PROJECT DESIGN DOCUMENT FORM
FOR AFFORESTATION AND REFORESTATION PROJECT ACTIVITIES (CDM-AR-PDD) - Version 04

CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM FOR AFFORESTATION AND REFORESTATION PROJECT ACTIVITIES (CDM-AR-PDD) Version 04

CONTENTS

Annexes

PROJECT DESIGN DOCUMENT FORM
FOR AFFORESTATION AND REFORESTATION PROJECT ACTIVITIES (CDM-AR-PDD) - Version 04

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

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

>>
The Sierra Madre Conservation Carbon Initiative

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

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The Proposed Carbon Sequestration Project in Quirino is located in one of the important watersheds in Region 02, Cagayan Valley. The watersheds play a very significant role in the socio-economic development and ecological stability of the region. It supplies the water needs for irrigating prime agricultural lands, providing livelihood for thousands of indigenous people in the uplands, and also help maintain the ecological balance, carbon sequestration, economic development and biodiversity of its immediate environment.

The project plans as contained in this document have the following specific objectives:

1. To reforest 2,000 hectares of denuded forestlands using species suitable to bring back the forest condition and appropriate biophysical requirement of the site;
2. To protect around 5,000 hectares of existing natural forest serving as watershed areas and habitat of wildlife;
3. To establish about 500 hectares of short rotation tree plantations that will provide for alternative source of wood for local consumption by the local communities; and
4. To establish about 2,000 hectares for agroforesty from which the local communities derive additional income and improve the long-term productivity of the farms.

Only reforestation and agroforestry components are proposed as A/R CDM project.

The total potential area to be developed is about 13,310 hectares. However, not all of those could be developed at once. The various plans provide the schedules for the gradual establishment or development over the years.

For the initial phase of the project, 13,000 hectares be developed, broken down as follows [Table 1]:

Table 1. Area allocation per project component.

Project Land Use Component	Location/Description	Total Potential Area [Ha]
Reforestation	All within forest lands, mostly under CBFM tenure planned for reforestation; some areas fall outside of CBFM sites; existing land cover include grasslands, brushlands, mixed/perennial crops, plantation crops; spatial planting as solid patch using mix of various suitable forest tree species	5,002
Agroforestry	All within forest lands under CBFM planned for agroforestry; some areas fall outside of CBFM sites; existing land cover include grasslands, brushlands, mixed/perennial crops, plantation crops, sub-marginal and second growth forests; spatial planting as solid	2,088

	patch using mix of various agro crops and fruit trees	
Tree Farms	All within private lands; spatial planting along lot boundaries or solid patch	509
Jatropha	All within private lands, planted along lot boundaries [2mx2m spacing], or as solid patch	526
Protection forest	Old growth and secondary forests within forest lands	5,185
Total Area [Ha]		13,310

A.3. Project participants:

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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)
Republic of the Philippines	• PEDAI •	No
(*) In accordance with the CDM A/R modalities and procedures, at the time of making the CDM-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.		
Note: When the CDM-AR-PDD is prepared to support a proposed new baseline and monitoring methodology (form CDM-AR-NM), at least the host Party(ies) and any known project participant (e.g. those proposing a new methodology) shall be identified.		

A.4. Description of location and boundaries of the A/R CDM project activity:

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

A.4.1.1. Host Party(ies):

>>

Republic of the Philippines

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

>>

Quirino Province

A.4.1.3. City/Town/Community etc:

>>

Maddela, Aglipay and Nagtipunan

A.4.2 Detailed geographic delineation of the project boundary, including information allowing the unique identification(s) of the proposed A/R CDM project activity:

