

MITIGATION OF GHG: RUBBER BASED AGRO-FORESTRY SYSTEM FOR SUSTAINABLE DEVELOPMENT AND POVERTY REDUCTION IN PAKKADING, BOLIKHAMSAY PROVINCE, LAO PDR

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Project Title	Mitigation of GHG: Rubber based agro-forestry system for sustainable development and poverty reduction in Pakkading, Bolikhamsay Province, Lao PDR
Version	2.0
Date of Issue	15 February 2017
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1 PROJECT DETAILS

1.1 Summary Description of the Project

The project aims at developing a forestry project in Lao PDR by establishing 969.20 hectares of rubber plantations according to a pioneering social and economic formula that provides sustainable change to poor rural communities without adverse impact on land ownership issues. In fact the project promoter actively stimulates the progress of official efforts by the government of the Lao PDR to issue the farmers with formal land certificates, which will enable them to benefit in financial terms from their land ownership rights.

Rubber plantations is to be one of the potential targets of the country as an opportunity for rural development and poverty alleviation. This reforestation project will be established on degraded and abandoned grasslands by growing clones which are better adapted to the relatively long spells of dry weather that is found in Lao PDR, and which is different from the traditional rubber growing areas in Thailand and Malaysia.

The existing or historical land use scenario and the baseline land use scenario are same, hence only the baseline land use scenario is explained below. People had been practicing slash and burn in lands belonging to the project area for many years and the natural forests have ceased to exist more than 10 years before the project started. Subsequently due to land degradation these lands were largely abandoned being too marginal for agricultural production.

The proposed project will sequester approximately 1,107,495 tCO₂-e during its 30 year project period. Annual average GHG removals are estimated to be approximately 36,916 tCO₂-e. There are many significant environmental credits of natural rubber resource such as ability to lock carbon both in biomass and rubber, rubber plantations functioning as self-sustaining ecosystem (annual leaf fall, branches, fruits, twigs, root hairs), cultivation being less demanding on fertilizers and pesticides, promoting soil conservation (in view of 30 year replanting cycles), upkeep of soil, ground water, water infiltration, scope for biological diversity (integration of other species including food crops in the inter-rows according to guidelines to the farmers provided by the project promoter).

Rubber wood, after harvesting for replanting a new cycle will be carefully processed by the project promoter, and it will be going into wood based furniture which is held in inert form for a considerable period of time and the woody portion remaining in the soil decomposes in-situ etc., all in favour of natural resources.

This reforestation project is implemented by Lao Thai Hua Rubber (LTR) Company Limited with the active participation of rural communities in the area who will lease their abandoned land to the project promoter and provide their labour for project implementation whilst the project promoter will provide the capital, technological expertise and marketing of the dried latex. This model is popularly referred to in Lao PDR as the 2 + 3 model. This model has never before been applied in the field of rubber plantations. The objective of this activity is to mitigate Green House Gases (GHG) and reduce poverty in relation to an environment that enables active participation of rural communities in an array of climate change mitigation activities, primarily by compensating for GHG emission through implementing a rubber based agro-forestry system with food crops and other related programmes, to support sustainable organic agriculture that would lead to substantial reduction in poverty among marginalized communities in Pakkading District,

Bolikhamstay Province. Pakkading is a least developed area and have been identified as one of the 47 poorest districts in Lao PDR.

The project will provide over and above the carbon sequestration:

- Poverty alleviation and wealth creation in rural areas,
- Communities empowerment through active participation in all stages of the project, and
- Improvement of basic infrastructure for rural communities.

Project's contribution towards sustainable development

Environmental criteria:

Establishing rubber plantations on degraded, underutilized lands will sequester significant amount of GHGs compared to baseline. Project is implemented by a developer who is committed to environmental sustainability and social responsibility and who is confident that the extraordinary costs involved in pioneering this project will eventually be covered by the supplementary cash flow from sale of VCUs.

Soil erosion has taken place over the years as indicated by the baseline scenario. Eroded top soil tends to be washed away and ends in water bodies resulting in water pollution and loss of farmland nutrients. However under the project, soil erosion is checked, nutrition is retained on the land and therefore water pollution is minimized compared with the baseline scenario. The soil organic contents and mineral contents will be improved due to proper land management. Micro-organism will function and fertilize soil. Vegetation cover is expected to improve soil conditions and the farmers' intercropping with food crops as made possible by advice from the project developer will add to the farmers' food production and contribute to reduce plant diseases.

Social criteria:

The project involves low income families in the area who will get more opportunities to increase their income and thus be less prone to pursue unsustainable practices that might increase CO₂ emissions, harm the environment and deplete the soil limiting the farming potential and livelihood of future generations of farmers. The project promoter will also pay for land and other taxes and contribute to the village funds to strengthen infrastructure and the villagers' quality of life and thus motivate them to make committed efforts for the project to succeed.

The project creates direct employment at agreed wages of the farmers involved in the project and the project promoter is committed to provide all the training necessary. Previously many of the youth in these villages went to neighbouring districts and countries including Thailand and Vietnam to seek employment. As a result, in many cases only the children and older generation remained. This situation will change due to newly created employment from the project and the cash income from the project is likely to have a positive effect on their food crop farming as well. The project developer will promote a working family model where both men and women can actively participate in the project.

Improvements to the infrastructure in the area are being carried out by the project promoter to provide economic accessibility of the project area but also to facilitate farmers' access and strengthen the competitiveness of the farmers when it comes to taking their food crops to the market.

Economic criteria:

Labour requirement for the project will be fulfilled with local employment. Therefore the major portion of the budget on labour will be retained within the country and the local community. A significant portion of the investment capital including equipment and vehicles used will be spent within the country.

