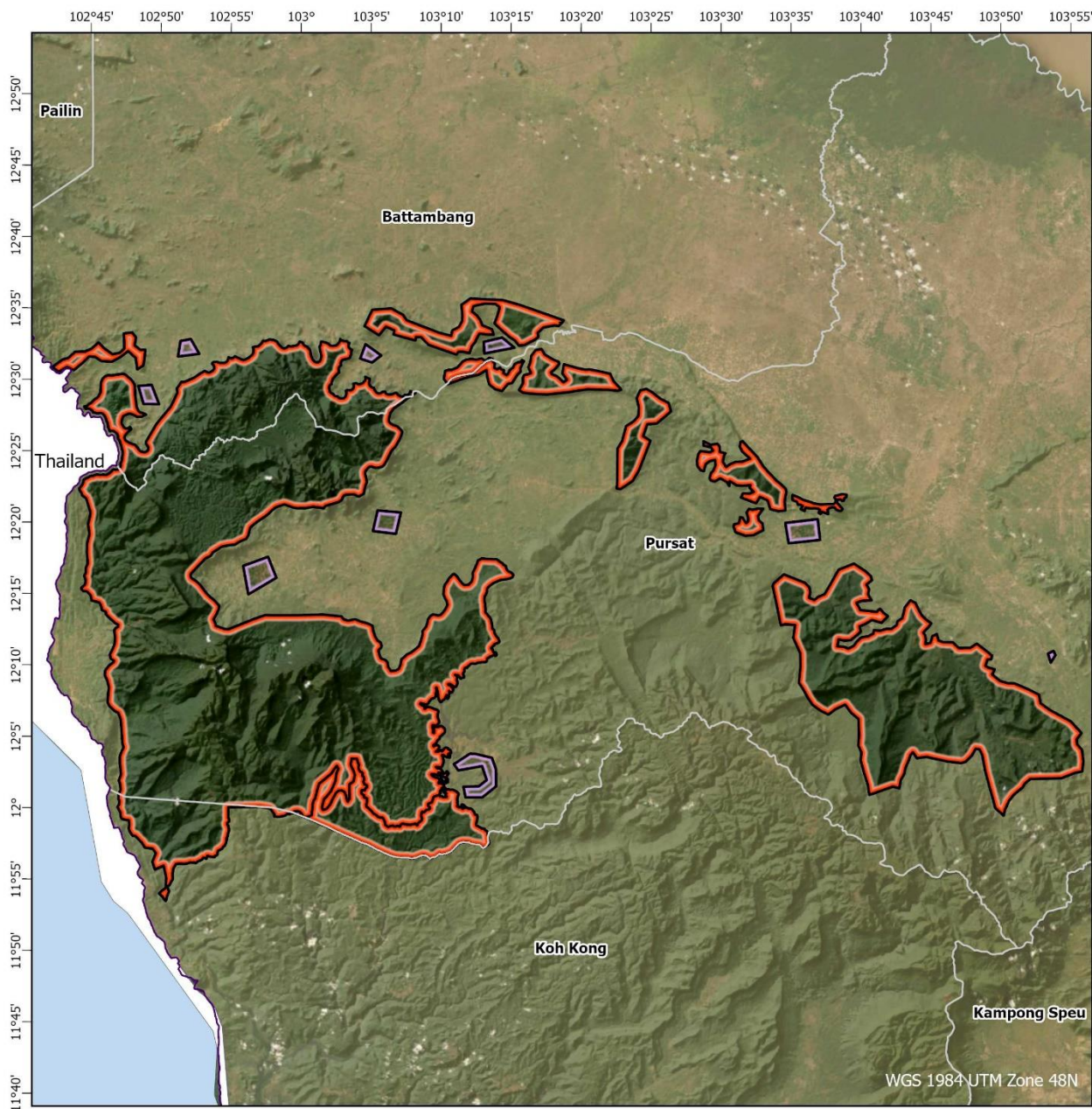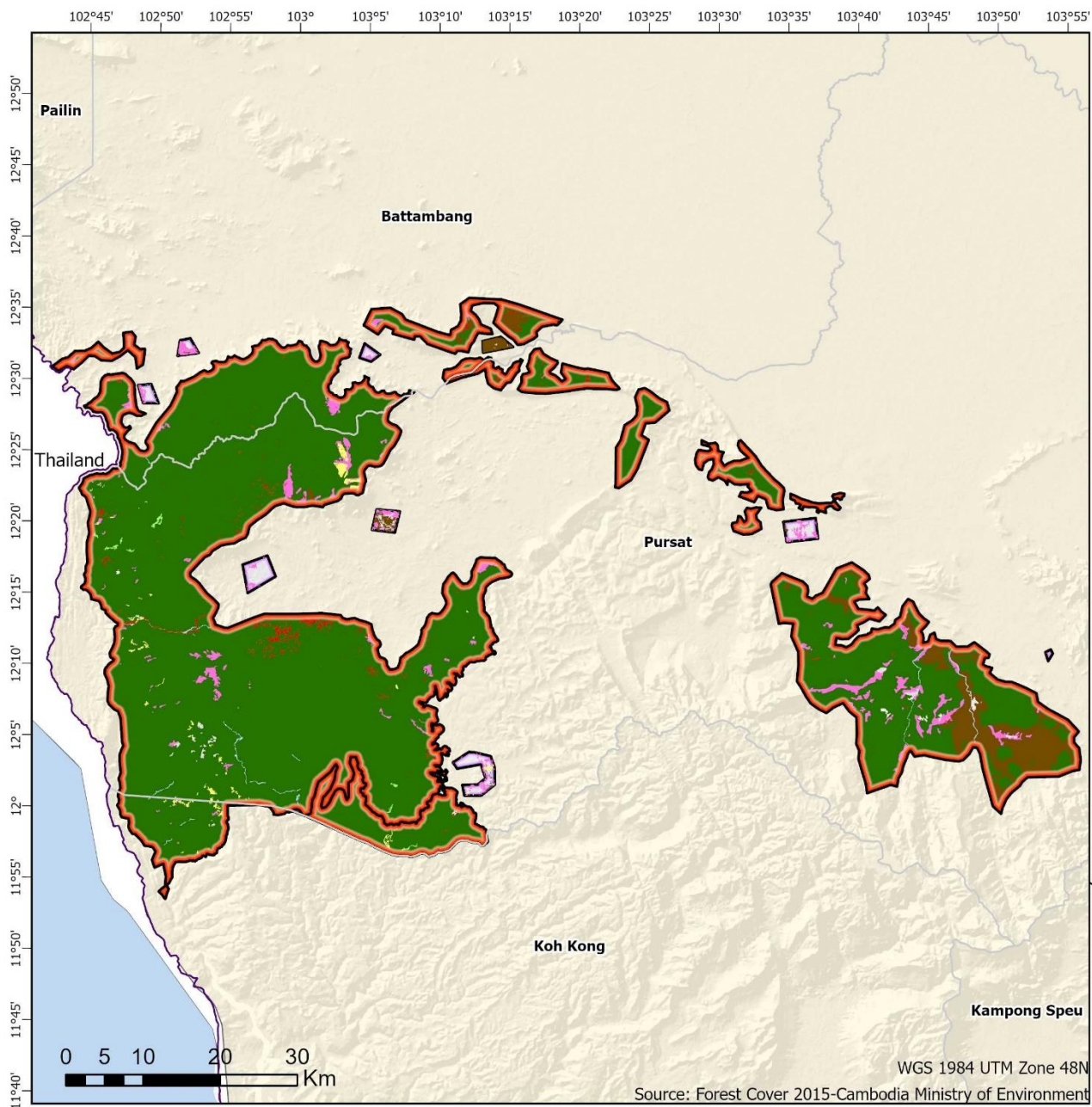
Legend:
- Biomass Plots
- PA
- Provinces
- Rivers
- Hydropower Reservoir
- Deforestation 2015-2019