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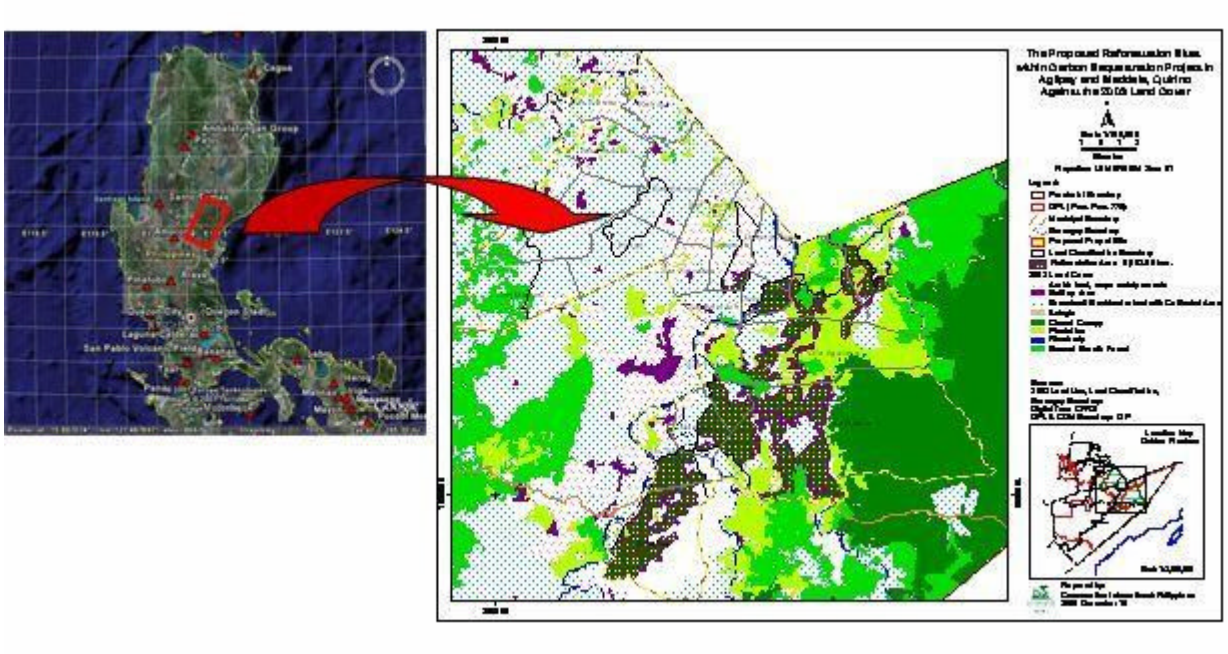

Figure 1 Map of the project area

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

A.5.1. Description of the present environmental conditions of the area planned for the proposed A/R CDM project activity, including a concise description of climate, hydrology, soils, ecosystems (including land use):

>>

LOCATION

The proposed carbon sequestration project covers an aggregate area of about 13000 hectares encompassing 13 barangays of Maddela, 8 barangays of Aglipay, and 1 barangay of Nagtipunan. It lies between coordinates 1800000 to 1820000N and 360000 E. The project area is a sub watershed of Addalam River and a portion of the Upper Cagayan River, located approximately 478 km northwest of Manila (see Appendix 1, Map of the Project Site)

TOPOGRAPHY

The project site is characterized by rolling to mountainous terrain with an elevation ranging from 100 m. as to 700 m. with slopes ranging from 18 % to 50 %. The specific elevation and slope class distribution and description by area and percentage coverage of the drainage area shall be determined on this study is in effect.

CLIMATE

Quirino Province has a mean annual temperature of 26.6°C with a mean maximum of 32.6°C and a minimum of 22.2°C. On the average, January is the coolest month, while the warmest month is May with a mean temperature of 30.3°C. Annual rainfall within the Province ranges from less than 1,500 mm to over 2,100 mm at the southernmost border to Aurora Province. The driest area of Quirino Province is the

Cagayan River Valley whereas the other parts of the lowland areas receive up to 1,700 mm e.g. near Diffun. But rainfall distribution is not constant throughout the years

Two agro-climatic regions were identified in the Quirino-Region namely: moist and dry zones. The moist zone is characterized by an annual rainfall from 1,500 to 2,500 mm and a growing period of 210-270 days. This zone covers most of the present agricultural and expansion areas in the lowland, upland and hilly areas. It represents by far largest area of the province. These moist conditions are a good indication that only moderate moisture deficit exists during the dry season. As such, it could sustain maximum production through careful planning and crop adjustments taking into consideration moisture availability.

