No.

DEPARTMENT OF FORESTRY (DOF),
VIETNAM FORESTRY UNIVERSITY (VFU) AND
FOREST SCIENCE INSTITUTE OF VIETNAM (FSIV),
MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT (MARD)
SOCIALIST REPUBLIC OF VIETNAM

THE STUDY
ON
CAPACITY DEVELOPMENT FOR AR-CDM PROMOTION
IN
THE SOCIALIST REPUBLIC OF VIETNAM

DRAFT PDD FOR
A SMALL-SCALE AR-CDM PILOT PROJECT

MARCH 2008

JAPAN INTERNATIONAL COOPERATION AGENCY

NIPPON KOEI CO., LTD.
SOJITZ RESEARCH INSTITUTE, LTD.

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CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM FOR SMALL-SCALE AFFORESTATION AND REFORESTATION PROJECT ACTIVITIES (CDM-SSC-AR-PDD)
(Version 02)

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SECTION A. General description of the proposed small-scale A/R CDM project activity:

A.1. Title of the proposed small-scale A/R CDM project activity:

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Title: Small-scale A/R CDM project in Cao Phong (to be changed)
Version: Version 1
Date: 9 November 2007

A.2. Description of the proposed small-scale A/R CDM project activity:

>>

The proposed small scale A/R CDM project activity plans to establish 365 ha of tree plantations on currently degraded grass and shrub land in Xuan Phong and Bac Phong communes, Cao Phong district, Hoa Binh province, Vietnam. Carbon dioxide will be removed from the atmosphere and stored in carbon pools within the project boundary through the photosynthesis of the planted trees.

Background

The proposed project was formulated through a "Study on Capacity Development for AR-CDM Promotion in Vietnam", a capacity building project funded by the Japan International Cooperation Agency (JICA) and implemented in cooperation with the Vietnam Forestry University (VFU), Research Center for Forest Ecology and Environment (RCFEE), and Department of Forestry under the Ministry of Agriculture and Rural Development (MARD).

The proposed project is located in the rural mountainous area of northwest Vietnam. Most of the forest in the project area was cleared for the expansion of agriculture before 1980 following the national policy of the time. Due to the intensive crop cultivation, the land on the slopes became degraded and was then abandoned and developed a cover of grass and shrubs.

The land use rights for the project area were allocated to individual households in the locality as "production forest land" as determined by the local authority. The production forest land has not been sufficiently used for forestry mainly due to a lack of financial resources to initiate reforestation activities. Local people have used the project area for extensive grazing of livestock and occasional slash and burn cultivation for additional income and fuel wood collection.

Proposed activity

Purpose of the proposed project activity is:

(a) To rehabilitate degraded land and improve land productivity and environmental condition through reforestation.
(b) To reduce the carbon dioxide in the atmosphere by sequestration of carbon in forest carbon pools
(c) To increase the income of the local people by timber production and sale of carbon credits.

To attain these objectives, the proposed project will implement:

(a) Plantations of *Acacia mangium* and *Acacia auriculiformis* for wood production on a 15=year rotation.

(b) Technical assistance to the local people for forest establishment and management practices.
(c) Monitoring and management of the project implementation for ten years.

The proposed project will establish a total of 365.26 ha of plantations and remove 41,029 tCO_2 during the project period. Tree species tolerant of degraded land were selected based on a study conducted by JICA, VFU and RCFEE. The thinned and harvested wood and carbon credits to be obtained will be sold and the profits shared between the project management body and the farmers. In addition, a fodder production plan will be implemented to supply high quality feed for domestic animals as well as to reduce grazing pressure in the planned area. The fodder plan will also be effective to minimize the project's leakage and is expected to increase the income of the local people by improving the nutritional condition of their cattle and buffalo.

Contribution to sustainable development

The project activity will contribute not only to environmental protection but also socio-economic improvement in the rural area including capacity development of local people for resource management.

A.3. Project participants:

>>

Please list project participants and Party(ies) involved and provide contact information in Annex 1. Information shall be indicated using the following tabular format.

Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Indicate if the Party involved wishes to be considered as a project participant (Yes/No)
Socialist Republic of Vietnam (host)	Social Fund (to be named)	Yes
	Vietnam Forestry University	No
	Research Center for Forest Ecology and Environment	No
…	• …	…
(*) At the time of making the CDM-SSC-AR-PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party(ies) involved is required.		

(See Annex 1 for the list of project participants and their contact information)

Social Fund: The social fund is a non-profit organization established in accordance with Decree No. 148/2007/ND-CP of the Vietnamese Government for the purpose of implementing the proposed project. The founding members are composed of Vietnam Forestry University, RCFEE, Hoa Binh Provincial People's Committee, and Cao Phong district People's Committee.

Vietnam Forest University: The Vietnam Forestry University is a state university specializing in forestry and rural development. It is administered by the Ministry of Agriculture and Rural

Development and is managed by the Ministry of Education and Training with respect to educational and professional quality.

Research Center for Forest Ecology and Environment: RCFEE is a specialized independent research organization under the Forest Science Institute of Vietnam (FSIV). It was established in 1990 to address the need for creating and transforming scientific research into ecologically and economically sound solutions for sustainable forest management and development.

A.4. Description of location and boundary of the small-scale A/R CDM project activity:

>>

A.4.1. Location of the proposed small-scale A/R CDM project activity:

A.4.1.1. Host Party(ies):

>>

Socialist Republic of Vietnam

A.4.1.2. Region/State/Province etc.:

>>

Hoa Binh Province

A.4.1.3. City/Town/Community etc:

>>

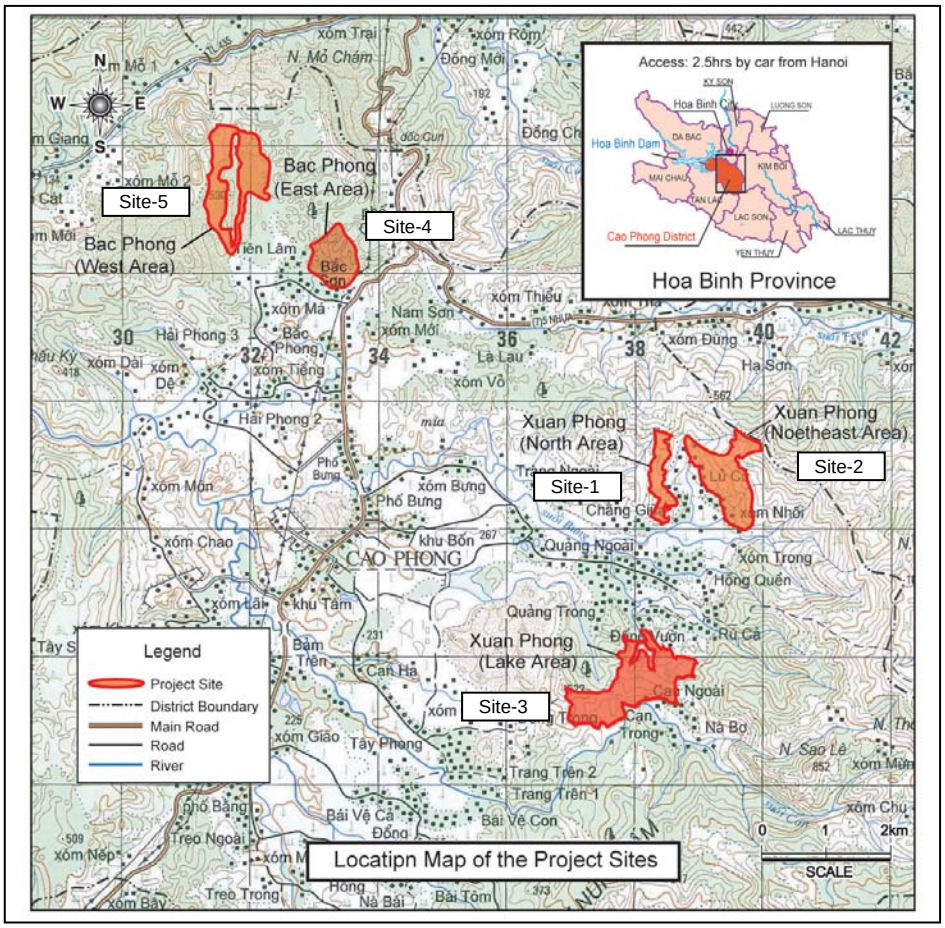
Xuan Phong Commune (site 1, 2 and 3) and Bac Phong Commune (site 4 and 5)

A.4.2. Detail of geographical location and project boundary, including information allowing the unique identification(s) of the proposed small-scale A/R CDM project activity:

>>

The project area is located about 100 km west of Hanoi and is composed of five (5) discrete areas in two communes in Cao Phong district, Hoa Binh province. The detailed geographical locations of the five sites are shown below:

Figure A.4.2-1: Location of the Project Sites



The details of the sites are shown below. Specific project boundaries (latitude and longitude) are given in Attachment-1.

Table A.4.2-1: Area of Each Project Site

Commune	Site No.	Village	Area (ha)
Xuan Phong	Site-1	Lu cu	23.50
	Site-2	Nhoi	73.50
	Site-3	Can	106.63
	Sub-total		**203.63**
Bac Phong	Site-4	Bac Son	71.66
	Site-5	Ma	89.97
	Sub-total		**161.63**
TOTAL			365.26

A.5. Technical description of the small-scale A/R CDM project activity:

A.5.1. Type(s) of small-scale A/R CDM project activity:

>>

The project activities fell under the classification of small scale "reforestation" on "grassland to forested land" and "cropland to forested land".