Land Cover
- Bamboo
- Deciduous Forest
- Evergreen Forest
- Grassland
- Shrubland
- Water

WGS 1984 UTM Zone 48N
Source: Hansen/UMD/Google/USGS/NASA
Source: Forest Cover 2015-
Cambodia Ministry of Environment

Phnom Samkus
REDD+ Project

Project Area
Soil Class

Legend:
- PA
- Cambodia
- Provinces
- Soil FAO Classification
  - Acid Lithosols
  - Alluvial Lithosols
  - Alumisols
  - Basic Lithosols
  - Brown Alluvial Soils
  - Brown hydromorphics
  - Coastal Complex
  - Cultural hydromorphics
  - Great Lake
  - Grey hydromorphics
  - Lacustrine Alluvial Soils
  - Latosols
  - Planosols
  - Plinthite podzols
  - Plinthitic hydromorphics
  - Red-yellow podzols
  - Regurs

Source: Forest Cover 2015-
Cambodia Ministry of Environment

WILDLIFE ALLIANCE

WGS 1984 UTM Zone 48N

Phnom Samkus REDD+ Project — Project Area Digital Elevation Model

Phnom Samkus REDD+ Project

*Project Area
Aspect*

Source: ASTER Global Digital Elevation Model V003. 2019, distributed by NASA EOSDIS Land Processes DAAC

Phnom Samkus
REDD+ Project

*Project Area
Slope*

Legend:
- PA
- Cambodia
- Provinces

Slope (Degrees)
- 0.001 - 8.198
- 8.199 - 14.639
- 14.64 - 21.959
- 21.96 - 31.328
- 31.329 - 74.66

Source: ASTER Global Digital Elevation Model V003. 2019, distributed by NASA EOSDIS Land Processes DAAC