Farmers find rubber tree cultivation foreign to their geographical area and economically unattainable since they cannot afford the long term capital investment to grow rubber trees on their own without technical and financial support provided to help them sustain the first seven years with practically no revenue from the land, labour and inputs. LTR Co. Ltd is providing this support by actively engaging the communities in project activities from the start and ongoing. Commercial banks are unwilling to provide long term loans. The Agricultural Promotion Bank (APB) shares the short term perspective of the farming community in Lao PDR and generally does not expose itself to financing agricultural cycles that extend beyond one calendar year.

1.2 Sectoral Scope and Project Type

Sectoral Scope 14: Agriculture, Forestry, Land use.
Afforestation, Reforestation and Revegetation (ARR)
Project is NOT a grouped project.

1.3 Project Proponent

Organization name	Lao Thai Hua Rubber Co. Ltd
Contact person	Mr. Saneu CHOUNRAMANY
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1.4 Other Entities Involved in the Project

Organization name	Prime Consultancy Co Ltd
Role in the project	Consultant
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1.5 Project Start Date

1st June 2008

Project start date was considered the date of land clearance started. Planting was done about 1 month after the land clearing started.

1.6 Project Crediting Period

30 years and 00 months

8th July 2008 to 7th July 2037

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	X
Large project	

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
2008	-50
2009	692
2010	6779
2011	35135
2012	14893
2013	64383
2014	38070
2015	63511
2016	53459
2017	43841
2018	44234
2019	32784
2020	39590
2021	35949
2022	33561
2023	34111
2024	27482
2025	19577
2026	27210
2027	16854
2028	25991
2029	24123
2030	27492
2031	31882
2032	37533
2033	44547
2034	55522
2035	62378
2036	77257
2037	88702
Total estimated ERs	1107495
Total number of crediting years	30
Average annual ERs	36916

1.8 Description of the Project Activity

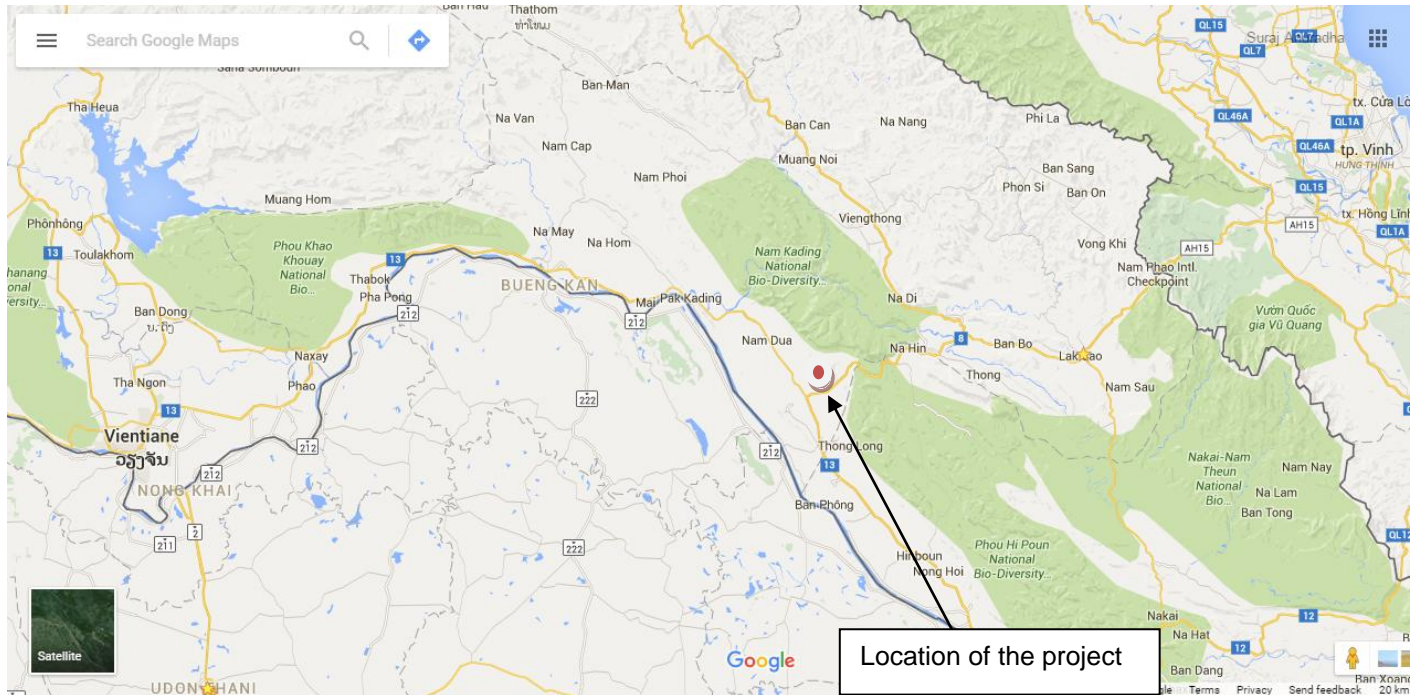
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1.9 Project Location

The project is situated in the Pakkading District, Bolikhamxay Province in Lao PDR. The location of the project is part of depleted and underutilized land belonging to four villages. The area suitable for planting

was assessed by Forest Mapping and Planning Division (FMP) of the Department of Forestry (DOF), Ministry of Agriculture and Forestry (MAF).

Figure 1 Location of rubber plantation Area, Pakkading district, Bolikhamxay province, Lao PDR



The project is implemented in lands belonging to four villages in Pakkading District, Bolikhamxay Province, Lao Peoples Democratic Republic (Lao PDR). Villages are namely;

- Huay Hai village
- Huay Phet village
- Nam Sang village
- Sonephansay village

The location of the project is part of depleted and underutilized land belonging to four villages. The area suitable for planting was assessed by Forest Mapping and Planning Division (FMP) of the Department of Forestry (DOF), Ministry of Agriculture and Forestry (MAF).