SOIL

Soils in the area come in various types. In lowland areas, soil types include the Maligaya clay loam, Quinga clay loam, and Quinga silt loam. In gently sloping areas, San Manuel silt loam dominates the area. Bolinao clay loam and Cauayan clay loam are found in slightly sloping to rolling areas. In steep areas are Rugao clay and Rugao sandy loam , while in very steep slopes, soil types include Luisiana clay loam, Luisiana Anna complex, undifferentiated mountain soils, and Faraon clay [ICRAF and CIP, 2005; RP-German CFPQ, 2003].

LAND USE AND LAND COVER

Land use and land cover of the proposed project can be classified into: open canopy or grassland, brushland, plantation crops, mixed crop, cultivated area, and built-up area.

Originally, the vegetative cover of the project site composed mainly of Dipterocarp-Molave forest with patches of grassland. However, through time and series of human intervention and disturbances the natural/old growth forest was transformed into grassland, brush land dominated by lesser-used species. Understock second growth forest are still dominated by different dipterocarp species and molave type species. Grassland is dominated by cogon, runo and bikal.

MAJOR AND MINOR RIVER TRIBUTARIES

There are two major rivers in the area that traverse the project site; these are Addalam and Upper Cagayan River. Minor tributaries of the Addalam River composed of Angad and Tabanuang creeks; for the Upper Cagayan River are the Ngilinan River and Tungcab River.

A.5.2. Description of the presence, if any, of rare or endangered species and their habitats:

>>

106 species under various categories of threat identified by the IUCN exist in the project area.

A.5.3. Species and varieties selected for the proposed A/R CDM project activity:

>>

Reforestation

For the reforestation component, species shown in Table 1will be planted.

Table 1 Species for reforestation

common name	scientific name	Proposed Relative Density within the 10-ha compartment (%)

Narra	*Pterocarpus indicus*	10
Mahogany	*Swietenia macrophylla*	15
Gmelina	*Gmelina arborea*	10
Mangium	*Acacia mangium*	5
Rain tree	*Samanea saman*	10
Molave	*Vitex parviflora*	10
Yakal	*Shorea astylosa*	5
Guijo	*Shorea guiso*	5
Datiles	*Muntingia calabura*	5
Binunga	*Macaranga tanarius*	5
Katmon	*Diospyros philippinensis*	5
Katmon	*Dillenia philippinensis*	5
Tibig	*Ficus nota*	5
Dao	*Dracontomelon dao*	5

Agroforestry
For the agroforestry component, species shown in Table 2will be planted.

Table 2 Species for agroforestry

common name	scientific name	Proposed Relative Density within the 10-ha compartment (%)
Coffee	Coffea robusta	5
Lanzones	*Lansium domesticum*	10
Rambutan	*Nephelium lappaceum*	10
Chico	*Achras zapota*	10
Santol	*Sandoricum coetjape*	5
Caimito	*Chrysophyllum caimito*	5
Tamarind	*Tamarindus indica*	5
Cacao	*Theobroma cacao*	5
Coconut	*Cocos nucifera*	5
Guyabano	*Annona muricata*	5
Macopa	*Syzygium samarangense*	5
Avocado	*Persia americana*	5
Marang	*Artocarpus odorratissima*	5
Jackfruit	*Artorcarpus heterophyllus*	5
Bignai	*Antidesma bunius*	5
Mabolo	*Diospyros discolor*	5
Calamansi	*Citrus microcarpa*	5

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

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

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

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A.6. Description of legal title to the land, current land tenure and rights to tCERs / lCERs issued for the proposed A/R CDM project activity:

>>

All within forest lands, mostly under CBFM tenure planned for reforestation or agroforestry, therefore these lands are owned by the government, but there tenures are under the local communities. PEDAI owns rights to tCERs.