WILDLIFE ALLIANCE

WGS 1984 UTM Zone 48N

Phnom Samkus REDD+ Project

Proxy Area

Legend:
- Proxy Area
- PA
- Cambodia
- Provinces

WGS 1984 UTM Zone 48N

Samkos REDD+ Project — Proxy Area Land Cover

Samkos REDD+ Project
Proxy Area Biomass Plots

□ Proxy Area
⊙ Biomass Plots
▭ Provinces
▭ Project Area

Samkos REDD+ Project — Proxy Area FAO Soil Class

Samkos REDD+ Project — Proxy Area Rivers and Streams
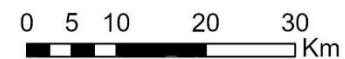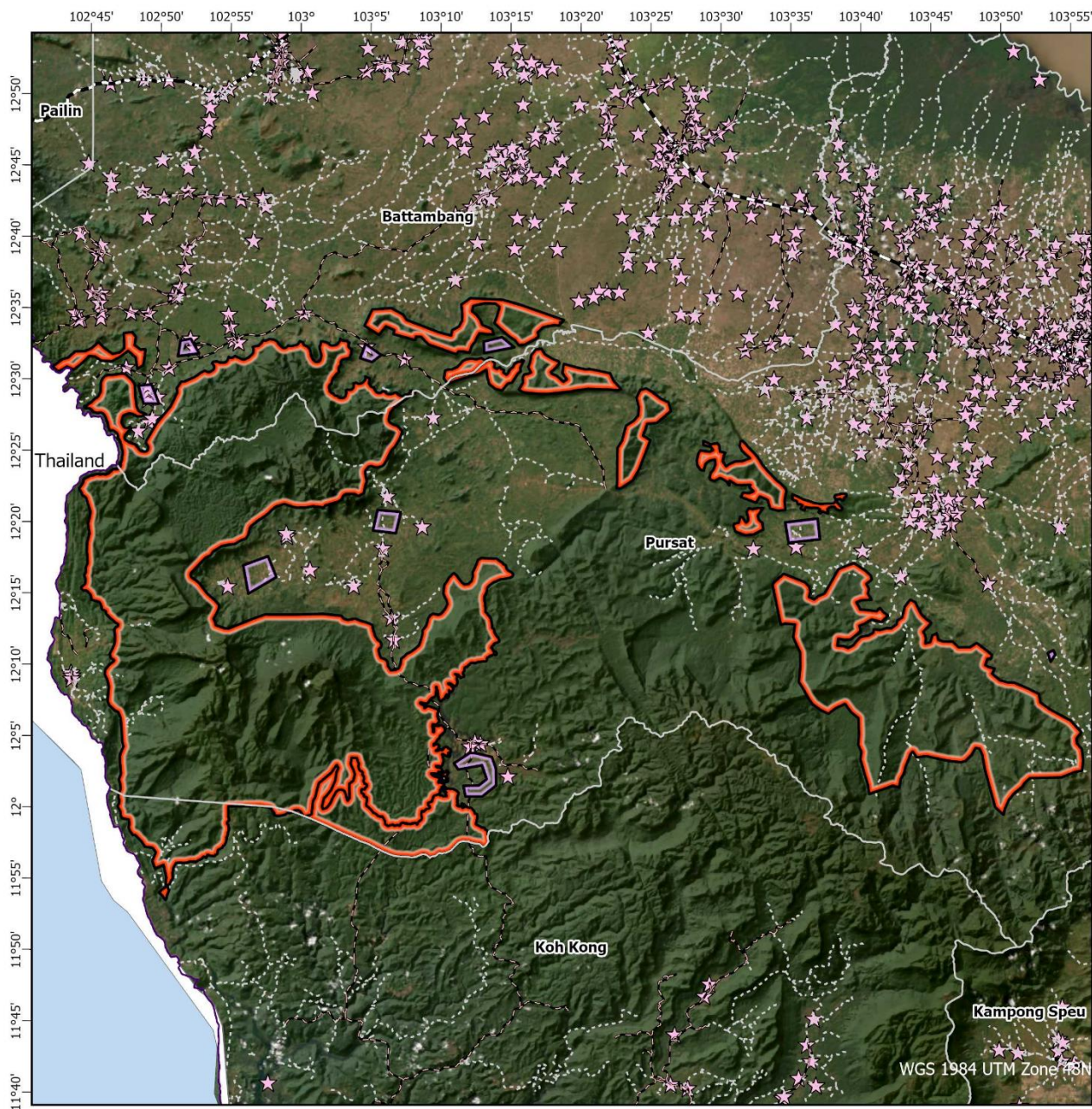
Samkos REDD+ Project — Proxy Area Infrastructure
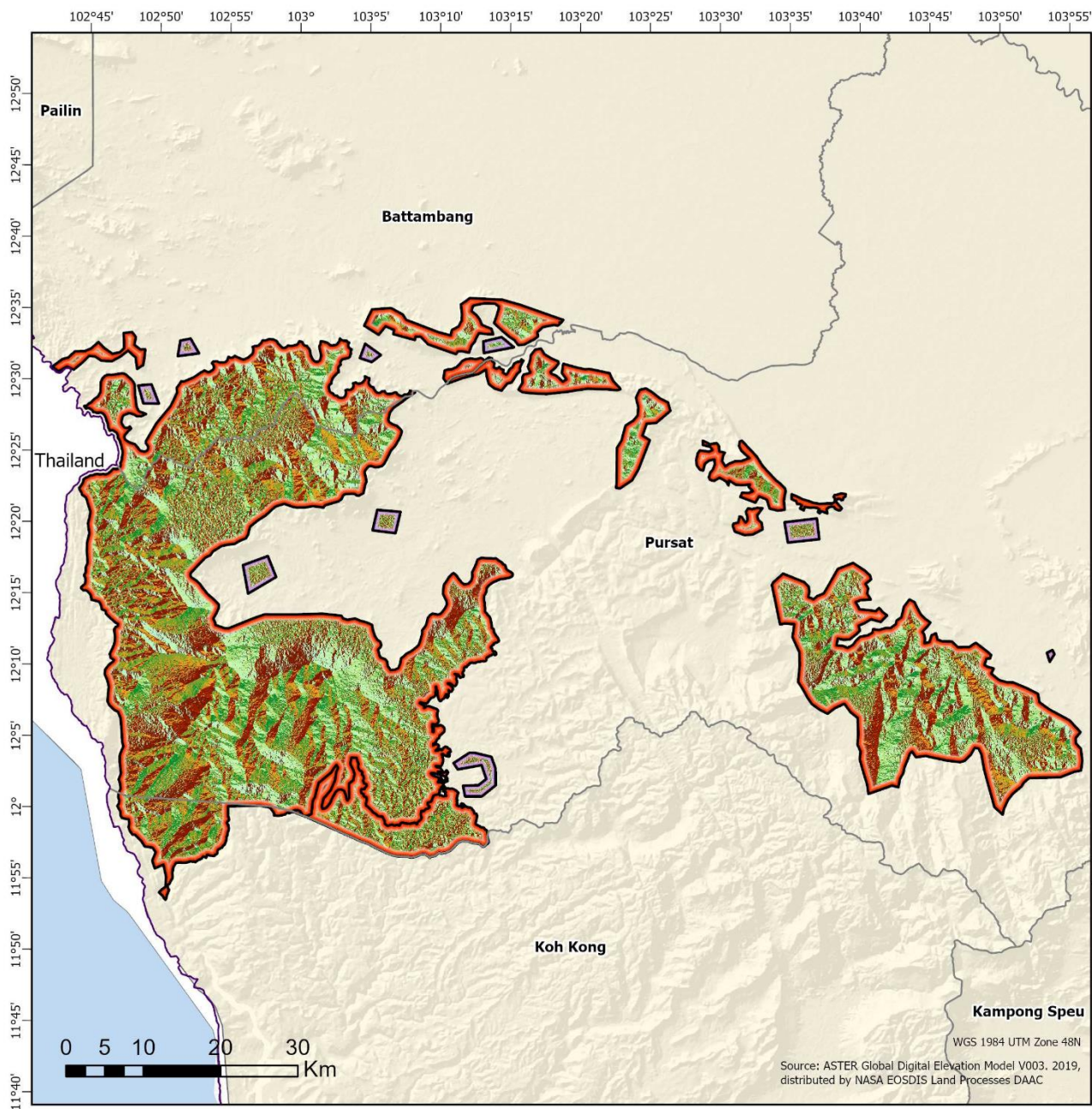
Samkos REDD+ Project