Figure 2: Area to be planted for the project

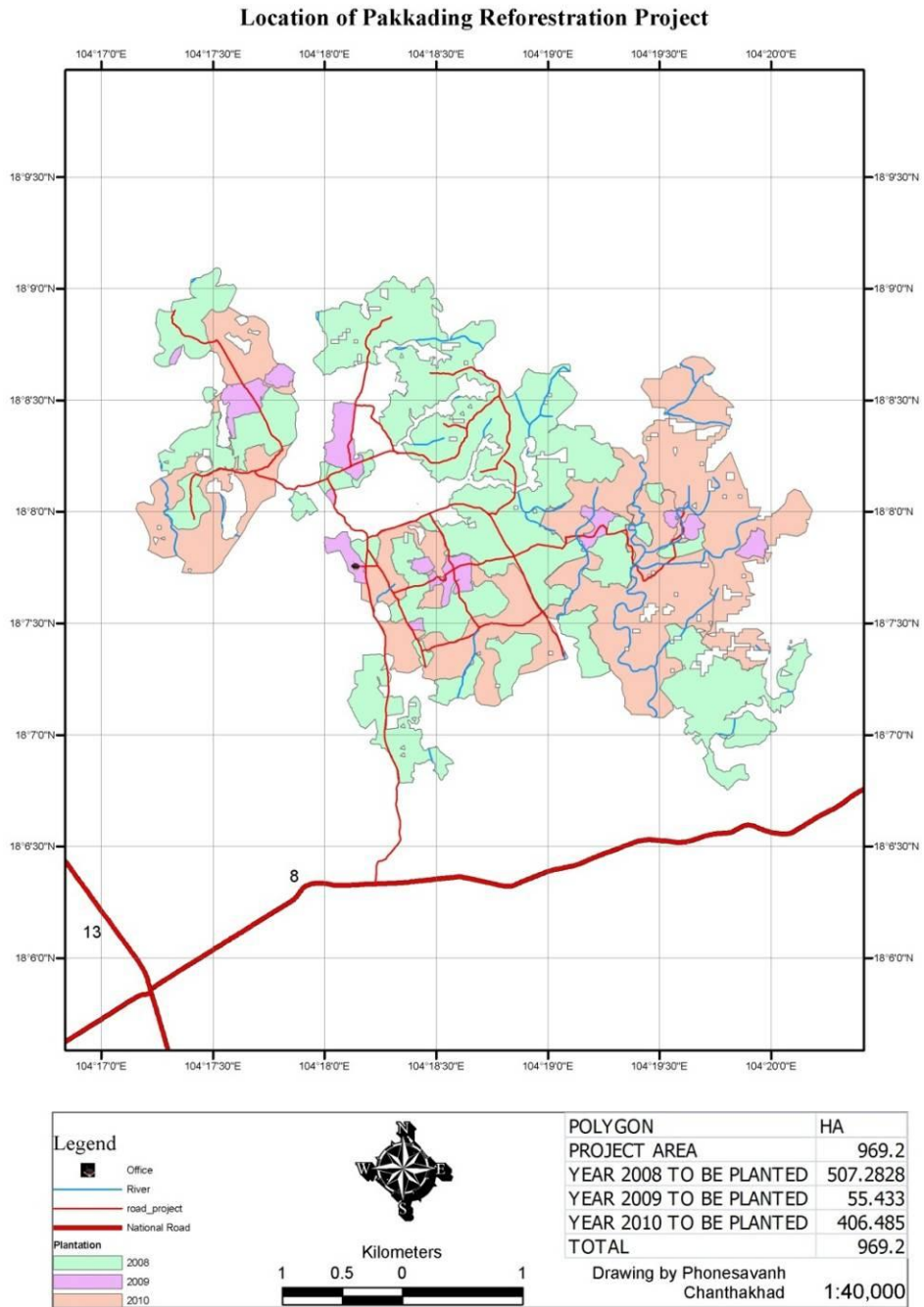
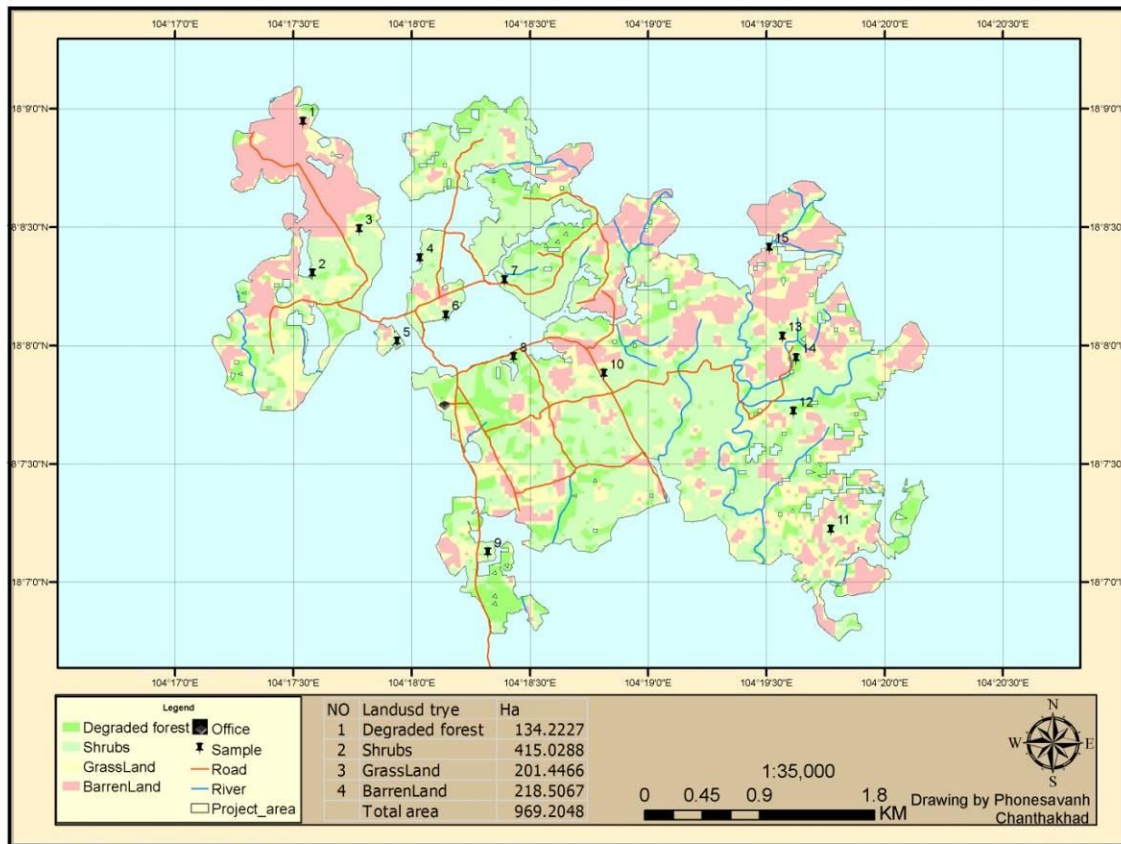