A.5.2. A concise description of present environmental conditions of the area, which include information on climate, soils, main watershed, ecosystems, and the possible presence of rare or endangered species and their habitats:

>>

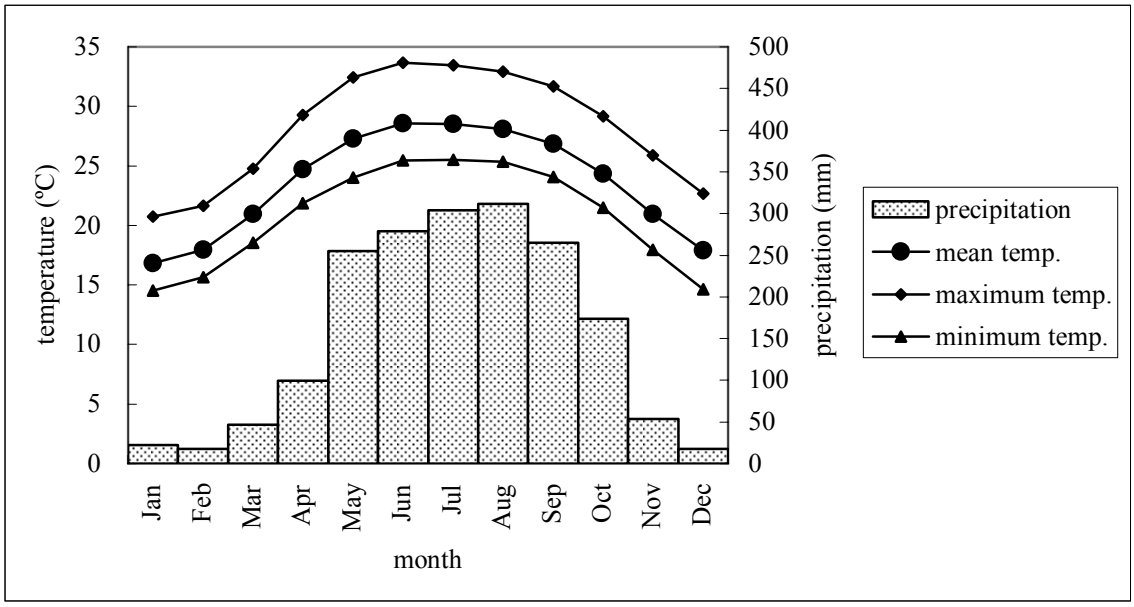
The environmental condition of the project area was summarized in Table A.5.2-1. The climate data of Hoa Binh City, which is about 10 km from the project area, was the only data available (Agro-Meteorology Research Center (2007) "Meteorology & Hydrology Data"). Other information was obtained from functional units of Cao Phong district, i.e. the Statistics Unit, Forest Protection sub-department and the Economic Unit, Agricultural and Forestry Extension Station.

Table A.5.2-1: Summary of environmental conditions in the Project area

Items	Occurrence / Frequency	Description
Annual precipitation	-	➢ 1845 mm on average for the years 1975-2004 in Hoa Binh City (Fig A.5.2-1)
Mean temperature	-	➢ 23.6 ºC (max: 28.2ºC, min: 20.8ºC) for the years 1975-2004 in Hoa Binh City (Fig A.5.2-1)
Drought	no	
Flood	no	
Frost	no	
Storm (Typhoon)	yes several times every year	➢ Typhoons arrive several times a year. ➢ However the damage from the typhoons is not serious in the region of the project which is located inland and distant from the coast
Forest fire	low	➢ Forest fires have not been recorded for more than 20 years in the region of the project. ➢ Forest fire control is included in the project activities (see section A.5.4)
Soil type	-	➢ Silty sand ➢ The soils in the area are dominated by light yellow Feralit soils derived from neutral magma rock and limestone and the thickness is generally around 50 cm. Soil texture is mostly medium and heavy loam. ➢ Soils have low humus content, poor to medium in total nitrogen, poor in available P_2O_5. Soils are rather acidic with pHkcl from 4.1-5.0.
Main	-	➢ Da river (black river) watershed

Items	Occurrence / Frequency	Description
watershed		
Ecosystem	-	➢ Human induced degraded grassland and shrub ➢ Temporal cropland on the degraded land
Endangered species	-	➢ No endangered species were reported in the project area or the surrounding area.

Fig A.5.2-1 Climate in Hoa Binh City (1975-2004)



A.5.3. Species and varieties selected:

>>

The project intends to establish plantations for wood production with a rotation period of 15 years. *Acacia mangium* and *A. auriculiformis* were selected due to their suitability to the site conditions, popularity in Vietnam and economic efficiency. Those two species are naturally distributed in Australia, Papua New Guinea and Indonesia and are known as fast-growing and tolerant to degraded land. They have been widely planted in tropical areas over the world for rehabilitation of degraded lands and production of wood chips and timber. In Vietnam also, those species were introduced a long time ago and are commonly planted all over the country.

For the tree species selection in the project, we interviewed the villagers who were the potential project participants and 80% of them had a preference to plant *A. mangium* and *A. auriculiformis*. Following these interviews the site-species matching was conducted by experts. *A. mangium* was selected for most parts of the project area because of the degraded land. In a limited area where the land is severally degraded, *A. auriculiformis* was selected as the most suitable species.

In general, those tree species have been planted in short rotation for wood chip production in Vietnam. In the project, however, a rather long term rotation period (15 years for both *A.*

mangium and *A. auriculiformis*) was selected considering the rehabilitation and improvement of land productivity and expecting higher income for the participants by producing timber.

A.5.4. Technology to be employed by the proposed small-scale A/R CDM project activity:

>>

The proposed project will employ the planting methods widely adopted in Vietnam such as the ones defined in "Decision No. 38/2005/QĐ-BNN dated 6 July 2005 of MARD on issuance of technical and economic norms for forest planting, forest zoning for regeneration and forest protection" and the "Forestry sector manual (2006)" issued by the FSSP (Forestry Sector Support Program). Site assessment and advice will also be provided periodically from forestry experts.

Operation	Detail
Planting design	➢ Site-species matching was conducted by forestry experts. ➢ For severely degraded areas, *A. auriculiformis*, which is tolerant to harsh environments, was selected. ➢ A long rotation will be adopted to minimize any negative impacts and improve the land. Repeated harvesting in the short term could remove soil nutrients.
Site preparation	➢ The entire site will be manually cleared of vegetation ➢ The vegetation slash will be piled along the contour to minimize soil erosion, and some of the slash will be mixed with the soil at planting. Slash will not be burnt. ➢ Soil preparation will be conducted by digging holes ➢ Holes are to be dug with hoes at a spacing of 2.5 m x 2.5 m for *A. mangium* and 2.0m x 2.0 m for *A. auriculiformis*, ➢ The common size of planting holes is 30x30x30 cm but it can be smaller or larger ➢ Fertilizer, "NPK-S Lam Thao (5.10.3-11)" will be applied at a rate of 0.1 kg/hole ➢ The holes will be backfilled with topsoil to approximately two thirds full.
Planting	➢ Seedlings of good quality and condition will be selected. ➢ Planting will be conducted in the period May-August after site preparation is completed. ➢ Survival rate will be checked 1-3 months after the planting. ➢ Replacement will be conducted if the survival rate is less than 90%.
Tending	➢ For the first several years, weeding is crucial for the growth and survival of the seedlings. ➢ Manual weeding without herbicide and soil scarification around the seedlings will be conducted periodically. ➢ Fertilizer, "NPK-S Lam Thao (5.10.3-11)" will be applied at a rate of 0.1 kg/seedling in the first year (Oct-Nov).
Thinning	➢ Thinning operations will be conducted once at 8-years (50 % will be thinned) in *A. mangium* plantations and twice in *A. auriculiformis* plantations, once at 8-years and once at 12-years (21% and 33% will

Operation	Detail
	be thinned at those times).
Pruning	➢ Adequate pruning is necessary to prevent wind damage and is crucial to produce good timber ➢ Pruning will be conducted periodically according to the growth of the trees and the condition of the plantation and in consultation with forest experts.
Fire control	➢ For forest fire prevention, cooperation and linkage among the entire community is necessary. ➢ Awareness raising activities regarding forest fires will be conducted in each village before the project starts. ➢ Forest fire control forces will be formed at the village level before the project starts. ➢ In case of fire, damaged areas should be replanted.
Pest and disease control	➢ No serious pests or diseases in Acacia plantations are reported in Vietnam. Any risk could be minimized through proper site-species matching and monitoring. ➢ If pests or diseases are found, organic or chemical products should be applied following the regulations of Vietnam.
Protection from grazing and illegal logging	➢ Cooperation and linkage among the entire community is necessary. ➢ Awareness raising activities will be conducted in the villages before the project starts. ➢ Regulations will be formulated and enforced in each village before the project starts.
Harvesting	➢ The trees will be harvested after 15 years and the site replanted.

A.5.5. Transfer of technology/know-how, if applicable:

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Introduction of long rotation plantation for timber production

Recently in Vietnam, most of the plantation for wood chip production has been established employing short rotation. It is known that harvesting removes the nutrients from the soil and repeated harvesting after only a short period might cause negative impacts on the land. In this proposed project, rather long term rotation is introduced for timber production and this is suitable for the rehabilitation of degraded land. As it is a new practice in Vietnam, the experts in forestry will provide advice periodically on the plantation management.

Optional activities for sustainable plantation management

In addition to the plantation activity, the project provides financial support for a fodder production program. The fodder production would decrease the potential leakage in the project area (see section A5.6) and also reduce the pressure on the land from free-grazing. Consequently, the plantation would not be damaged by grazing cattle. In addition, it will improve the growth and nutrient condition of the cattle, which are malnourished at present due to free-grazing in the degraded grassland, and this will increase the income of the local people.

Moreover, when the cattle can be kept in stalls because of the fodder production, introduction of

biogas systems could be also considered. The combination of a plantation project with fodder production is not common in Vietnam and it would be contribute to the sustainable management of the plantation and land use in the area.

A.5.6. Proposed measures to be implemented to minimize potential leakage as applicable:

>>

To minimize the potential leakage, the fodder production program would be provided. This program will support the villagers who would join the plantation project and also other people in the villages. The sites of the villages where the project is located are hilly and the area for cultivation is limited. The villagers hope to increase their income by expansion of grazing; however, they only conduct inefficient free-grazing on degraded grassland. By providing the techniques and materials for fodder production, the cattle will be kept in the stalls of each household and the grazing pressure in the project area would be decreased. This will result in the decrease of displacement of grazing animals in the project area.

A.6. A description of legal title to the land, current land tenure and land use and rights to tCERs / lCERs issued:

>>

Land tenure in Vietnam

In Vietnam, land belongs to all the people and the State is the representative owner. The State shall decide land use purposes and grant land use rights to land users in the form of land allocations, land leases, and recognition of land use rights for current stable land users. The State authorities issue land use right certificates (so called "red book") to land users in order to protect rights and obligations (Article 5 of the Land Law 2004). Forests and forest land must be allocated in accordance with the Land Law.

Ownership of forest and forest products in Vietnam

The Forest Protection and Development Law (2004) defines the rights and obligations of forest owners for three types of forests classified based on the major use purposes; production forest, protection forest, and special-use forest. The land of the proposed project area is classified as "production forest," which shall be used mainly for production of timber and non-timber forest products in combination with contributing to environmental protection. According to the Law, the holders of the land use rights for the production forests have ownership rights on forest products. However, the Law does not clearly recognize the rights to the carbon or to carbon credits.

Ownerships of CERs

The Prime Minister's Decision No. 130/2007/QD-TTg dated 2/8/2007 regarding financial mechanisms and policies regarding CDM projects states that CER is under the ownership of the CDM project developers and the investors implementing the CDM project and, therefore, those developers and investors have the right to sell the CERs.

The land use rights in the project area are summarized in Table A.6-1.