A.7. Assessment of the eligibility of the land:

>>

The EB35-Annex 18 "PROCEDURES TO DEMONSTRATE THE ELIGIBILITY OF LANDS FOR AFFORESTATION AND REFORESTATION CDM PROJECT ACTIVITIES" are applied here: The procedures require a demonstration that the land is not forest at the time the project starts and that the land is a reforestation or afforestation project activity.

(a) Demonstrate that the land at the moment the project starts is not a forest by providing information that:

i. Vegetation on the land is below the forest thresholds (tree crown cover or equivalent stocking level, tree height at maturity in situ, minimum land area) adopted for the definition of forest by the host country under decisions 16/CMP.1 and 5/CMP.1 as communicated by the respective DNA; and;

Although small parcels of land currently have multiple use species, no land has (or has had since 1990) a contiguous area of 1ha with a crown cover of greater than 30 % and tree height of 5m. Therefore the lands of the proposed A/R CDM project activity comply with the definition for afforestation or reforestation. Land surveys and photographs will be available to the DOE at the time of validation.

ii. All young natural stands and all plantations on the land are not expected to reach the minimum crown cover and minimum height chosen by the host country to define forest;

Land surveys and photographs, plus SPOT imagery and aerial photographs from 1987 and Landsat TM/ ETM+ imagery of Forest Change Map from 1990-2000 and 2003 and 2006 Land Use Map will be available to the DOE at the time of validation.