Figure A.3 Land use of rubber plantation area in Pakkading district, Bolikhamsay province, Lao PDR

Land use map 2007 of Pakkading Reforestration Project



The project involves lands belonging to Nam Sang, Huay Hai, Huay Phet and Sonephansay villages. There have been 5 discrete parcels delineated for the unique identification.

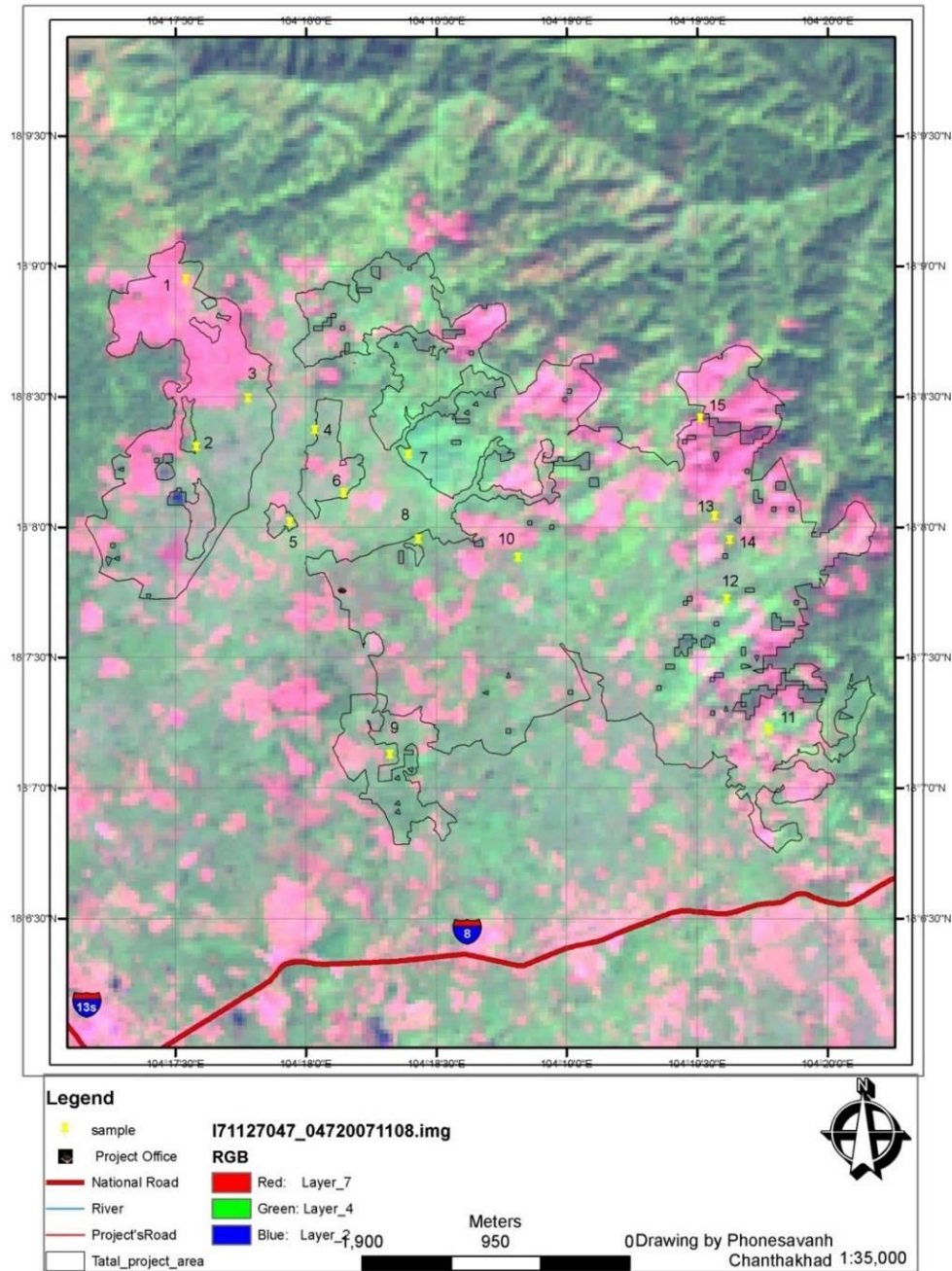
The size and coordinates of the project area was determined as follows:

The project developer contacted the village communities and informed them about the desired project activity. After several stakeholder meetings providing information on rubber planting and the project promoter’s vision in respect of cooperation without transfer of title to the land, village families started joining the project. Only the few villagers with duly documented land titles joined initially. LTR helped the other villagers who did not have duly documented land titles to acquire them. Once these documents were acquired, boundaries of each single plot of land of each farmer were entered into a master data sheet. Then field verifications were done to get the GPS coordinates of these boundaries. Staff from LTR and local communities joined this process. These GPS coordinates were used by the GIS team at LTR Company to prepare GIS maps.