Table A.6-1 Summary of land use rights in the project area

	yes/no	Description
The name of the property	-	The land of the proposed project area is allocated to 329 households. In addition, 35 pieces of land are allocated to cooperatives and 6 pieces are allocated to communities (see Table A.6-2). Land use right certificates were issued by district people's committee (DPC) in 1995. The list and the official documents would be provided to the DOE at the validation.
Information regarding how long the land has been in the hands of the current land use right holders	-	The land use right certificates issued to the users of the proposed project area indicate that they have the right for 50 years.
How many people live within the boundary of the project activity	-	There are no households within the project boundaries as it is not a settlement.
Does the project include a cooperative of small land use right holders?	Yes	Land use right holders of the project area would join the project by contracting with the project participants. The villagers would be responsible for planting and tending trees in their own areas.
Is the legal title to the land in the name of the project participant?	No	The legal use right for the land is in the names of the heads of the households, cooperatives, and villages. They will sign a contract agreement with the project participants regarding the project implementation.
Are all carbon pools in a given piece of land owned by the same person/institution?	No	According to aforementioned Law and regulation, holders of the land use rights for the forest land have ownership of the forest products (timber, firewood, etc.), while CER is owned by the CDM project developers and investors.
Are carbon pools included in the legal title or not?	No	Land use right certificates do not mentioned legal ownership of carbon or CERs. This will be clarified in the contract between the Social Fund and the villagers that hold land use rights for the project area.
Description of the current land use	-	Most of the land in the project area is covered by grass and shrub and used for fuel wood collection and free grazing, not for agriculture as it is classified as production forest area by the land use plan determined by the communes. However, slash and burn cultivation is occasionally conducted for maize, cassava and sugarcane in some small scattered areas.

Table A.6-2 Proportion of Land tenure in the project area

Commune	Site	No. of Land Use Right Holders		
		Individual households	Cooperative	Commune
Xuan Phong	Site-1	26	0	0
	Site-2	46	0	0
	Site-3	114	1	1
Bac Phong	Site-4	82	1	1
	Site-5	53	2	0

A.7. Assessment of the eligibility of land:

>>

Land eligibility is assessed using "The procedure to demonstrate the eligibility of lands for afforestation and reforestation for CDM project activities" approved by the CDM Executive Board (EB 35, 19 October 2007).

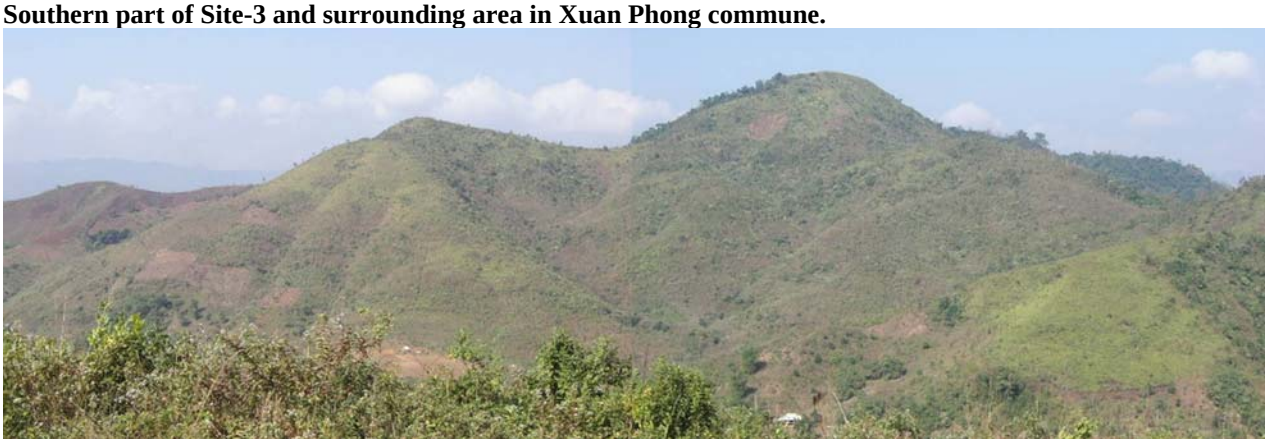
Forest in Vietnam is defined by DNA as an area of at least 0.5 ha with a minimum crown cover of 30% and a minimum tree height at maturity of 3.0m.

The land at the beginning of the project does not contain forest: Field surveys conducted in 2007 indicated that the proposed project area is below the threshold of the definition of a forest (see pictures). It was confirmed from the land use map of 2006 and the analysis of Landsat satellite imagery taken on 1 February 2007 that the proposed project area did not contain any forest and that it was covered with grass and shrub.

Site-1 and the surrounding area.

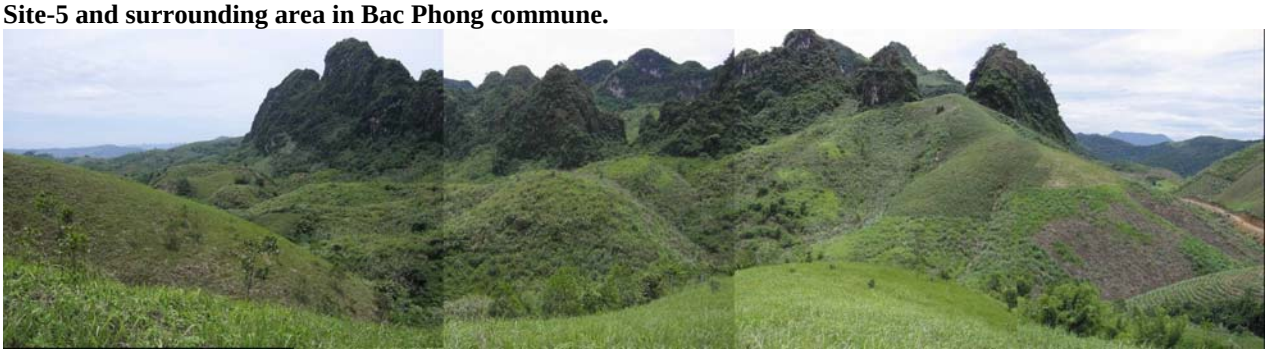
Site-2 and surrounding area in Xuan Phong commune.

Southern part of Site-3 and surrounding area in Xuan Phong commune.



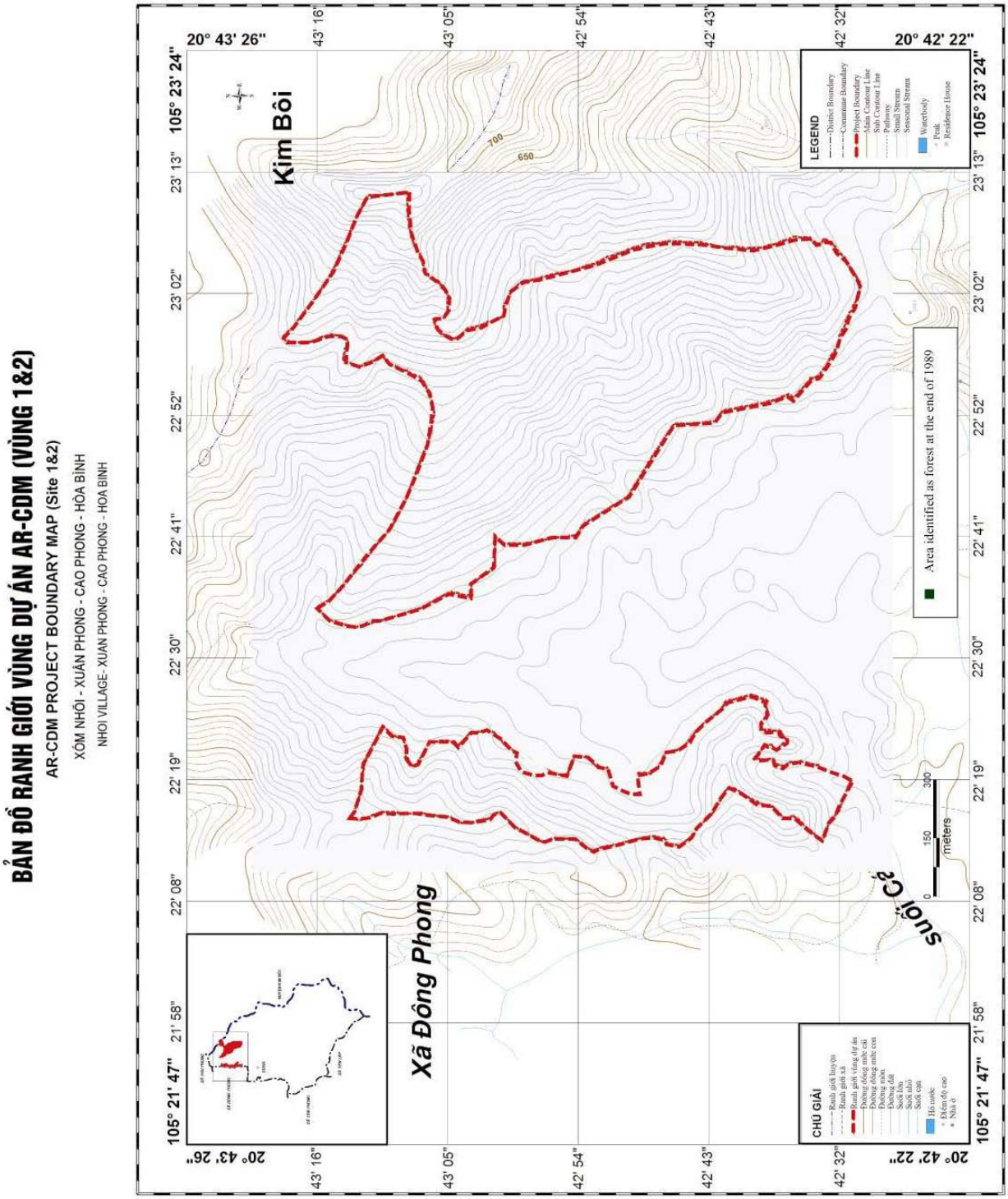
Site-4 and surrounding area in Bac Phong commune.