Proxy Area Aspect

Samkos REDD+ Project

*Proxy Area
Digital Elevation Model*

Legend:
- Proxy Area
- PA
- Cambodia
- Provinces

Elevation (m)
- 20.001 - 218
- 218.001 - 339
- 339.001 - 458
- 458.001 - 565
- 565.001 - 672
- 672.001 - 799
- 799.001 - 943
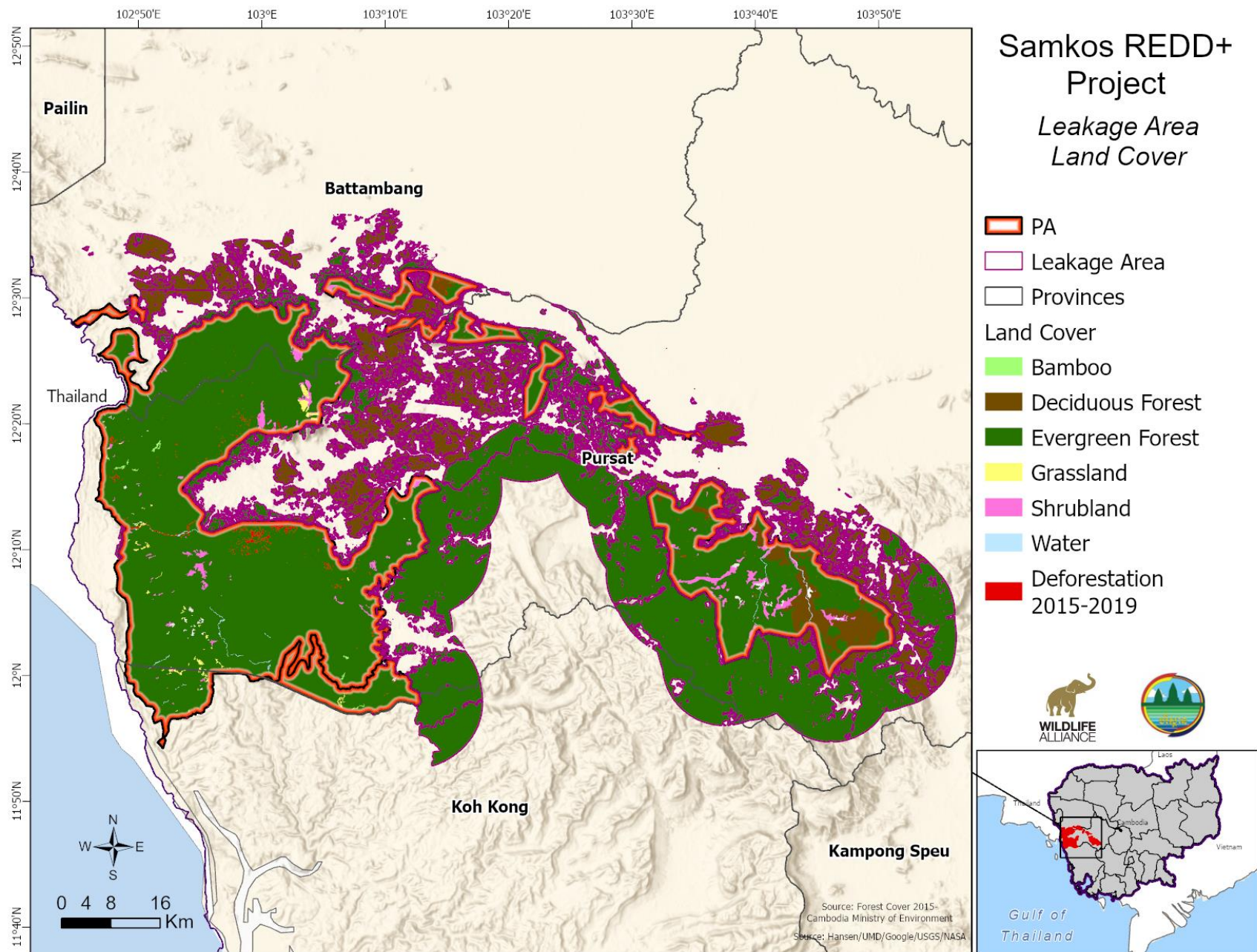- 943.001 - 1,107
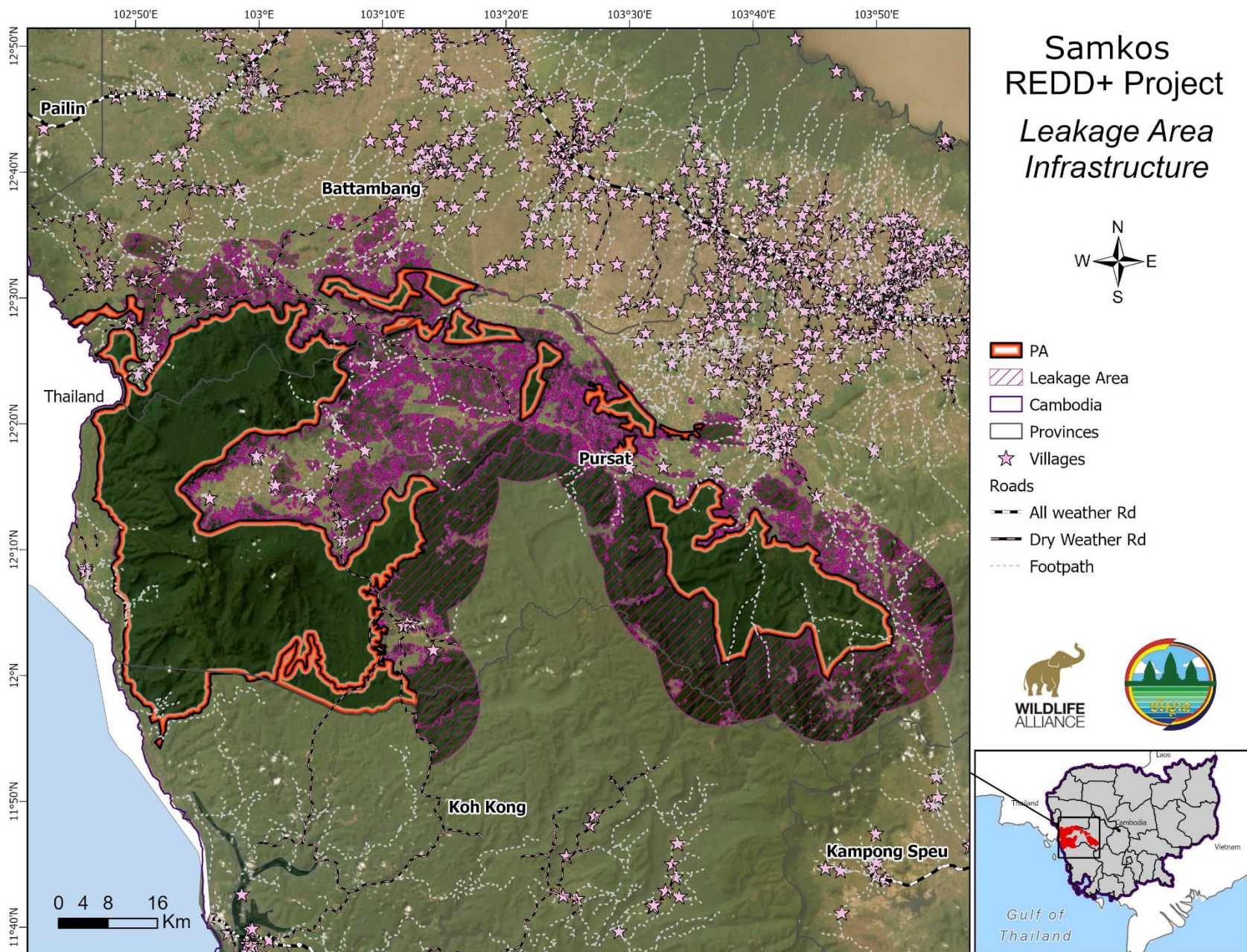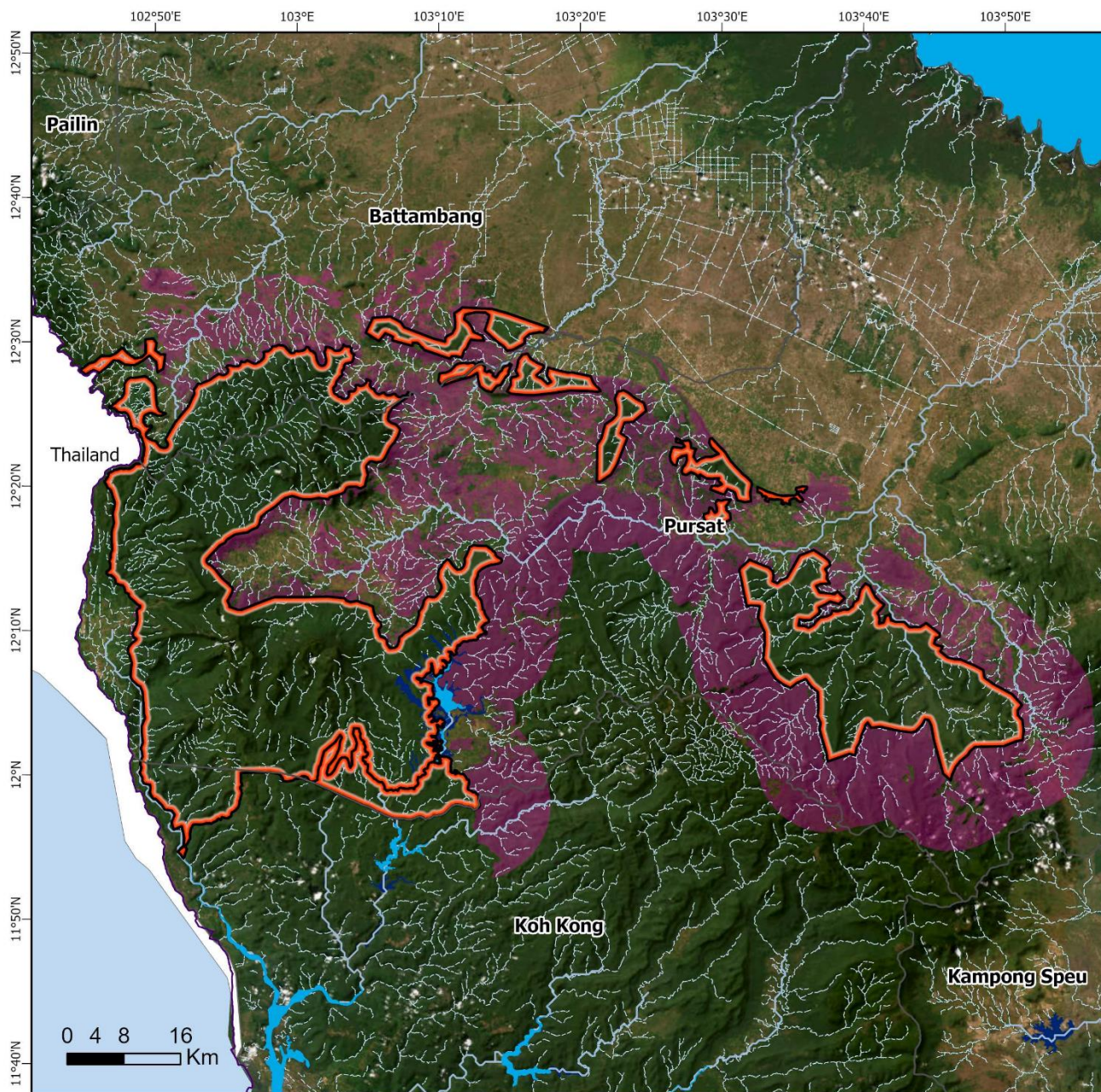- 1,107.001 - 1,304
- 1,304.001 - 1,750