Only areas with potential for reforestation have been included. Others were excluded. Initially the project area was over 1000 ha but after including only reforestation areas, total project area is now 969.20 ha.

Figure 4 Satellite imagery use for the project

Location of Pakkading Reforestration Project



1.10 Conditions Prior to Project Initiation

For this project the baseline scenario is the same as the conditions existing prior to the project initiation therefore please refer Section 2.4 (Baseline Scenario).

Since this is an AFOLU project the following is a description of present and prior environmental conditions.

All the parcels are located within the same District and belong to the neighbouring 4 villages. Environmental conditions in all 5 parcels are similar. Therefore the following information is common for all 5 parcels.

1. Climate

The area is in the Southeast Asia monsoon climate regime. During November-February, when the sun is to the south of the equator, the climate is under the influence of the cold continental high pressure region over China.

1.1 Sunshine

Day length variation is reported to be from a minimum of 10.5 hours per day during December to January to a maximum 12.3 hours per day during June and July months. The bright sunshine per day varies from a minimum 3.65 hours per day to a maximum of 8.2 hours per day in May. The average number of bright sunshine – hours per day over a year is 6 hours per day.

1.2 Precipitation

For the area, the Southwest Monsoon begins in May, reaches its maximum strength in August and disappears about mid-October. The climate then cycles through a transition period to mid-November when the Northeast Monsoon appears. Rainfall becomes very infrequent and light, the air is cool and the humidity lower. The Northeast Monsoon lasts until the end of February when the hot and dry transition period begins.

The 13 years history (1990-2002) of average monthly rainfall at Paksan, Bolikhamxay Province follows the general pattern of the Southeast Asia monsoon. The mean annual rainfall is 3502 mm. The maximum rainfall was recorded in year 1995 as 4306.3 mm and the minimum rainfall was recorded in 1991 as 2315.6 mm.

Table A.1: Mean annual rainfall (mm) station KM 20 (1990 to 2002)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1990	2.5	51.6	91.8	154	417.0	934.0	750.8	570.5	353.1	59.4	48.5	0.5	3433.7
1991	2.5	—	84.2	12.9	202.7	370.4	729.8	589.4	258.3	38.0	—	27.4	2315.6
1992	30.4	26.6	18.9	14.4	282.5	503.0	618.7	559.0	567.8	42.7	0.2	20.1	2684.3
1993	1.7	23.5	139.6	163.5	416.9	865.7	862.1	665.7	504.3	45.1	—	—	3688.1
1994	—	71.6	160.8	56.3	285.5	1287.8	890.2	812.2	370.6	48.8	—	13.3	3997.1
1995	1.0	3.0	20.5	114.3	404.6	828.1	1165.3	1119.7	426.4	223.3	0.1	—	4306.3
1996	3.2	113.2	46.2	187.8	304.5	473.6	709.7	779.0	518.4	101.6	128.1	—	3365.3
1997	13.7	28.7	82.3	208.9	496.9	702.7	1143.5	627.6	633.3	34.6	—	0.4	3972.6
1998	0.1	57.0	77.0	82.0	247.7	757.1	1121.4	411.9	272.6	134.9	0.7	—	3162.4
1999	7.3	—	123.0	266.5	657.3	687.1	521.6	630.3	602.2	234.8	23.2	0.2	3753.5
2000	—	68.3	21.6	186.9	414.2	1063.1	657.1	645.6	731.3	64.4	7.0	—	3859.5
2001	0.9	—	102.0	209.6	506.8	715.9	718.3	646.2	388.2	127.1	0.2	0.7	3415.9
2002	1.0	2.1	24.9	179.2	378.8	847.6	798.9	808.9	466.9	55.0	—	16.7	3580.0

1.3 Temperature

Temperatures between years 1990-2002 are presented in Table A.2. The hottest year recorded was 1996 and the temperature recorded was 32.1 °C.

Table A.2: Temperature (°C & 1/10) Paksan Station, Bolikhamxay Province, Lao PDR

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
1990	Min	17.6	17.3	19.4	24.2	24.9	25.6	25.9	25.1	24.6	23.2	20.4	19.5	22.3
	Max	28.3	28.9	32.6	34.8	32.7	31.3	30.4	29.1	29.7	29.3	28.8	28.4	30.4
	Avg	20.4	23.6	27.1	24.8	28.1	27.6	28.8	27.9	27.1	24.5	22.6	21.3	25.3
1991	Min	17.0	17.4	20.9	23.6	24.8	25.1	25.6	24.8	24.1	22.4	20.3	18.6	22.1
	Max	27.9	28.6	32.4	34.5	31.4	31.0	30.7	29.4	29.3	29.0	28.6	28.1	30.1
	Avg	20.2	24.1	27.3	28.5	27.6	28.3	29.4	28.5	27.3	24.2	23.1	21.8	25.9
1992	Min	14.4	17.9	20.6	23.8	24.3	24.7	25.4	25.1	24.2	23.1	20.7	22.1	22.2
	Max	27.6	28.4	32.1	34.8	31.3	30.8	29.6	29.5	28.7	29.3	28.9	28.0	29.9
	Avg	21.2	24.6	27.4	28.3	27.8	27.4	28.1	27.3	26.7	24.1	23.6	22.3	25.7
1993	Min	16.7	17.8	21.1	24.4	24.6	24.9	25.1	24.7	24.4	21.2	19.4	16.8	21.8
	Max	27.0	30.8	33.2	34.2	30.1	29.4	30.1	28.8	29.7	30.4	29.8	27.8	30.1
	Avg	20.4	23.6	27.8	28.2	27.3	27.1	27.9	26.5	26.4	24.3	23.0	21.2	25.3