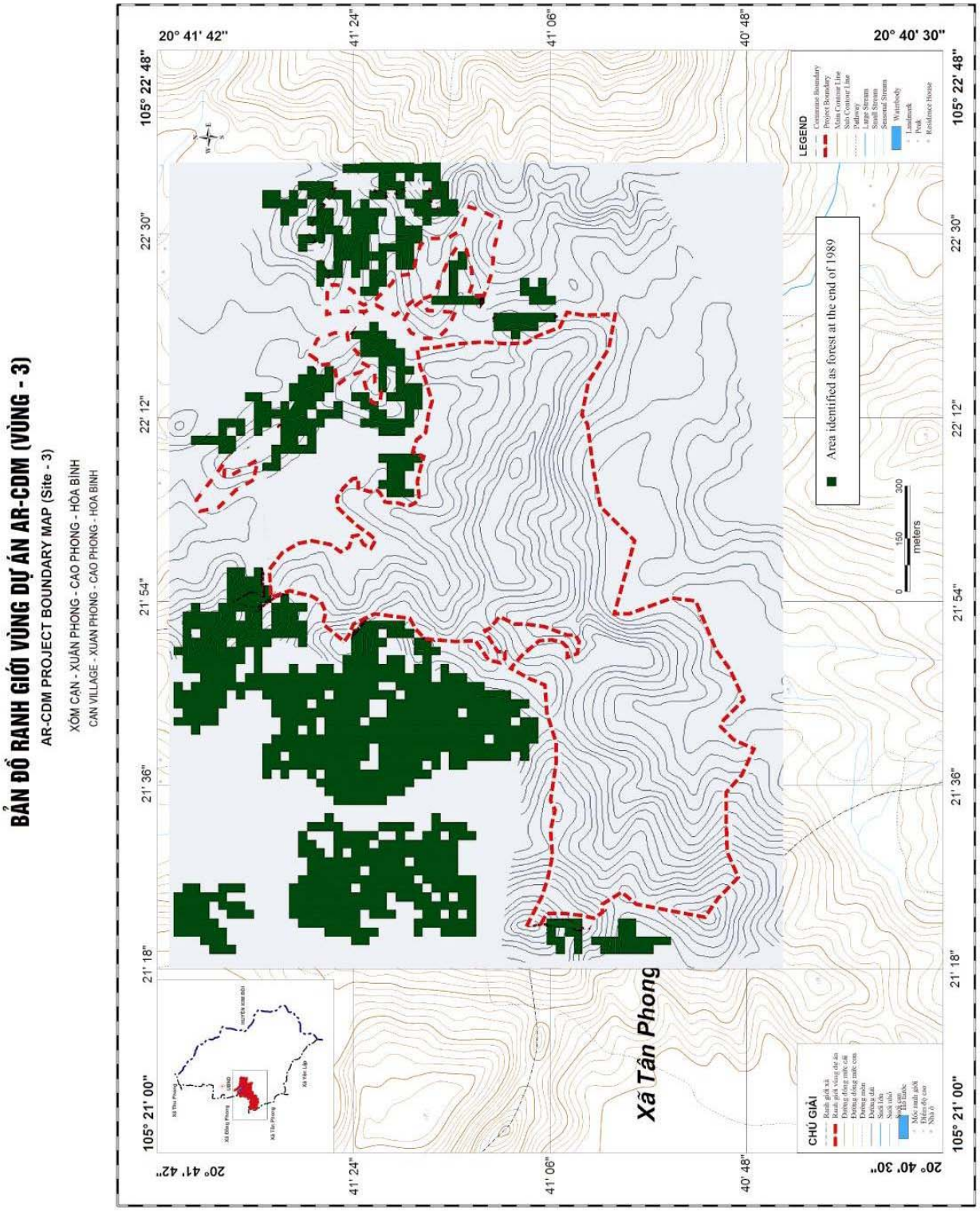
Site-5 and surrounding area in Bac Phong commune.



The land was not forest as of 31 December 1989: A total of 20 people who have lived in the villages adjacent to the project area for more than 20 years were interviewed applying the PRA procedure. The maps and pictures of the proposed project area were shown and the definition of forest was explained. The villagers were encouraged to discuss their history of land use in the area using the map. The results indicated that the proposed project area had been deforested before 1980 due to expansion of crop area promoted by the government. The leaders and staff of Cao Phong district and two communes as well as village leaders all affirmed that the proposed project area was deforested about 30 years ago.

Further, Landsat satellite imagery taken in November 1989 was analyzed in order to confirm the land eligibility. The following maps with project boundaries indicated that the proposed project area was not forest as of November 1989.


BẢN ĐỒ RANH GIỚI VÙNG DỰ ÁN AR-CDM (VÙNG 1&2)
AR-CDM PROJECT BOUNDARY MAP (Site 1&2)
XÓM NHỘI - XUÂN PHONG - CAO PHONG - HÒA BÌNH
NHOI VILLAGE- XUAN PHONG - CAO PHONG - HOA BINH
20° 43' 26"
20° 42' 22"
105° 23' 24"
105° 21' 47"
Kim Bôi
Xã Đông Phong
Suối Cả
LEGEND
Area identified as forest at the end of 1989
CHÚ GIẢI
meters

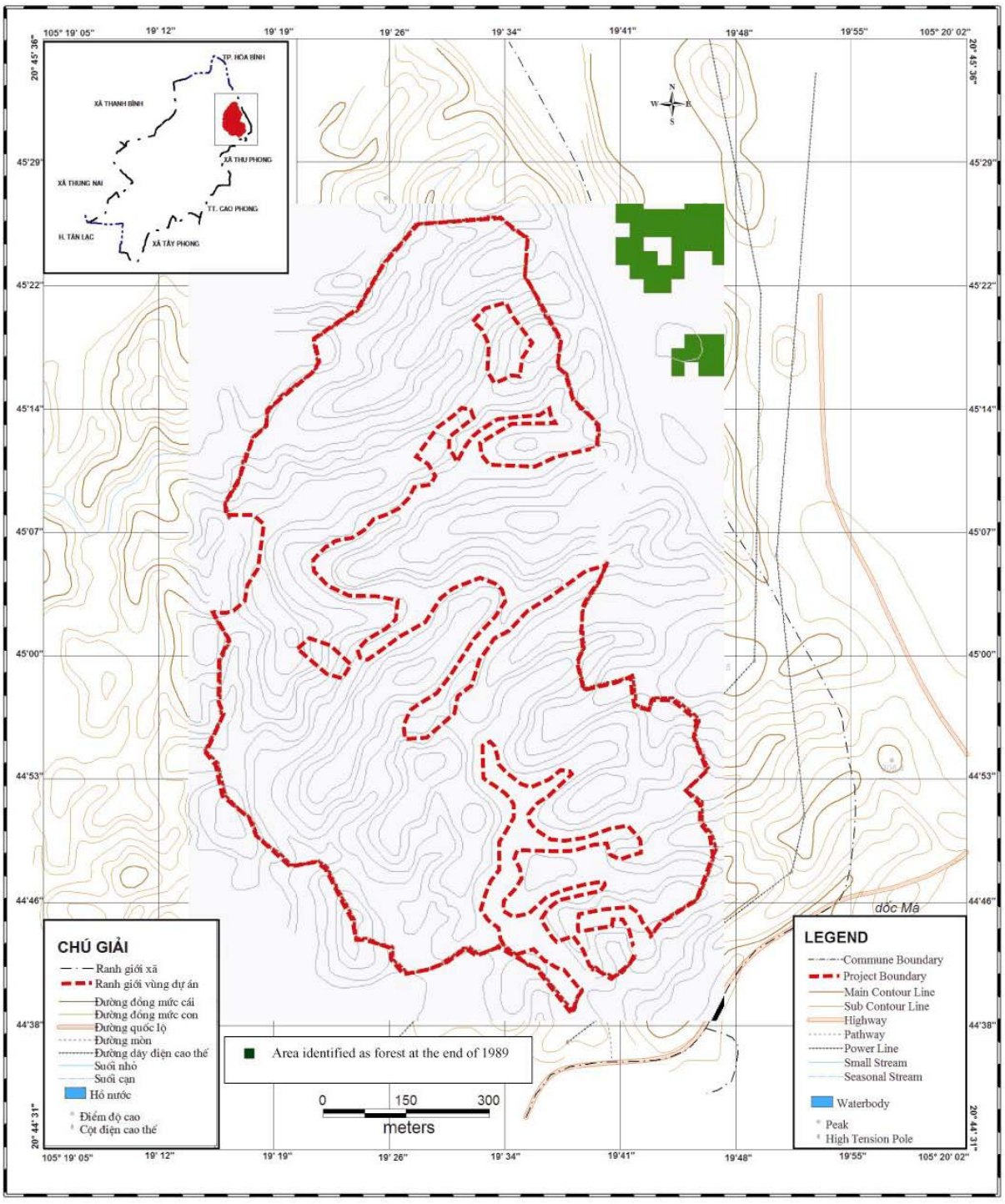

BẢN ĐỒ RANH GIỚI VÙNG DỰ ÁN AR-CDM (VÙNG - 3)
AR-CDM PROJECT BOUNDARY MAP (Site - 3)
XÓM CẠN - XUÂN PHONG - CAO PHONG - HÒA BÌNH
CAN VILLAGE - XUAN PHONG - CAO PHONG - HOA BINH
20° 41' 42"
20° 40' 30"
105° 22' 48"
105° 21' 00"
41' 24"
41' 06"
40' 48"
22' 30"
22' 12"
21' 54"
21' 36"
21' 18"
LEGEND
Area identified as forest at the end of 1989
0
150
300
meters
CHÚ GIẢI
Xã Tân Phong

BẢN ĐỒ RANH GIỚI VÙNG DỰ ÁN AR-CDM (VÙNG - 4)

AR-CDM PROJECT BOUNDARY MAP (Site - 4)