WGS 1984 UTM Zone 48N

Source: ASTER Global Digital Elevation Model V003. 2019, distributed by NASA EOSDIS Land Processes DAAC

Samkos REDD+ Project

Proxy Area Slope

Legend:
- Proxy Area
- PA
- Cambodia
- Provinces

Slope (Degrees)
- 0.001 - 8.198
- 8.199 - 14.639
- 14.64 - 21.959
- 21.96 - 31.328
- 31.329 - 74.66

WGS 1984 UTM Zone 48N

Source: ASTER Global Digital Elevation Model V003. 2019, distributed by NASA EOSDIS Land Processes DAAC

Phnom Samkus
REDD+ Project

Leakage Area

Samkos REDD+ Project

Leakage Area Land Cover

Legend:
- PA
- Leakage Area
- Provinces

Land Cover
- Bamboo
- Deciduous Forest
- Evergreen Forest
- Grassland
- Shrubland
- Water
- Deforestation 2015-2019

Source: Forest Cover 2015-Cambodia Ministry of Environment
Source: Hansen/UMD/Google/USGS/NASA

Samkos
REDD+ Project

*Leakage Area
Infrastructure*

Samkos
REDD+ Project

*Leakage Area
Rivers and Streams*
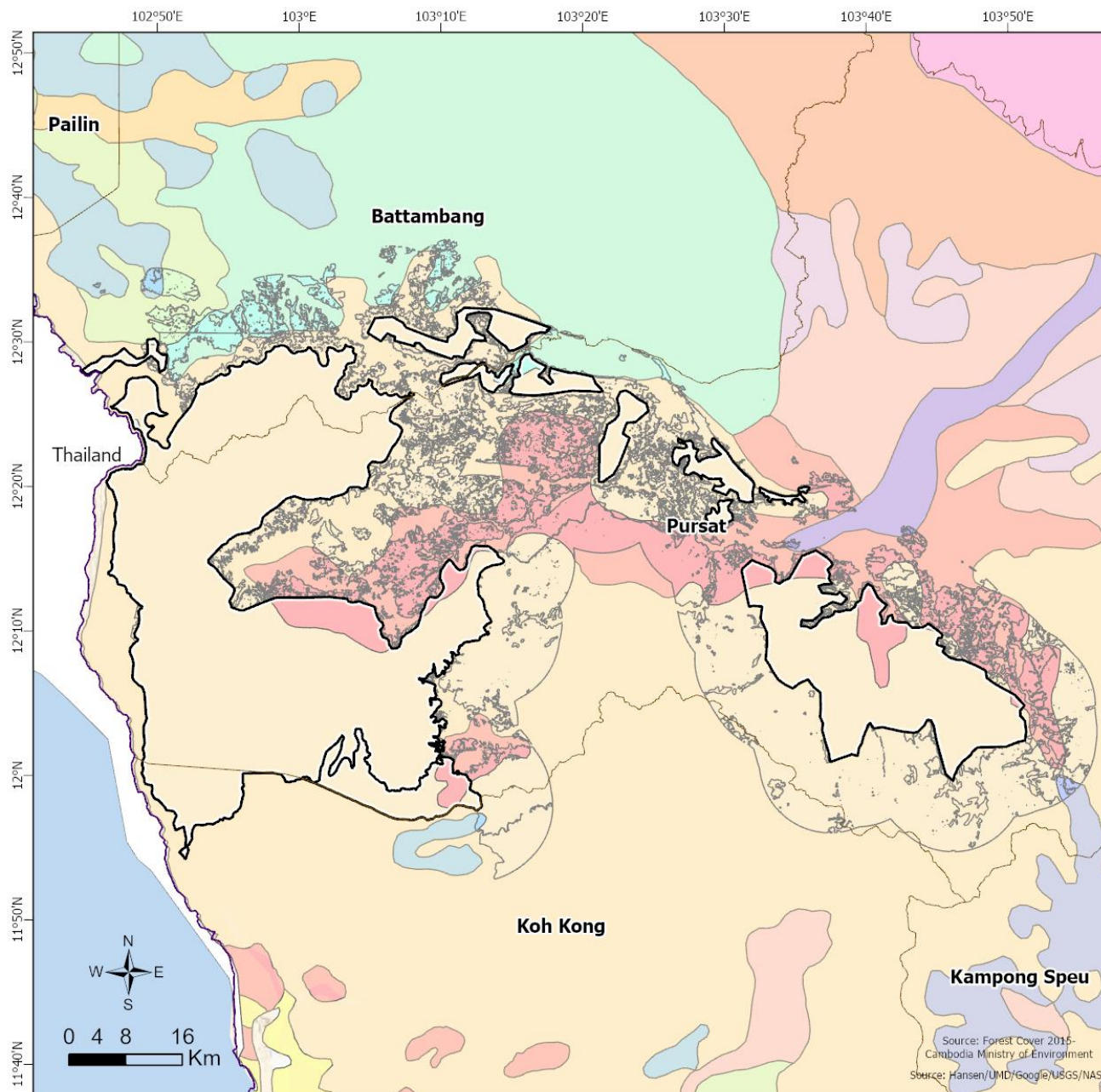
Samkos REDD+
Project