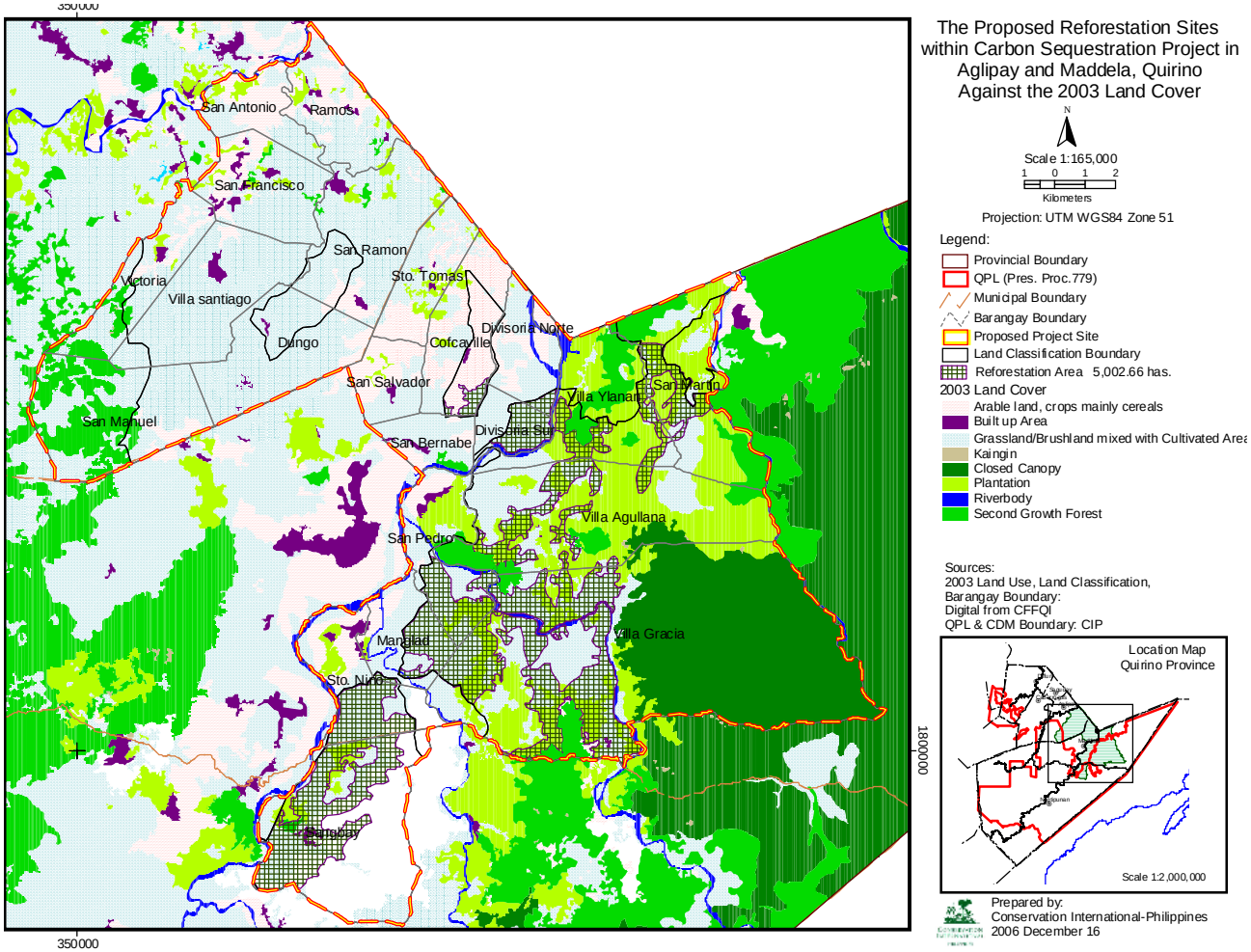

Figure 2 Land cover in 2003

iii. The land is not temporarily unstocked, as a result of human intervention such as harvesting or natural causes

The lands to be planted in the proposed A/R CDM project activity are current agricultural land either in a fallow cycle or in a pasture cycle. In all cases the land is never permitted to regrow to forest due to ongoing human usage.

(b) Demonstrate that the activity is a reforestation or afforestation project activity:

i. For reforestation project activities, demonstrate that the land was not forest by demonstrating that the conditions outlined under (a) above also applied to the land on 31 December 1989.

The land eligibility is demonstrated by interpreted Landsat images for 1987 (Figures below). The boundaries of potential project locations were collected with a overlayed 2006 Land Use Map and Forest Change Map in September and December 2006. Boundary coordinates were converted into ArcView polygon shapefiles, and then imported into ArcGIS 8.3, where they were merged to eliminate unintended gaps and overlaps. To assure property boundary validity, GPS/GIS unit were used to gather field GPS readings which were used to further ground-truth coordinate data in the map. To show the absence of

forest in 1989 an orthorectified multi-spectral Landsat image from 1987 was used. This image was selected because it represented one of the closest dates to the December 31, 1989 deadline that was sufficiently cloud-free in the study area.

Forest boundaries in the study areas were classified and digitized using visual interpretation of Landsat imagery. To further assist Landsat classification, ground-truth points and digital photos were taken in 2006 of land-use areas that had not changed in the past five years, such as mature tropical forest and well-established pasture, and these points were compared to pixel values in Landsat imagery from 1990-2000. After 1987 forest boundaries were delineated, forested areas were subtracted from the overlaid boundaries of purchased properties, thereby leaving behind only the areas eligible for CDM reforestation within these properties.

Visual interpretation of the 1987 and 2000 Landsat TM/ ETM Landsat 7 image was then used to verify that areas deforested in 1987 had remained deforested in 2001, which assured CDM eligibility by demonstrating that baseline altering cycles of reforestation and deforestation did not normally occur in the project area. The lands to be planted in the proposed A/R CDM project activity are marked with red lines in these figures.