XÓM BẮC SƠN - BẮC PHONG - CAO PHONG - HÒA BÌNH

BAC SON VILLAGE - BAC PHONG - CAO PHONG - HOA BINH

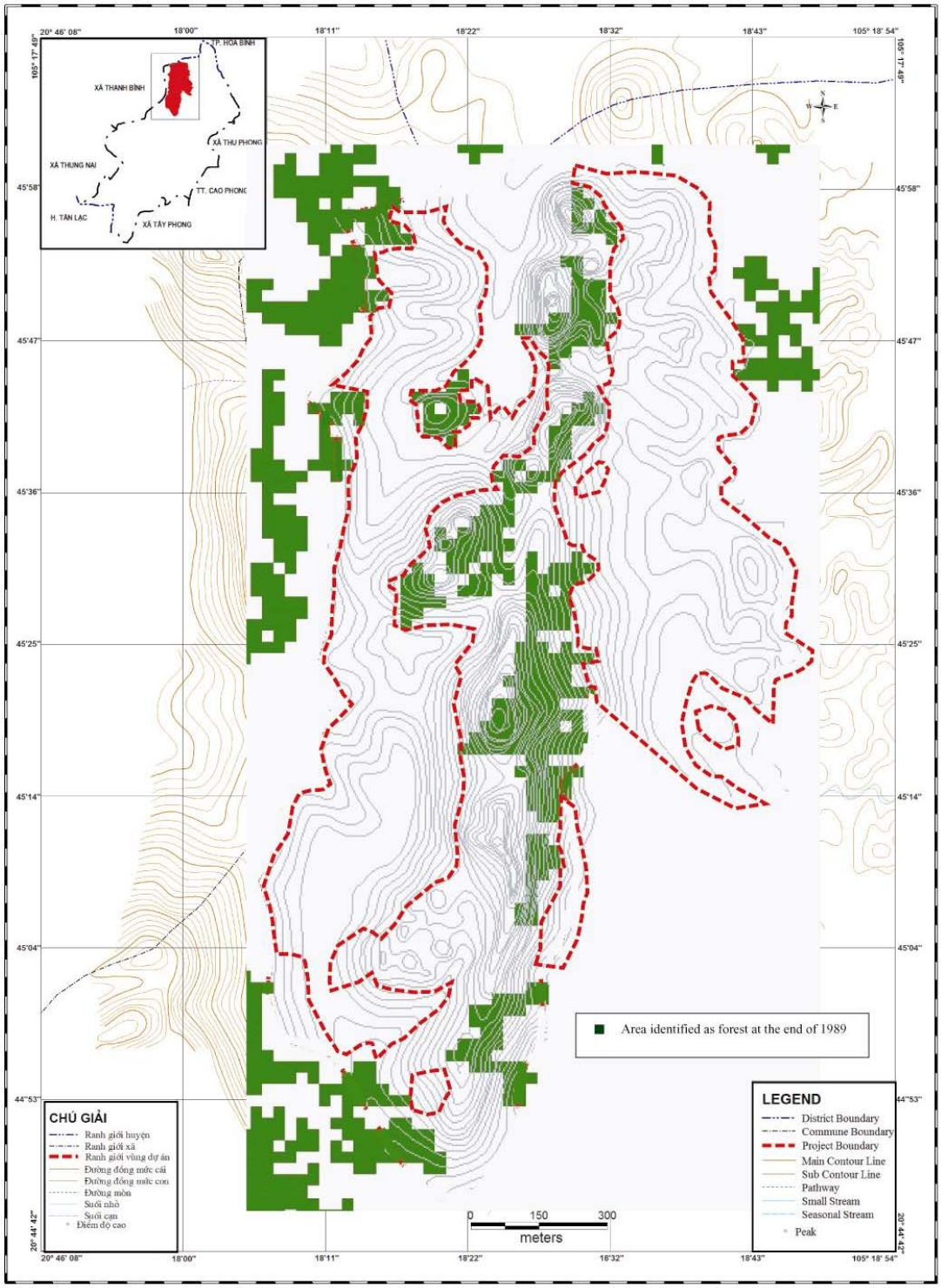


BẢN ĐỒ RANH GIỚI VÙNG DỰ ÁN AR-CDM (VÙNG - 5)

AR-CDM PROJECT BOUNDARY MAP (Site - 5)

XÓM MÁ - BẮC PHONG - CAO PHONG - HÒA BÌNH

MA VILLAGE - BAC PHONG - CAO PHONG - HOA BINH



A.8. Approach for addressing non-permanence:

>>

Please select between:

■ **Issuance of tCERs**

□ **Issuance of lCERs**

A.9. Duration of the proposed small-scale A/R CDM project activity / Crediting period:

>>

A.9.1. Starting date of the proposed small-scale A/R CDM project activity and of the (first) crediting period, including a justification:

>>

Starting date of the proposed project and the crediting period is 1 May 2009. The planting season in Cao Phong district starts in May.

A.9.2. Expected operational lifetime of the proposed small-scale A/R CDM project activity:

>>

More than 30 years.

A.9.3. Choice of crediting period and related information:

>>

Please select one of the following:

1. Renewable crediting period ■
2. Fixed Crediting period □

A.9.3.1. Duration of the first crediting period (in years and months), if a renewable crediting period is selected:

>>

16 years

A.9.3.2. Duration of the fixed crediting period (in years and months), if selected:

>>

N/A

A.10. Estimated amount of net anthropogenic GHG removals by sinks over the chosen crediting period:

>>

Please provide the total estimation of net anthropogenic GHG removals by sinks as well as annual estimates for the chosen crediting period. Information on the net anthropogenic GHG removals by sinks shall be indicated using the following tabular format.

Years	Annual estimation of net anthropogenic GHG removals by sinks in tonnes of CO_2 e
Year 0	0

Year 1	-5,986
Year 2	1,743
Year 3	3,551
Year 4	6,043
Year 5	7,270
Year 6	7,822
Year 7	8,026
Year 8	-3,634
Year 9	-6,226
Year 10	4,430
Year 11	4,049
Year 12	3,992
Year 13	2,900
Year 14	3,567
Year 15	3,484
Total estimated net anthropogenic GHG removals by sinks (tonnes of CO_2 e)	41,029
Total number of crediting years	16
Annual average over the crediting period of estimated net anthropogenic GHG removals by sinks (tonnes of CO_2e)	2,564

The negative values of the net anthropogenic GHG removals by sinks during the credit period are caused by the decrease of the baseline carbon stock at year 1 and by the thinning operations at years 8 and 9.

A.11. Public funding of the proposed small-scale A/R CDM project activity:

>>

There is no public funding to be used for the proposed project activities that would result in the diversion of official development assistance (ODA) or financial obligations of any Parties under UNFCCC.

The project development and the validation were supported through a capacity building project, namely the ”Study on Capacity Development for AR-CDM Promotion in Vietnam” funded by Japan International Cooperation Agency (JICA), but it is not considered as the diversion of ODA.

The plantation activity would be funded by a Social Fund established for the purpose of the implementation of the proposed project and the local people would contribute partially by providing labor. The Social Fund will operate the project using funds given by a private company and the income from project activities.

A.12. Confirmation that the small-scale A/R CDM project activity is not a debundled component of a larger project activity:

>>

There is no other SSC A/R project to submit for registration in Vietnam so that the proposed project activity doesn’t fall under the criteria of debundling determined in Appendix C of

"Simplified modalities and procedure for small-scale afforestation and reforestation project activities under CDM". The proposed activity is not a debundled component of a larger project activity.

SECTION B. Application of a baseline and monitoring methodology :

B.1. Title and reference of the approved baseline and monitoring methodology applied to the proposed small-scale A/R CDM project activity:

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"Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands (AR-AMS0001 / Version 04)" is applied.

B. 2. Justification of the applicability of the baseline and monitoring methodology to the proposed small-scale A/R CDM project activity:

>>

"The Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands AR-AMS0001 (version 04)" was selected to be applied to the proposed project activities because the four applicability conditions listed in the methodology were all met in the proposed project activities.

(a) Project activities are implemented on grasslands or croplands;

The land-use prior to the project implementation was grassland and cropland (see section C.1).

(b) Project activities are implemented on lands where the area of the cropland within the project boundary displaced due to the project activity is less than 50 per cent of the total project area;

The cropping activity inside of the project boundary would be terminated before the project starts and the potential area to be displaced is estimated to be smaller than 50 % of the total project area (see section C.3).

(c) Project activities are implemented on lands where the number of displaced grazing animals is less than 50 per cent of the average grazing capacity of the project area;

The displacement of grazing animal was calculated and it was less than 50 % of the average grazing capacity of the project area (see section C.3).

(d) Project activities are implemented on lands where ≤ 10% of the total surface project area is disturbed as result of soil preparation for planting.

Soil preparation will not be conducted, only holes would be dug to plant seedlings (see section A.5.4).

B.3. Specification of the greenhouse gases (GHG) whose emissions will be part of the proposed small-scale A/R CDM project activity:

>>

According to the applied methodology, the project emissions to be taken into account are limited to emissions from the use of fertilizers (in paragraph 3).

The applied methodology indicated in paragraph 25 says that:
"If project participants consider that the use of fertilizers would result in significant emissions of N2O (>10 per cent of the actual net greenhouse gas removals by sinks) project emissions (GHGPROJ, (t) – t CO2e / year) should be estimated in accordance with the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (hereinafter referred to as IPCC good practice guidance)."

In the proposed project, 0.1 kg of the synthetic fertilizer "NPK-S Lam Thao" (5.10.3-11) would be applied to every seedling when planting and additionally another 0.1 kg in the first year. In total, 100.97 t of fertilizer would be applied (Table B.3-1).

Table B.3-1 The amount of the fertilizer which will be used in the project

year	planting density	area	fertilizer	number of seedling planted	total amount of fertilizer
	(/ha)	ha	kg/seedling		t
0	1600	140.19	0.2	224304	44.86
1	2000	28.12	0.2	56240	11.25
1	1600	140.19	0.2	224304	44.86
Total		**308.5**			**100.97**

Significance of the N_2O project emissions from the fertilizer was tested using the "A/R Methodological tool: Estimation of direct nitrous oxide emission from nitrogen fertilization" in accordance with the methodology. The parameters applied in the calculation are shown in Table B.3-2.

Table B.3-2: The parameters used and the process of calculation in the estimation of N_2O emission from the fertilize

year	M_{SFi}	NC_{SFi}	$Frac_{GASF}$	F_{SN}	EF_1	MW_{N2O}	GWP_{N2O}	$N2O_{direct-N}$
	t							t-CO2-e
0	44.86	0.05	0.1	2.02	0.01	1.57	310	9.83
1	56.11	0.05	0.1	2.52	0.01	1.57	310	12.30
Total								**22.13**

EF_1: IPCC 2006 Guidelines (table 11.1)
$Frac_{GASF}$: IPCC 2006 Guidelines (table 11.3)
MW_{N2O}: Ratio of molecular weights of N_2O and N (44/28)
GWP_{N2O}: IPCC default valid for the first commitment period

The estimated total project emission of N_2O from fertilizer application in the proposed project was 22.13 tCO2-e. This is less then 10 % of the actual net greenhouse gas removals by sinks. Hence it could be considered non-significant.

B.4. Carbon pools selected:

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In calculating the baseline net GHG removals by sinks and/or actual net GHG removals by sinks, project participants may choose not to account for one or more carbon pools, and/or emissions of GHGs measured in units of CO2 equivalents, while avoiding double counting.

Select the carbon pools that are considered in determining actual net GHG removals by sinks and baseline net GHG removals by sinks in the table below in accordance with the proposed new/ approved methodology used. Note that the same carbon pools should be considered in the actual net GHG removals by sinks and the baseline net GHG removals by sinks.

Carbon pools	Selected (answer with yes or no)
Above ground	Yes
Below ground	Yes
Dead wood	No
Litter	No
Soil organic carbon	No

According to paragraph 2 in the applied methodology, the carbon pools to be considered are above and below ground tree and woody perennial biomass and below ground biomass of the grasslands.

B.5. Description of strata applied for ex ante estimations:

>>

Stratification for the ex ante baseline estimation

The project area was stratified into 6 strata based on the on-site land-use survey (see section C1).

Stratification for the ex ante Actual green house gas removal estimation

The stratification should be carried out to improve the accuracy and precision of the biomass estimates. The methodology requests a target precision level of +- 10 % of the mean at a 95 % confidence level for the stratification approach (paragraph 38). However this target can be achieved not only by stratification but also by the combination of the stratification and the number and size of the permanent sample plots. This point is described in section B.8.1.1.

The project area will be stratified into 3 strata according to the project planting plan by tree species and age classes (Table B.5-1).

Table B.5-1 Stratification for the ex ante Actual GHG removals estimation

Strata	Species	year of planting
stratum 1	*A. mangium*	year 0

stratum 2	*A. mangium*	year 1
stratum 3	*A. auriculiformis*	year 1

The planted area will be visited by forest experts at least once every year for checking the condition and quality of the plantation. If an underperforming area is identified, a new stratum or substratum will be additionally created.