*Leakage Area
FAO Soil Class*

☐ Project Area	Great Lake
☐ Leakage Area	Grey hydromorphics
☐ Provinces	Lacustrine Alluvial Soils
Soil FAO Classification	
Acid Lithosols	Latosols
Alluvial Lithosols	Planosols
Alumisols	Plinthite podzols
Basic Lithosols	Plinthitic hydromorphics
Brown Alluvial Soils	Red-yellow podzols
Brown hydromorphics	Regurs
Coastal Complex	
Cultural hydromorphics	

WILDLIFE ALLIANCE

Source: Forest Cover 2015-
Cambodia Ministry of Environment

Source: Hansen/UMD/Google/USGS/NASA
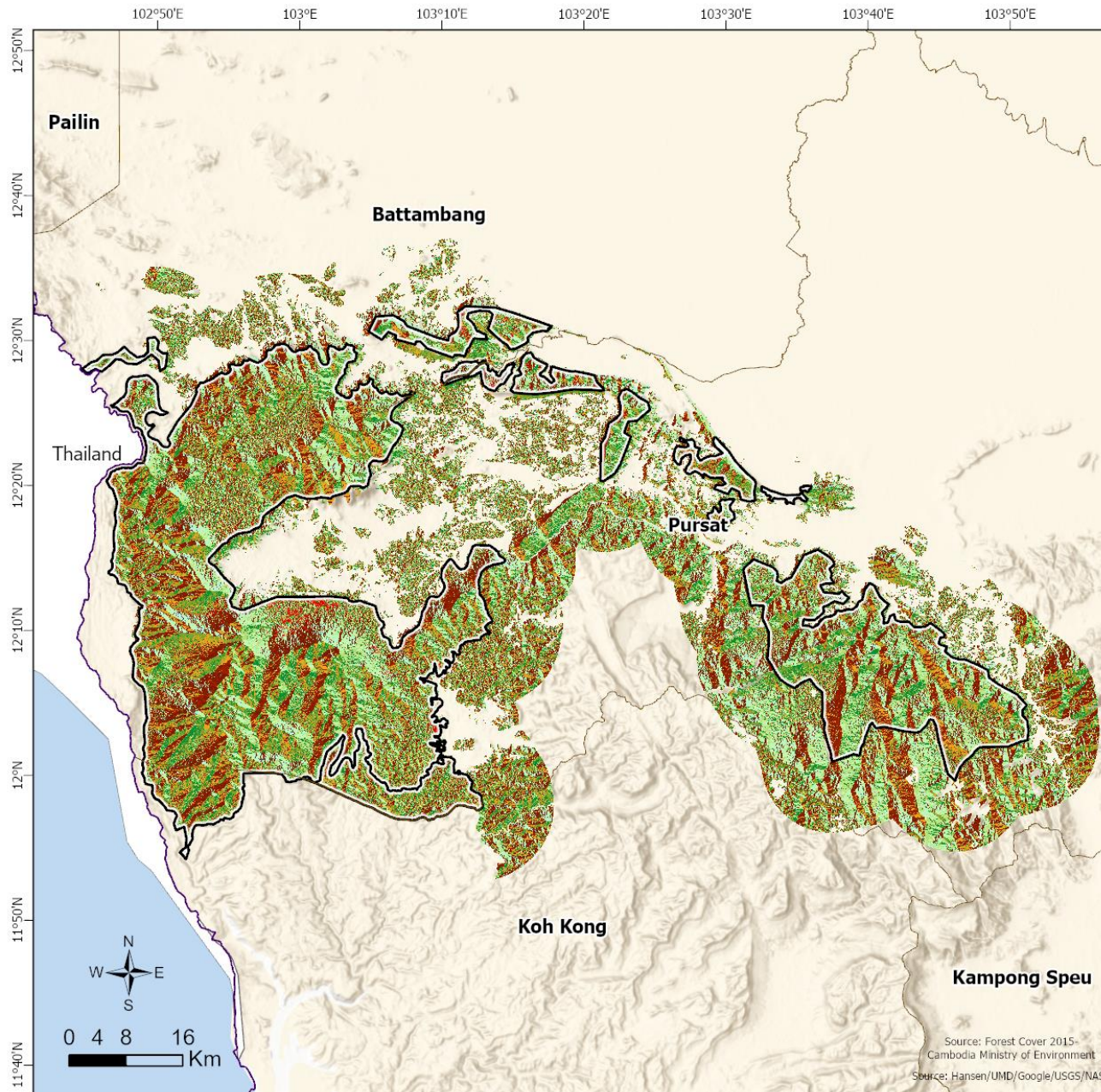
Samkos REDD+ Project

Leakage Area Aspect

Samkos REDD+ Project
Leakage Area Elevation

Samkos REDD+ Project

Leakage Area Slope