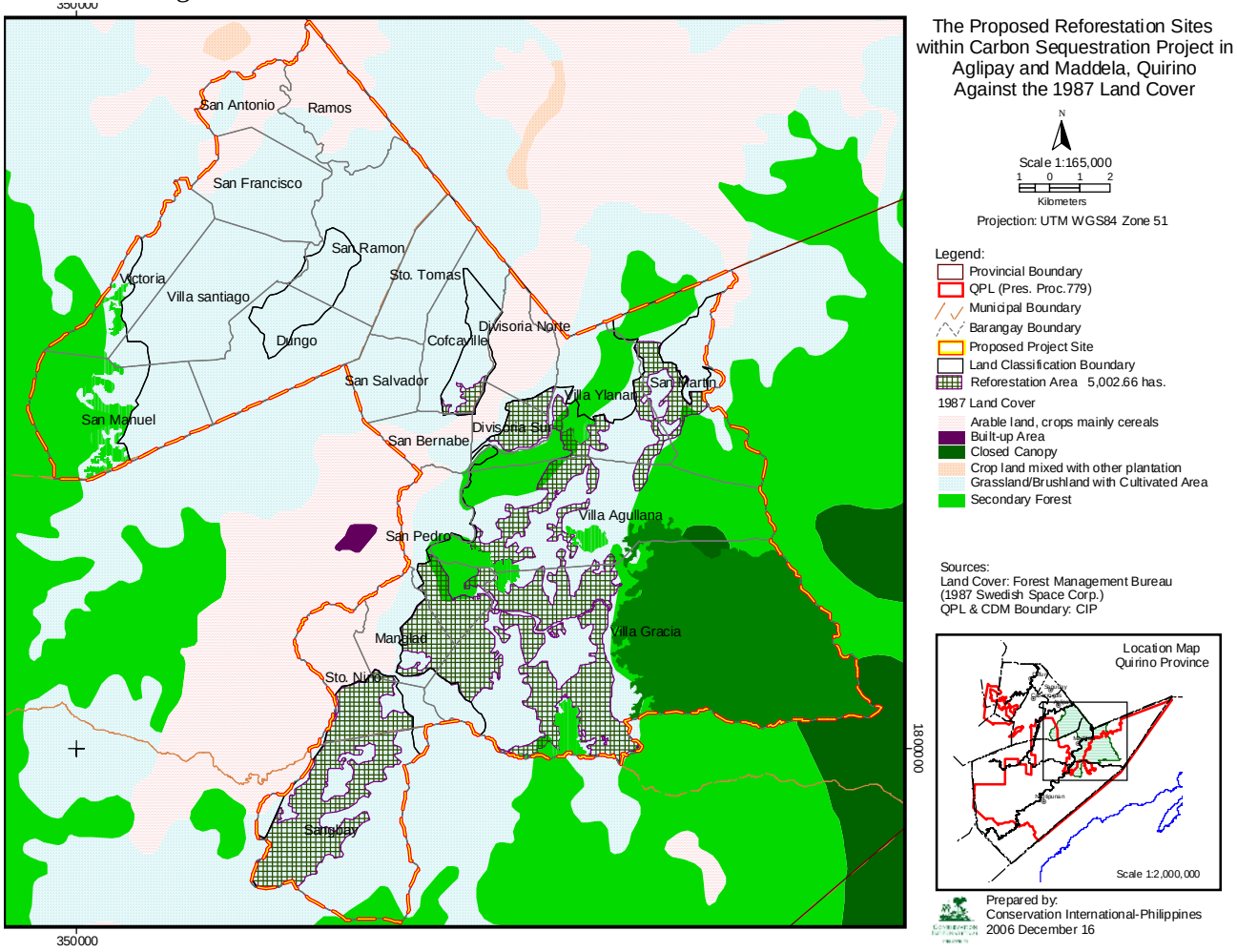

Figure 3 Land cover in 1987

A.8. Approach for addressing non-permanence:

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The issuance of tCERs.

A.9. Estimated amount of net anthropogenic GHG removals by sinks over the chosen crediting period:

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Summary of results obtained in Sections C.7., D.1., and D.2.				
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)**
1	0	0	176,760	-176,760
2	0	-37,641	718	-38,358
3	0	-63,231	718	-63,949
4	0	-56,954	718	-57,672
5	0	-23,185	718	-23,903
6	0	110,824	169	110,655
7	0	111,019	169	110,850
8	0	111,019	169	110,850
9	0	111,019	169	110,850
10	0	111,019	169	110,850
11	0	111,019	84	110,934
12	0	111,019	84	110,934
13	0	111,019	84	110,934
14	0	111,019	84	110,934
15	0	111,019	84	110,934
16	0	111,019	84	110,934
17	0	111,019	84	110,934
18	0	111,019	84	110,934
19	0	111,019	84	110,934
20	0	111,019	84	110,934
21	0	111,019	84	110,934
22	0	111,019	84	110,934
23	0	111,019	84	110,934
24	0	111,019	84	110,934
25	0	111,019	84	110,934
26	0	111,019	84	110,934
27	0	111,019	84	110,934
28	0	111,019	84	110,934
29	0	111,019	84	110,934
30	0	111,019	84	110,934
Total (tonnes of CO2 e)	0	2,594,258	2	2,412,095