B.6. Application of baseline methodology to the proposed small-scale A/R CDM project activity:

>>

Onsite evaluation of the whole area within the project boundary was conducted to determine "*the land-use prior to the implementation of the project activity*" which should be considered as the most likely baseline scenario of the project according to paragraph 5 in the methodology.

It was found in the field observation and by expert judgment that the land-use prior to the implementation of the project was grassland and cropland and the carbon stock in the living biomass pool of both woody perennials and grass is expected to decrease in the absence of the project activity. The most likely baseline scenario falls under the category (b) "*If the carbon stock in the living biomass pool of woody perennials and in below-ground biomass of grasslands is expected to decrease in the absence of the project activity, the baseline net GHG removals by sinks shall be assumed to be zero. In the above case, the baseline carbon stocks in the carbons pools are constant and equal to existing carbon stocks measured at the start of the project activity"* (paragraph 6 in the methodology), because:

- The project area was deforested before 1980 for agricultural land expansion under the national policy (Hop Tac Xa). The intensive forest clearance and cultivation on the slope lead to the land being degraded.
- The project area is severely degraded and continues to degrade in the absence of the project activities. The nutrient in the soil is decreasing due to soil erosion and the living biomass of the project area tends to decrease year by year.
- Currently, the area is continually under pressure of human activities such as grazing, fuel wood collection and occasional slash and burn cultivation. These activities lead to a decrease in the carbon stock in the living biomass and the degradation of the land.

In the baseline calculation of the project activity, "*the baseline net GHG removals by sinks shall be assumed to be zero."* In this case, "*the baseline carbon stocks in the carbon pools are constant and equal to existing carbon stocks measured at the start of the project activity.*"

B.7. Description of how the actual net GHG removals by sinks are increased above those that would have occurred in the absence of the registered small-scale A/R CDM project activity:

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The procedures for the assessment of additionality were provided in Appendix B of the applied methodology. The following barriers were identified in the proposed project.

Barriers due to local ecological conditions

The project area and its surroundings had been deforested in 1970s for expansion of cropland. The intensive cultivation on the slopes without soil erosion measures resulted in land degradation and the land was abandoned by the middle of the 1980s. Since then, the area has been occasionally used for fuel wood collection and free grazing of cattle and buffalo. The owners of the land use rights also sometimes conduct slash and burn cultivation of annual crops for a short period of time and abandon the land after that. Due to the soil degradation and the pressure of the human activities, the natural regeneration of forest in the degraded grassland is not expected and the area would remain as it is or will be more degraded without tree planting activities.

Barriers due to social conditions

The project area is classified as "production forest land" in the land use plan approved by the local government but the land has not been reforested. One reason is lack of investment opportunities attractive and affordable to the local people as mentioned in "investment barrier" below. Other reasons include the widespread practice of free-grazing. Even if an individual wishes to plant trees in his allocated land within the project area, it would be difficult to protect the trees from free grazing animals without the cooperation of the villagers. The plantation project launched in the past in another area of the village was not successful because of this problem according to the villagers.

Investment barriers

The main reason that the villagers don't plant trees is lack of money for forestry investment according to the results of the socio economic survey conducted in the villages. They can not afford to invest for tree planting in production forest land since financial support from the government is very small. It is difficult for individuals to access to loans for forest development since the gestation period of forest development is long and there are risks involved in forest development such as damage to the trees by natural disasters.

There are cases in which a private forestry company has invested in wood chip plantations in Vietnam, but it is not realistic to expect similar investments in the proposed project area because the proposed project is located in an inland mountainous area and is far from sea ports. Furthermore the condition of the road from the main road to the proposed project area is not good.

Because of these barriers, the project area would not be forested without this proposed project, thus the project is additional.

B.8. Application of monitoring methodology and monitoring plan to the small-scale A/R CDM project activity:

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B.8.1. Data to be monitored: Monitoring of the actual net GHG removals by sinks and leakage.

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B.8.1.1. Actual net GHG removals by sinks data:

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Monitoring of baseline net GHG removals by sinks is not necessary according to the applied methodology (paragraph 36). The establishment of the forest will be monitored following the

applied methodology (Table 1) and it is included in the monitoring of the actual net GHG removals by sinks. All data will be kept for two years after the end of the last crediting period in the paper and electronic file. The provisions for quality assurance (QA) and quality control (QC) will be applied (see section B.8.2.).

Monitoring of forest establishment

a. Location of the project boundary and strata

Location of the area where the project activity has been implemented will be measured in the field using GPS and checked and recorded by GIS. It will be conducted every 5 years before the verification. Stratification for monitoring will be conducted following Section B.5.

b. Size of planted area

The size of the area where the project activity has been implemented for each stratum will also be measured in the field using GPS and checked and recorded by GIS. It will be conducted every 5 years before the verification. The planted area will be visited by forest experts at least once every year for checking the condition and quality of the plantation.

c. Size and location of permanent sample plot

The size of the permanent sample plot is to be at least 20m x 20m which is considered the standard area for a sample plot. The number of permanent sample plots of each stratum that will be needed to estimate the project biomass stocks to the target precision of level of +-10% of the mean at a 95% confidence level will be determined according to the methodological tool, "Calculation of the number of sample plots for measurements within A/R CDM project activity." Pre-monitoring will be conducted to obtain the parameters necessary for the calculation with the tool such as standard deviation of the diameter at breast height of trees for each stratum before the first monitoring.

The location of the permanent sample plots will be determined using GPS and GIS and marked on GIS maps. It will be checked every 5 years at the monitoring operation for verification.

Carbon stock

The monitoring of the carbon stock in the above and below ground biomass pools will be conducted according to the applied methodology.

Above ground biomass

To estimate stem volume (SV) used in the equation (26) of the applied methodology, the diameter at breast height (1.3m, DBH) and the height (H) of all trees in the permanent sample plots will be measured every 5 years before the verification. At the same time, the mortality will be checked. The locally developed allometric equation for each planted species of corresponding site index will be used with the measured DBH and H. The same values for BEF and WD will be used in the ex-post and ex-ante calculation (paragraph 44 in the applied methodology).

Below ground biomass

Carbon stock in the below ground biomass will be estimated from the above ground biomass using the equation (28) in the applied methodology.

Project emission

The amount of the fertilizer used in the project will be monitored. The amount and the name of the fertilizer will be recorded every time it is applied. The significance of N_2O emission from the fertilization will be assessed by the "A/R Methodological tool: Estimation of direct nitrous oxide emission from nitrogen fertilization" in accordance with the methodology (paragraph 47 in the applied methodology).

B.8.1.1.1. Data to be collected or used in order to monitor the verifiable changes in carbon stock in the carbon pools within the project boundary resulting from the proposed small-scale A/R CDM project activity, and how this data will be archived:

>>

Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/paper)	Comment
Location of the areas where the project activity has been implemented	Field survey	latitude and longitude	Measured	every 5 years	100 %	electronic and paper	GPS will be used for field survey
A_i - Size of the areas where the project activity has been implemented for each type of strata	Field survey	ha	Measured	every 5 years	100 %	electronic and paper	GPS will be used for field survey
Location of the permanent sample plots	Project maps, project design and field survey	latitude and longitude	Measured	every 5 years	100 %	electronic and paper	Plot location is registered with a GPS and marked on the map
Diameter of tree at breast height (1.30 m)	Permanent plot	cm	Measured	every 5 years	Each tree in the sample plot	electronic and paper	Measure diameter at breast height (*DBH*) for each tree that falls within the sample

Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/paper)	Comment
							plot and applies to size limits
Height of tree	Permanent plot	m	Measured	every 5 years	Each tree in the sample plot	electronic and paper	Measure height (*H*) for each tree that falls within the sample plot and applies to size limits
Amount of Fertilizer by type	Field survey	t	Measured	Every time the fertilizer is applied	100 %	electronic and paper	

B.8.1.2. Data for monitoring of leakage (if applicable)

>>

In accordance with paragraph 48 of the applied methodology, each of the following indicators should be monitored during the first crediting period:

(a) Area under cropland within the project boundary displaced due to the project activity;
(b) Number of domesticated grazing animals within the project boundary displaced due to the project activity;
(c) For domesticated roaming animals, the time-average number of domesticated grazing animals per hectare within the project boundary displaced due to the project activity.

As (a) and (c) were identified in the baseline activities, those two indicators will be monitored in the proposed project activity. The data for the ex post leakage estimation would be treated as follows:

(a) Displacement of cropland

It was agreed with the land use right owners that they would terminate their cultivation within the project boundary before the project starts. It would be difficult for them to start any new cultivation outside of the project boundary because most of the land in the communes has been allocated. The cropland that existed in the proposed project area prior to the beginning of the project (= in the baseline) was all considered as leakage and the area was measured during the on-site assessment(see section C.1). It would be conservative to apply that area for estimation of the

ex post leakage and therefore monitoring the cropland area displaced will not be necessary. Nevertheless, it will be confirmed at the time of monitoring the size of planted area that the all the cultivation activity inside the project boundary has been terminated.

(b) Displacement of domesticated grazing animals

There were no domesticated (settled) grazing animals within the project boundary before the starting of the project (see section C.1). Therefore this type of displacement would not be necessary to monitor

(c) Displacement of domesticated roaming animals

The number of domesticated roaming animals within the project boundary was estimated before starting of the project in the ex ante leakage estimation (see section C.1) and it was assumed that all of these animals would be displaced. As the proposed project would implement fodder production (described in section A.5.6) to minimize the displacement of roaming animals, the number before the start of the project could be considered as the potential maximum number of animals to be displaced. Therefore it would not be necessary to monitor the number of the displaced domesticated roaming animals and it is conservative to apply the numbers of animals estimated in the ex ante estimation. Nevertheless, it will be confirmed at the time of monitoring the size of the planted area that all the grazing activity inside of the project area has been terminated.

Finally the leakage would be estimated following paragraph 49 of the applied methodology.

B.8.1.2.1. If applicable, please describe the data and information that will be collected in order to monitor leakage of the proposed small-scale A/R CDM project activity

>>

Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic / paper)	Comment
Area under cropland within the project boundary that have been displaced due to the project activity	Survey	ha	Measured	One time after project is established but before the first verification	100 %	electronic and paper	Confirm that the all cultivation activity has terminated in the project area
Time-average number of grazing	Survey	Number of heads	Estimated	One time after project is established	100 %	electronic and paper	Confirm that the all grazing activity has

domesticated roaming animals per hectare within the project boundary that have been displaced due to the project activity				but before the first verification			terminated in the project area

B.8.2. Describe briefly the proposed quality control (QC) and quality assurance (QA) procedures that will be applied to monitor actual GHG removals by sinks:

>>

For the sake of data quality, the following QA and QC measures should be implemented. The procedures should be described in the Standard Operating Procedures (SOP) according to the IPCC Good Practice Guidance for LULUCF.