1994	Min	16.3	17.8	21.1	25.7	25.5	25.9	25.1	24.4	24.1	22.8	20.3	17.2	22.2
	Max	28.6	30.8	34.1	35.7	35.1	32.8	31.6	29.9	29.7	29.1	28.9	28.7	31.3
	Avg	21.3	23.6	25.4	27.8	28.6	27.6	27.1	26.8	26.2	25.0	23.4	22.1	25.4
1995	Min	16.7	17.5	22.5	25.2	25.3	26.1	25.8	25.4	24.6	22.8	19.6	16.0	22.3
	Max	29.2	31.3	34.3	35.5	34.4	31.4	29.7	29.5	29.1	28.7	27.3	26.5	30.6
	Avg	21.3	24.2	25.8	27.1	26.3	26.8	26.1	26.0	25.8	25.4	25.1	21.3	25.1
1996	Min	15.5	15.4	20.8	21.3	23.2	24.3	24.8	22.5	20.4	20.0	18.5	17.2	20.3
	Max	30.6	28.1	32.8	33.6	32.9	31.6	30.3	35.0	34.0	34.3	32.1	30.2	32.1
	Avg	22.1	21.3	25.4	29.6	28.4	27.9	27.5	28.1	27.3	36.9	35.1	21.9	27.6
1997	Min	16.8	18.3	21.1	22.6	24.5	24.9	24.5	25.1	22.1	20.7	20.1	18.5	21.6
	Max	26.8	29.4	32.4	31.6	31.8	31.6	28.9	30.2	30.1	31.8	30.9	29.9	30.5
	Avg	22.0	23.8	26.8	27.1	28.2	28.2	27.8	27.6	26.1	26.2	25.8	25.4	26.3
1998	Min	17.2	19.0	22.6	24.3	26.1	27.4	27.1	26.8	25.3	22.1	21.4	19.6	23.2
	Max	28.7	31.9	33.7	34.4	34.2	33.7	31.8	30.4	30.0	31.6	31.7	31.1	31.9
	Avg	23.7	25.4	28.2	29.4	30.2	29.3	28.6	28.1	27.5	27.1	26.4	24.3	27.4
1999	Min	16.6	18.2	21.2	23.7	23.4	24.4	24.7	23.9	23.9	22.8	20.5	14.5	21.5
	Max	29.5	31.4	31.4	32.1	30.4	30.7	31.1	30.4	31.1	31.4	29.9	25.7	30.4
	Avg	23.1	26.6	27.9	27.9	26.9	27.6	27.9	27.4	27.5	27.1	25.2	20.1	26.3
2000	Min	16.8	17.0	20.8	23.7	23.8	24.4	24.6	24.5	23.5	22.8	18.0	17.5	21.5
	Max	31.1	30.4	32.6	33.7	31.4	30.7	31.0	30.8	30.9	31.8	29.9	29.6	31.2
	Avg	24.0	23.7	26.7	28.7	27.6	37.6	31.8	27.6	27.4	27.3	23.9	23.5	27.5
2001	Min	15.5	18.8	21.6	24.8	23.9	24.2	25.0	24.7	24.1	22.9	17.7	17.2	21.7
	Max	30.5	30.6	31.4	36.5	35.6	31.0	29.8	31.2	31.7	32.5	29.2	29.2	31.6
	Avg	24.5	24.7	26.50	30.6	25.7	27.6	27.4	27.9	27.9	27.7	23.4	23.1	26.4
2002	Min	16.1	18.6	21.50	23.4	24.1	24.3	24.6	24.3	23.7	21.9	20.4	19.0	21.8
	Max	29.0	31.0	33.20	35.3	31.6	30.4	29.2	30.4	30.4	31.9	30.8	29.9	31.1
	Avg	22.5	24.8	27.30	29.3	27.8	27.3	27.2	23.7	27.0	26.9	25.6	24.4	26.2

1.4 Humidity

Relative humidity in the area is over 75% during the night and early morning, even reaching 85-90%. The relative humidity decreases during the day with a minimum in the afternoon at levels around 60% and sometimes even 40%. Very low humidity may occur in December, January or February. High relative humidity plays a role on trees internal pressure and is favourable to latex production and tree growth.

1.5 Surface winds

The winds are clockwise around the high and are from the Northeast over Southeast Asia. This is the Northeast Monsoon, characterized by cold dry air and infrequent and light rain. During May-August, the sun is to the north of the equator and heats the land mass beneath to a degree that causes an extensive low pressure region called the Inter-tropical Convergence Zone and the Monsoon trough.

1.6 Evaporation and evapo-transpiration

Warm winds from the Southwest carry moisture from the Andaman Sea and the Gulf of Thailand through the Lao PDR region where vertical convection causes the rainfall in large amounts during the height of the monsoon season. This is the Southwest Monsoon. The air is warm and humidity is high.