A.10. Public funding of the proposed A/R CDM project activity:

>>

No public funding will be used.

SECTION B. Duration of the project activity / crediting period

B.1 Starting date of the proposed A/R CDM project activity and of the crediting period:

>>
XX/XX/2008

B. 2. Expected operational lifetime of the proposed A/R CDM project activity:

>>
30 years

B.3 Choice of crediting period:

B.3.1. Length of the renewable crediting period (in years and months), if selected:

>>
NA

B.3.2. Length of the fixed crediting period (in years and months), if selected:

>>
30 years

SECTION C. Application of an approved baseline and monitoring methodology

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

>>
AR-AM0004 "Reforestation or afforestation of land currently under agricultural use" ver.2

C.2. Assessment of the applicability of the selected approved methodology to the proposed A/R CDM project activity and justification of the choice of the methodology:

>>
The proposed A/R CDM project activity complies with the conditions under which the chosen baseline methodology applies in the following ways:

- Lands to be afforested or reforested are degraded and the lands are still degrading or remain in a low carbon steady state.
- Site preparation was demonstrated not to cause significant longer term net decreases of soil carbon stocks or increases of non-CO2 emissions from soil by applying "Procedure to determine when accounting of the soil organic carbon pool may be conservatively neglected in CDM A/R project activities (EB33 Annex15)".
- Carbon stocks in soil organic carbon, litter and dead wood can be expected to decrease more due to soil erosion and human intervention or increase less in the absence of the project activity, relative to the project scenario.

- Flooding irrigation is not permitted;
- Soil drainage and disturbance are insignificant, so that non CO2-greenhouse gas emissions from this these types of activities can be neglected;
- The amount of nitrogen-fixing species (NFS) used in the AR CDM project activity is not significant, so that greenhouse gas emissions from denitrification can be neglected in the estimation of actual net greenhouse gas removals by sinks.
- The AR CDM project activity is implemented on land where there are no other on-going or planned AR activities (no afforestation/reforestation in the baseline).

C.3. Assessment of the selected carbon pools and emission sources of the approved methodology to the proposed CDM project activity:

>>

As discussed above, the soil organic carbon pool is conservatively negligible. Deadwood and litter pools are also negligible since carbon stocks in these two pools will increase after project commencement due to carbon supply from newly established forests.

C.4. Description of strata identified using the *ex ante* stratification:

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Step 1 *Stratification based on the current condition*

Step 2 *Stratification based on the forestation plan*

Table 3 Result of the stratification

Stratum	Location	Type	area（ha）
RF1	Northern Maddela	reforestation	892
RF2	Central Maddela	reforestation	1,914
RF3	Southern Maddela and Nagtipnum	reforestation	1,213
Reforestation total			**4,019**
AF4	Central maddela	Agroforestry	962
AF1	Western Agripay	Agroforestry	373
AF2	Central Agripay	Agroforestry	410
AF3	Eastern Agripay	Agroforestry	340
Agroforestry total			**2,085**

C.5. Identification of the baseline scenario:

>>

C.5.1. Description of the application of the procedure to identify the most plausible baseline scenario (separately for each stratum defined in C.4.):

>>

Baseline scenario was determined based on the procedures shown in AR-AM0004 ver.2 Section II 4.