B.8.3. Please describe briefly the operational and management structure(s) that the project operator will implement in order to monitor actual GHG removals by sinks by the proposed small-scale A/R CDM project activity:

>>

The operational and management structure for the monitoring of the proposed project is indicated in Fig B.8.3-1. A Monitoring Unit staffed with well-trained members will conduct the field survey and collect data from the permanent sample plot. The data will be processed and calculated in accordance with the applied methodology. The supervisor of the Monitoring Unit, who is an expert in forestry, will review the compiled data and complete the monitoring report for the verification, then submit it to the director of the Social funds (project management body). The monitoring report will be reviewed by the director and sent to the DOE for verification when the quality of the report has been assured.

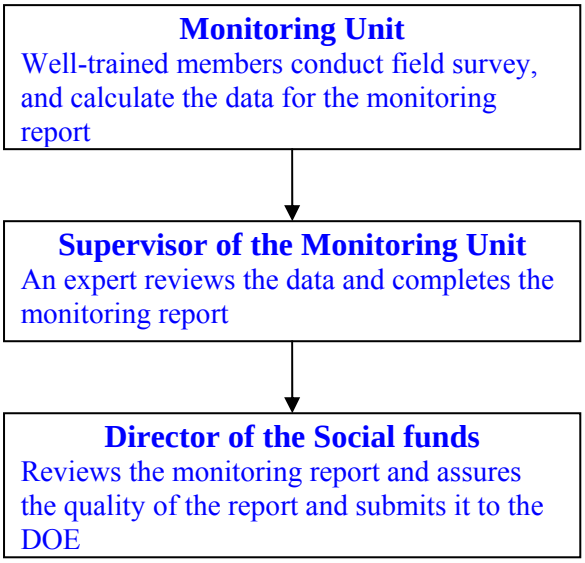

Fig B.8.3-1 Operational and management structure for the monitoring

B.9. Date of completion of the baseline study and the name of person(s)/entity(ies) determining the baseline and the monitoring methodology:

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The baseline study was completed on 26 November 2007. Makino Yamada, Akihiko Sasaki and Tomoki Nakamura of JICA Study Team determined the methodology.

SECTION C. Estimation of ex ante net anthropogenic GHG removals by sinks:

C. 1. Estimated baseline net GHG removals by sinks:

>>

The baseline survey was conducted by the JICA Study team and the counterpart in January-March 2007.

Step 1. Onsite evaluation for land use and stratification

(For information regarding the baseline scenario determination, see section B.6)

The baseline stratification was conducted following paragraph 7 of the methodology. According to the methodology, the project area should be classified into 2 stratum, *"(a) Area of cropland with changes in the carbon stocks in the living biomass pool of woody perennials and in below-ground biomass of grasslands expected not to exceed 10% of ex ante actual net GHG removals by sinks multiplied by share the ratio of the area in to the entire project area"* and *"(b) Area of grassland with changes in the carbon stocks in the living biomass pool of woody perennials and in below-ground biomass of grasslands expected not to exceed 10% of ex ante actual net GHG removals by sinks multiplied by share the ratio of the area in to the entire project area."* We classified the project area into 6 strata for a more accurate estimation of the baseline based on the vegetation/land-use classification in the field survey (Table C.1-1).

Table C.1-1 Baseline stratification

Land-use identified	Stratum No	Area (ha)					
		Xuan Phong			Bac Phong		
		Site 1	Site 2	Site 3	Site 4	Site 5	**Total**
Grassland 1	1	10.37	64.07	23.14	15.19	10.81	**123.58**
Grassland 2	2	0.00	0.00	0.00	26.52	73.47	**99.99**
Grassland 3	3	0.00	0.00	9.81	2.36	0.00	**12.17**
Shrub	4	7.90	8.57	67.78	19.88	0.73	**104.86**
Cropland	5	0.00	0.86	0.00	1.25	4.96	**7.07**
Bare land	6	5.23	0.00	5.90	6.46	0.00	**17.59**
Total		**23.5**	**73.5**	**106.63**	**71.66**	**89.97**	**365.26**

Grassland 1: Dominated by Co lao (*Eupatorium odoratum*) and Co trang (*Imperata cylindrica*)
Grassland 2: Dominated by Te gout (*Dicranopteris linearis*)
Grassland 3: Dominated by Lao lac (*Erianthus arundinaceus*)
Shrub: Dominated by *Melastoma candidum* with *Rhodomyrtus tomentosa, Randia dasycarp* etc.
Cropland: Cassava, maize and sugarcane are planted occasionally by slash and burn cultivation but only for short periods of time.

Step 2. Measurement of the baseline biomass in the field

The field survey for the baseline biomass measurement was conducted in the grassland and shrub in the project area.

In each land use type, sample plots to measure the biomass were randomly selected. The sizes of the plots for above ground biomass and below ground biomass were 2m x 2m and 1m x 1m, respectively. All the biomass in the plots was collected and measured. The above ground biomass was separated into woody biomass and grass biomass but below- ground biomass includes the root of both grass and woody perennials because it was difficult to identify and separate them in the field. The result is shown in Table C.1-2.

Table C.1-2 Result of field measurement of baseline biomass

Land-use identified	Stratum No	Area	Plot number	Above-ground biomass woody		Above-ground biomass grass		Below-ground biomass woody + grass	
		(ha)		(t dry matter / ha)		(t dry matter / ha)		(t dry matter / ha)	
				average	SD	average	SD	average	SD
Grassland 1	1	123.58	52	0.02	0.09	3.32	2.13	1.68	1.45
Grassland 2	2	99.99	8	0.00	0.00	3.38	1.41	4.57	1.77
Grassland 3	3	12.17	32	7.28	5.15	0.77	0.81	6.58	3.46
Shrub	4	104.86	66	3.16	2.44	0.87	1.10	3.79	4.83
Cropland	5	7.07	*0*	*0*		*0*		*0*	
Bare land	6	17.59	*0*	*0*		*0*		*0*	

The biomass in the cropland and bare land is assumed to be zero. The project area is classified as "production forest land" by the land use plan determined by the communes and district. The land

use right holders are required to terminate all crop cultivation before commencement of plantation establishment according to the regulation. The local people who will join the project agreed to that.

Step 3. Baseline carbon stock determination

The baseline carbon stock was determined following the procedure indicated in the methodology.

Baseline carbon stock was determined by equation (1) in the methodology.

Above-ground biomass was calculated by equation (2) in the methodology.

Below-ground biomass was calculated by equation (6) in the methodology.

Root to shoot ratios for grass and woody perennials were obtained from table 3.4.3 in the IPCC Good Practice Guidance for LULUCF and the values for sub-tropical/tropical grassland and shrub land were used, respectively.

The baseline living biomass was calculated at 1,902.99 tC. The values of the parameters used in the calculation and process of the calculation are shown in Table C.1-3.

Table C.1-3 Parameters used and process of the calculation of the baseline carbon stock in biomass

i	Ai	Mgrass	Mwoody	Rgrass	Rwoody	M(t)	BA(t)	BB(t)	(BA(t)+BB(t))*A
	ha	d.m.	d.m.			d.m.	tC/ha	tC/ha	tC
1	123.58	3.32	0.02	1.58	2.83	3.34	1.67	2.65	533.84
2	99.99	3.38	0.00	1.58	2.83	3.38	1.69	2.67	435.74
3	12.17	0.77	7.28	1.58	2.83	8.05	4.03	10.92	181.85
4	104.86	0.87	3.16	1.58	2.83	4.03	2.01	5.15	751.57
5	7.07	0.00	0.00			0.00	0.00	0.00	0.00
6	17.59	0.00	0.00			0.00	0.00	0.00	0.00
Σ								**B(t) ->**	**1902.99**

Finally the baseline net GHG removals by the sinks were calculated by equation (10) in the methodology.

In this project, B(t) is conservatively assumed to be constant and thus the baseline net GHG removals by the sinks (ΔCBSL,t) was calculated to be zero.

C. 2. Estimate of the actual net GHG removals by sinks:

>>

The project area should be stratified by tree species and age class according to the planting plan for the ex-ante calculation following paragraphs 15 and 16 in the applied methodology (see B.5 and Table C.2-1). To estimate the carbon stock in the biomass, net planting area is used instead of the project area (gross planted area) because the soils of the project area contain rocks and

some parts of the project area would not be able to sustain trees. Net planting area was calculated applying a net/gross ratio of 88% for sites 1, 2, and 3 in Xuan Phong commune and 80% for sites 4 and 5 in Bac Phong commune.

Table C.2-1 Stratification for ex-ante actual net GHG removals by sinks

Site no	Total area	Area of each stratum (ha)			Area discounted for estimation (ha)		
		Stratum 1	Stratum 2	Stratum 3	Stratum 1	Stratum 2	Stratum 3
Site 1	23.50	11.75	11.75	0.00	10.34	10.34	0.00
Site 2	73.50	20.77	20.77	31.96	18.28	18.28	28.12
Site 3	106.63	53.32	53.32	0.00	46.92	46.92	0.00
Site 4	71.66	35.83	35.83	0.00	28.66	28.66	0.00
Site 5	89.97	44.99	44.99	0.00	35.99	35.99	0.00
Total	365.26	166.65	166.65	31.96	140.19	140.19	28.12

The actual net GHG removals by sinks (ex-ante) were calculated according to paragraphs 17 to 26 in the applied methodology. A spreadsheet showing the calculation process was prepared for validation.

Above-ground biomass

The parameters and values applied to the calculation are shown in Table C.2-2.

Table C.2-2 Parameters used in the above biomass calculation

parameter	*A. mangium*	*A. auriculiformis*	Reference
SV	Equation	Equation	Khuc Dinh Thanh (2002) "Establishment of the growth table and productivity of *Acacia mangium* plantation for mine or timber purposes in the North-East region of Viet Nam" Vu Tien Hinh et al. (1996) "Establishment the growth table of *Acacia auriculiformis*"
BEF	1.4	1.4	Table 3A.1.10 of the IPCC good practice guidance for LULUCF
WD	0.500	0.515	Nguyen Dinh Hung et al. (1995) Overall Report on research: Study on the value of resources of main Forest Plant species and development of some new special product species which meet the demands of the export market

Below-ground biomass

The equation developed by Cairns et al. was used to estimate the below-ground biomass (paragraph 23 and equation 16 in the applied methodology).

Project Emission

The project emission from the fertilizer is insignificant and was not estimated (see section B.3.).

Consequently, the actual net GHG removal by the sinks (ex-ante) was calculated at 41,029 tCO_2 in total during the first crediting period. The detailed result of the estimation of the actual net GHG removals by the sinks (ex-ante) was indicated in Section C.5.

C. 3. Estimated leakage:

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The project area was deforested for the expansion of the crop land before 1980. The forest clearance and intensive cropping led to the land becoming degraded and the land was abandoned due to decline of crop productivity. Even though the land use rights were allocated to the villagers, they had not used the land constantly so that the land became a "common access" area, which means, not only the land use right holder but also other villagers can access the land for free-grazing and fuel wood collection. In addition, some of the land use right holders occasionally plant annual crops by slash and burn cultivation. But this is only a temporary activity and the area in which it is practiced is limited because of the land degradation.