Evaporation is defined as the transfer of liquid water from the soil alone to the atmosphere. Evapotranspiration is the water-loss to the atmosphere through the combined surface of plants and soil. Variations in different factors of evapotranspiration generally cancel each other out and in Lao PDR the annual water loss to the atmosphere is about 1.485 mm.

1.7 Extreme events

There are no reported catastrophic climatic disasters such as heavy winds, droughts or frost.

2. Hydrology

2.1 Water erosion

Soil condition prior to the project activity was poor. Soil erosion is common in these soils due to lack of soil conservation techniques. However it is expected that erosion will be reduced due to the proposed project activity.

2.2 Flooding

There are no reported flooding in the area.

2.3 Water logging

The soil belonging to the project area does not have any water logging.

2.4 Presence of wetlands

The project area does not have any wetlands.

3. Soil

3.1 Topography

The country as a whole is classified as mountainous area. However, the project area is classified as lowland. The location of the project is between 18°06'50" to 18° 09'20" N Latitude and 104°16' 20" to 104° 20'30" E Longitude. Elevation ranges from 141 m to 410 m MSL.

3.2 Soil types

There is a variation of soil types in the proposed project area. As soil quality begins to degrade under shifting cultivation of cleared land, the farmers have had to abandon land which was

formerly cultivated after deforestation. Soil depth profile range from 20 cm in Nam Sang village to 120 cm in Huay Phet village but the humus layer is marginal at best as a result of erosion.

The disadvantages of these soil types are a low humus content and low cation exchange capacity, which makes temporary retaining nutrients in the topsoil quite difficult.

Most of the fertility was historically stored in the forest cover and, once the forest-cover is removed, these soils rapidly become very poor and therefore prone to surface-erosion. The soil of Huay Phet village is vulnerable and eroded near the Huay Phet stream. It was reported that the banks of the stream were lost year by year from 0.2 m to 1 m width because of lack of protection of trees cover.

4. Ecosystem

The vegetation type in this area is representative of tropical forest whereas the ecosystem of *Dipterocarpaceae*, have been subjected to heavy destruction due to construction of the roads and slash and burn by local villagers. This affected the characteristic of secondary habitats that have been cleared of natural forest cover. Most of these lands are grasslands and others covered with shrubs. Names of floral species found in the area are presented in Appendix: Baseline Information.

The source of the ecosystem information was the baseline study conducted by the team including Dr. Marc Morival (Prime Consultancy Co Ltd), Mr. Chanthaphone PHON-ASA (National University of Laos), Mr. Outhai Vongsa (Department of Forestry). Information about ecosystem “The vegetation type in this area is representative of tropical forest whereas the ecosystem of *Dipterocarpaceae*, have been subjected to heavy destruction due to construction of the roads and slash and burn by local villagers” was determined by the study done by baseline study team. Furthermore the Ministry of Agriculture and Forestry on Lao PDR have issued a letter stating the land belonging to the project activity is depleted and is underutilized.

There are no threatened or endangered species within the project boundary. Local communities in surrounding areas have been eating many of the species found in shrubs and bushes. Since the large trees have been cut down and lands are degrading, these lands are currently not habitats for any rare or endangered fauna.

1.11 Compliance with Laws, Statutes and Other Regulatory Frameworks

Left blank intentionally as per Section 3.11.10 of the VCS Standard (Version 3.5)

1.12 Ownership and Other Programs

1.12.1 Right of Use

The project includes land belonging to farmers of four villages namely Huay Hai, Huay Phet, Nam Sang and Sonéphansay. There will be 402 families participating in the project. Land use of the four villages constituting the project area is presented in the following table.

Table: Land use allocation for four villages

Land use/villages	Huay Hai (ha)	Huay Phet (ha)	Nam Sang (ha)	Sonephansay (ha)	Total (ha)
Village Area	2,500	3,400	3,800	Data N/A	9,700
Reserve Forest	1,007	1,831	2,040	Data N/A	4,878
Village Utilization Forest	370	403	504	Data N/A	1,277
Depleted and underutilized land	815	645	745	363	2568
Agricultural Production area	138	218	228	153	737
Rice field	140	268	258	30	696
House and Building area	30	35	25	8.4	98

Land owners with formal land certificate/ land title which are issued by the Government are eligible to join the project. The project proponent has committed to lease the land for a period of 30 years, which can be renewed for 20 years more. Project proponent will pay the land owner USD 8.00 per hectare per year as the land lease/rent. The company will pay the land lease upfront for a period of 5 years in the following 3 installments.

- 20% on the land identification, demarcation and signing of agreement,
- 40% after land preparation and,
- 40% after planting rubber trees depending on the actual planted area.

Thereafter the land lease will be paid annually by the company until the end of contract. In addition, the company will pay 5.30 USD (45,000 LAK) per hectare per year to the Government as the royalty/tax for land.

The land owner will provide labour for planting and maintenance depending on their personal capacity. The company will make payments according to the work done.

The rights to issued tCERs have been transferred to LTR Co. Ltd. Evidence collected from four chief of villages that the people from each village will join the project only after agreeing to transfer the rights to tCERs to LTR Co. Ltd. Since this project is already registered as an AR CDM project the rights of tCERs have been transferred as the right of VCU to LTR Co. Ltd (PP).

1.12.2 Emissions Trading Programs and Other Binding Limits

As a least developed country (LDC), Lao PDR has no binding limits on GHG emissions or compliance requirements under international multilateral agreements. GHG removals generated by this project will not be used for compliance with binding limits to GHG emissions since such limits are not enforced in Lao PDR. There are no emissions trading programs in place in the country. Consequently, this project will only generate net GHG emission reductions on an additional and voluntary basis.

1.12.3 Other Forms of Environmental Credit

This project is not being used to create other environmental credits

1.12.4 Participation under Other GHG Programs

The project is already registered as a CDM AR project. Registration number:

Link: <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1424864873.61/view>

1.12.5 Projects Rejected by Other GHG Programs

The project has not been rejected by any other GHG programs.

1.13 Additional Information Relevant to the Project

Eligibility Criteria

The project is not a grouped project

Leakage Management

Under the village land allocation program lands within the project area were not pastoral land. The villagers have separate lands for grazing activities and also the historical evidence shows that these lands were not used for grazing. Grazing is not a common practice within the project boundary hence there will be no displacement of grazing activities within the project area.

The District Land Management Authority has confirmed that the land used for the project is specifically under Depleted and Underutilized category (dated 07.05.2008). Also the developer has agreed with land owners to implement the project as an agro-forestry system where villagers can use the land for their agricultural activities if they want. Therefore by this, the developer has ensured that there will be no leakages or local communities will have to clear forests from other areas for their activities.

Commercially Sensitive Information

There is no Commercially Sensitive Information

Further Information

No further information.

Sustainable Development

Project's contribution towards sustainable development has been described in 3 categories, environmental, social and economic.

Environmental criteria:

Establishing rubber plantations on degraded and underutilized lands will sequester significant amount of GHGs compared to the baseline. This project is implemented by a project developer who is committed to environmental sustainability and social responsibility and who is confident that the extraordinary costs

involved in pioneering this project will eventually be covered by the supplementary cash flow from sale of the carbon credits.

Soil erosion has taken place over the years as indicated by the baseline scenario. Eroded topsoil tends to be washed away and ends in water bodies resulting in water pollution and loss of farmland nutrients. However under the project, soil erosion is checked, nutrition is retained on the land and therefore water pollution is minimized compared with the baseline scenario. The soil organic contents and mineral contents will be improved due to proper land management. Micro-organism will function and fertilize soil. Vegetation cover is expected to improve soil conditions and the farmers' intercropping with food crops as made possible by advice from the project developer will add to the farmers' food production and contribute to reduce plant diseases.

Social criteria:

The project involves low income families in the area who will get more opportunities to increase their income and thus be less prone to pursue unsustainable practices that might increase CO₂ emissions, harm the environment and deplete the soil limiting the farming potential and livelihood of future generations of farmers. The project promoter will also pay for land and other taxes and contribute to the village funds to strengthen infrastructure and the villagers' quality of life and thus motivate them to make committed efforts for the project to succeed.

The project creates direct employment at agreed wages of the farmers involved in the project and the project promoter is committed to provide all the training necessary. Previously many of the youth in these villages went to neighbouring districts and countries including Thailand and Vietnam to seek employment. As a result, in many cases only the children and older generation remained. This situation will change due to newly created employment from the project and the cash income from the project is likely to have a positive effect on their food crop farming as well. The project developer will promote a working family model where both men and women can actively participate in the project. There are sufficient opportunities where women can work in the project.

Improvements to the infrastructure in the area are being carried out by the project promoter to provide economic accessibility of the project area but also to facilitate farmers' access and strengthen the competitiveness of the farmers when it comes to taking their food crops to the market.

Economic criteria:

Labour requirement for the project will be fulfilled with local employment. Therefore the major portion of the budget on labour will be retained within the country and the local community. A significant portion of the investment capital including equipment and vehicles used will be spent within the country.

Farmers find rubber tree cultivation foreign to their geographical area and economically unattainable since they cannot afford the long term capital investment to grow rubber trees on their own without technical and financial support provided to help them sustain the first seven years with practically no revenue from the land, labour and inputs. LTR Co. Ltd is providing this support by actively engaging the communities in project activities from the start and ongoing. Commercial banks are unwilling to provide long term loans. The Agricultural Promotion Bank (APB) shares the short term perspective of the farming community in Lao PDR and generally does not expose itself to financing agricultural cycles that extend beyond one calendar year.

2 APPLICATION OF METHODOLOGY

2.1 Title and Reference of Methodology

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2.2 Applicability of Methodology

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2.3 Project Boundary

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Source		Gas	Included?	Justification/Explanation
Baseline	Source 1	CO ₂		
		CH ₄		
		N ₂ O		
		Other		
	Source 2	CO ₂		
		CH ₄		
		N ₂ O		
		Other		
Project	Source 1	CO ₂		
		CH ₄		
		N ₂ O		
		Other		
	Source 2	CO ₂		
		CH ₄		
		N ₂ O		
		Other		

2.4 Baseline Scenario

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2.5 Additionality

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2.6 Methodology Deviations

No methodology deviations.

3 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

3.1 Baseline Emissions

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3.2 Project Emissions

Left blank intentionally as per Section 3.11.10 of the VCS Standard (Version 3.5)

3.3 Leakage

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3.4 Net GHG Emission Reductions and Removals

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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)
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Total				

4 MONITORING

4.1 Data and Parameters Available at Validation

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Data / Parameter	
Data unit	
Description	
Source of data	
Value applied:	
Justification of choice of data or description of measurement methods and procedures applied	
Purpose of Data	•
Comments	

4.2 Data and Parameters Monitored

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Data / Parameter	
Data unit	
Description	
Source of data	
Description of measurement methods and procedures to be applied	
Frequency of monitoring/recording	
Value applied:	
Monitoring equipment	
QA/QC procedures to be applied	

Purpose of data	•
Calculation method	
Comments	

4.3 Monitoring Plan

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5 ENVIRONMENTAL IMPACT

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6 STAKEHOLDER COMMENTS

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APPENDIX X: <TITLE OF APPENDIX>

All Appendices are in the AR CDM Project Design Document (PDD) which shall be submitted along with the VCS Project Description.