The displacement of grazing and cropping activities has to be considered as leakage according to the applied methodology (paragraph 29 in the methodology).

Displacement of cropland

Some small part of the project area (7 ha) was defined as temporary cropland in the baseline on-site land use survey (see section C.1). The holders of the land use rights who have been cultivating crops and are going to become participants in the project agreed to terminate all activities when the project starts and it would be difficult to start new cultivation outside of the boundary because most of the land in the communes has been allocated. Even if the owners start new cultivation outside of the project boundary, no significant decrease in the carbon pools would occur because the unused land surrounding the project area is mostly degraded and doesn't contain significant carbon.

For a conservative estimation, the displacement of cropland was taken into account and calculated following the applied methodology (paragraph 29-31). The cropland to be displaced is about 2 % of the total area (Table C.3-1).

Table C.3-1 Percentage of the cropland to total project area in the baseline

Cropland area	Total project area	%
7.07	365.26	1.94

Displacement of grazing

It was confirmed that there were no domesticated grazing animals permanently located in the project area. Most of the villagers keep their cattle and buffalo in their stalls and take them out for grazing in grass and shrub lands in the village for several hours every day. As the project area is under common access, any villagers both project participants and non-participants can come for grazing. Therefore, only "*the time-average number of grazing animals per hectare within the project boundary displaced due to the project activities*" ((c) of paragraph 29 of the applied methodology) should be used to estimate the leakage from the displacement of grazing activity.

First hand reports on the number of cattle and buffalo, the frequency of grazing and the location of grazing were obtained from the occupants of 287 households (33.6 % of the total households in the villages). The time-average number of grazing animals in the project area was estimated for

each project site (Table C.3-2). The average Grazing Capacity (GC) of the project area was calculated at 1.03/ha following appendix D in the applied methodology (Table C.3-3). The percentage of the time-average number of domesticated roaming animals displaced to the average grazing capacity of the project area varied among the project sites, from 11 % to 35 % (Table C.3-2).

Table C.3-2 Time average number of grazing animals in each project site.

Project sites	time-average N of grazing animals	GC	%
	/ha	/ha	
Site 1 & 2	0.12	1.03	11.4%
Site 3	0.13	1.03	13.0%
Site 4	0.35	1.03	34.4%
Site 5	0.34	1.03	33.2%

Table C.3-3 Grazing capacity of the project area

DMI	ANPP	GC
21.9	8.2	1.03

As the cropland was 2 % of the total project area and the time-average number of domesticated roaming animals displaced is higher than 10 % and less than 50 % of the average grazing capacity, the entire leakage shall be equal to 15 % of the *ex-ante* actual net GHG removals by the sinks achieved during the first crediting period (paragraph 31 of the applied methodology). The average annual leakage was calculated following equation (20) in the methodology and as a result, the total leakage during the first crediting period was estimated at 10,037 tCO_2 as shown in Section C.5.

C. 4. The sum of C. 2. minus C.1. minus C.3. representing the net anthropogenic GHG removals by sinks of the proposed small-scale A/R CDM project activity:

>>

41,029 t CO2 e (see section C.5)

C. 5. Table providing values obtained when applying equations from the approved methodology:

The result of the application of equations from approved methodology above shall be indicated using the following tabular format:

Table C5-1 The net anthropogenic GHG removals by the sinks of the proposed project

Year	Estimation of baseline net GHG removals by sinks (tonnes of CO_2 e)	Estimation of actual net GHG removals by sinks (tonnes of CO_2 e)	Estimation of leakage (tonnes of CO_2 e)	Estimation of net anthropogenic GHG removals by sinks (tonnes of CO_2 e)
Year 0	0	0	0	0
Year 1	0	-5,986	0	-5,986
Year 2	0	2,051	308	1,743
Year 3	0	4,178	627	3,551
Year 4	0	7,109	1,066	6,043
Year 5	0	8,553	1,283	7,270
Year 6	0	9,203	1,380	7,822
Year 7	0	9,442	1,416	8,026
Year 8	0	-3,634	0	-3,634
Year 9	0	-6,226	0	-6,226
Year 10	0	5,212	782	4,430
Year 11	0	4,763	715	4,049
Year 12	0	4,696	704	3,992
Year 13	0	3,411	512	2,900
Year 14	0	4,197	630	3,567
Year 15	0	4,098	615	3,484
Total (tonnes of CO_2 e)	0	51,066	10,037	41,029

SECTION D. Environmental impacts of the proposed small-scale A/R CDM project activity:

D.1. Provide analysis of the environmental impacts, including transboundary impacts (if any):

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The proposed project will restore forest in degraded land. It is expected that the project will provide positive environmental impacts such as reducing surface run-off and erosion as a result of the vegetation cover to be developed and increasing soil fertility by increasing soil organic matter as well as by planting nitrogen-fixing leguminous tree species (Acacia). In general, forest development is accompanied by minor risks of forest fire and disease. But the risk of forest fire will be minimized through awareness raising among the local people, organizing a forest fire control force at the village level, and patrolling that will be implemented by the proposed project. Pest management will be conducted through proper thinning and pruning, removal of branches infected by disease, and use of pesticides only when it is necessary.

D.2. If any negative impact is considered significant by the project participants or the host Party, a statement that project participants have undertaken an environmental impact assessment, in accordance with the procedures required by the host Party, including conclusions and all references to support documentation:

>>

No significant negative environmental impact is foreseen. In addition, an environmental impact assessment is not required for reforestation projects with an area of less than 1000 ha, according to Appendix I of Government Decree No.80/2006/ND-CP dated 9/8/2006 regarding detailing and guiding the implementation of a number of articles of the Law on Environmental Protection.

D.3. Description of planned monitoring and remedial measures to address significant impacts referred to in section D.2. above:

>>

N/A

1

SECTION E. Socio-economic impacts of the proposed small-scale A/R CDM project activity:

E.1. Provide analysis of the socio-economic impacts, including transboundary impacts (if any):

>>

The proposed project will have significant positive socio-economic impacts. It will contribute to an increase in the income of the local people through payment of economic incentives for planting/tending by the proposed project and sharing of benefits from thinned and harvested forest products and tCER. Green fodder production to be implemented outside of the project area will also lessen the work loads of the local people for grazing control and carrying fodders from far away. In addition, the proposed small-scale AR-CDM project is the first of its kind in the province as well as in Vietnam and will draw much public attention because it is unique in terms of source of funding (from the private sector) and benefits (including CER). The ripple effect of the implementation of the proposed project will be large in the forestry sector of Vietnam.

E.2. If any negative impact is considered significant by the project participants or the host Party, a statement that project participants have undertaken a socio-economic impact assessment, in accordance with the procedures required by the host Party, including conclusions and all references to support documentation:

>>

N/A

E.3. Description of planned monitoring and remedial measures to address significant impacts referred to in section E.2. above:

>>

N/A

SECTION F. Stakeholders' comments:

F. 1. Brief description of how comments by local stakeholders have been invited and compiled:

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Four meetings were held in the period of 23-26 October 2007 in the project area to explain the proposed project to the occupants of 285 households who hold the land use rights in and surrounding the project area. After detailed explanations of the proposed project, verbal and written comments from the participants were received.

F. 2. Summary of the comments received:

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Based on the questionnaire survey in the village meetings, 99.6% of the participants said they understood the features of the proposed project and agreed with the project plan. The comments received are summarized in Table F.2-1.

Table F.2-1 Comments received from the villagers who hold the land use rights in and surrounding the project area

Comments	Number of times received
I have cadastral muniment, but I am not listed as a project participant.	9
I don't have land in the project area but I would like to participate in the project.	1
I want the project to provide suitable seedlings and materials.	3
I hope that a road will be constructed for maintenance and transportation of timber.	4
I hope that mixed planting of grass and small trees will be implemented.	1
I hope that short-term trees will be planted.	1
I hope that the project will be implemented soon.	18
I hope that the project will be implemented on schedule.	2
I hope the project will be expanded.	2
I hope that the project boundary will be unambiguous.	1
I would like to use only some part of my land for plantation activity.	1
How can the project ensure timber production after planting?	1
If the forest plantation is damaged by natural disaster, will land owners be compensated or not?	1

F. 3. Report on how due account was taken of any comments received:

>>

There was no change in the proposed project activity since the almost all stakeholders agreed with the plan.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROPOSED SMALL-SCALE A/R CDM PROJECT ACTIVITY

Organization:	to be completed
Street/P.O.Box:	
Building:	
City:	
State/Region:	
Postfix/ZIP:	
Country:	
Telephone:	
FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	
Salutation:	
Last Name:	
Middle Name:	
First Name:	
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

The project formulation was assisted by Japan International Cooperation Agency (JICA) under grant technical assistance program. The fund for project implementation will be sourced from donation from a private company but the company is not a project participant.

The project will not result in the diversion of official development assistance and is separated from and is not counted towards the financial obligation of Parties included in Annex I of the Kyoto Protocol.

Annex 3

DECLARATION ON LOW-INCOME COMMUNITIES

See attachment.

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CAO PHONG PEOPLE'S COMMITTEE	**Socialist Republic of Vietnam Independence-Freedom-Happiness**
No. ___/XN-UBND	*Cao Phong, dated _____ 2008*

LETTER OF CONFIRMATION

Ref. Xuan Phong and Bac Phong commune are with difficult socio-economic conditions

Pursuant to Decision No. 393/2005/QD-UBDT dated 29th August 2005 of the Committee for Nationalities promulgating criteria for classifying ethnic minority and mountainous areas by their development level;

Pursuant to Decision No. 301/2006/QD-UBND dated 27th November 2006 of the Committee for Nationalities on recognition of three ethnic minority and mountainous regions according to their development levels. According to this Decision, Xuan Phong and Bac Phong commune, Cao Phong district are recognized to be communes belonging to region II – area with difficult conditions.

Pursuant to Decree No. 108/2006/ND-CP dated 22 September 2006 of the Government providing guidelines for implementation of several articles of Law on Investment. According to this Decree (Appendix B), Cao Phong district is categorized as "the area with difficult socio-economic conditions".

Pursuant to mentioned official documents, Cao Phong People's Committee hereby confirm that Xuan Phong and Bac Phong commune, Cao Phong district, Hoa Binh province that locate in the areas to be carried out the Project of Afforestation and Reforestation according to Clean Development Mechanism (AR-CDM) in are the ones with difficult socio-economic condition and low income.

Attn:
- Vietnam Forestry University;
- Chairperson, Vice-Chairpersons of Cao Phong PC;
- Agricultural - Forestry Extension Station;
- Archive: File at Cao Phong PC.

pp. CHAIRMAN
VICE CHAIRMAN

VU DINH VIET
(signed)