C.5.2. Description of the identified baseline scenario (separately for each stratum defined in Section C.4.):

>>

Assessment of alternative land use

The methodology sets out three steps to determine the most plausible baseline scenario:

Step 1: Identify and list plausible alternative land uses

Considering land-use policies, field surveys and interviews with stakeholders the following land uses were identified:

1. Status Quo: The project lands continue to be used for marginal agricultural purposes. These include production of corn and other annual crops.

2. Permanent Abandonment of Marginal Land: The project lands are abandoned by agriculturalists, and are allowed to naturally revert fully to forest.

3. Commercial Plantations: The creation of tropical hardwood plantations on marginal farm lands for commercial or sustainable harvests.

4. Agroforestry: The communities and individual land owners adopt agroforestry practices.

Step 2: Demonstrate that under the plausible scenarios identified in Step 1, the most plausible scenario is that the project areas would remain under the existing land use or a similar land use

Interviews with stakeholders and land use surveys show that similar lands in the vicinity are not being converted to either commercial plantations or agroforestry. Investment barriers deny land holders the finances to invest in commercial timber or agroforestry seeds or necessary equipment; Institutional barriers prevent farmers from manipulating the chain from investment through production and sales;

Technological barriers limit the access of farmers to either quality seed or the necessary skills for successful commercial timber or agroforestry plantations; and the barrier due to market risks, of new income streams, drives farmers to be conservative to maintain a constant income. The field surveys and interviews with stakeholders indicated that the only realistic and credible alternative available to the project participants is to continue the current marginal agricultural practices. Data from field surveys and interviews will be available to DOE at time of validation

Step 3: Demonstrate that forest regeneration will not occur in the absence of project activities

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Step 3: Demonstrate that forest regeneration will not occur in the absence of project activities

Seed sources do exist nearby for natural regeneration, but constant agricultural pressure prevents forest from ever re-establishing. Land prices are high relative to income from farming. Land ownership in the Philippines is defined by occupation so that pressure exists to utilize all land, using the land in short agricultural cycles. Therefore the cost of abandoning land is high, removing any risk of natural forest regeneration.

Data and analyses will be available to DOE at time of validation

Stratification of A/R CDM project area

Stratification is supported by the following activities:

a) Identification of factors influencing the carbon stocks: The lands to be reforested are distributed in different communities which have different climate and landform. Within communities the baseline land use (fallow cycle, pasture, multiple use tree species) and the project activity (restoration, commercial, agroforestry) are the major factors that will influence tree growth.

b) Site classification based on factors identified in a).
c) Field visits on each piece of land to inspect existing vegetation, soil condition and erosion status.
d) Interviews with local farmers on land use/cover history, important events that have impacted or area impacting the land use/cover.
e) Sampling surveys on representative land use and land cover types including baseline biomass measurements.

Determination of baseline scenario for each stratum

Baseline scenario for each stratum was determined through ground visits and the tracing of boundaries of each piece of land was determined using GPS. Maps and baseline detail will be available to the DOE at the time of validation

C.6. Assessment and demonstration of additionality:

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The steps as outlined in the additionality tool are followed to demonstrate that the proposed A/R CDM project activity is additional and not the baseline scenario. For the proposed project, only the barrier argument (step 3) is used.

STEP 0: Preliminary screening based on the starting date of the A/R project activity

This step is not needed, because the crediting period is not intended to start prior to the registration of the project activity. The crediting period of the proposed project will start in the year 2006 as and when it is registered.

STEP 1: Identification of alternatives to the A/R project activity consistent with current laws and regulations

Sub-step 1a: Define alternatives to the project activity

Four potential baselines were identified:
1. Status Quo: The project lands continue to be used for marginal agricultural purposes. These include production of corn and other annual crops.
2. Commercial Plantations: The creation of tropical hardwood plantations on marginal farm lands for commercial or sustainable harvests.
3. Permanent Abandonment of Marginal Land: The project lands are abandoned by agriculturalists, and are allowed to naturally revert fully to forest.
4. Agroforestry: The communities and individual land owners adopt agroforestry practices.

Sub-step 1b. Enforcement of applicable laws and regulations

The selected baseline scenario (the status quo) is entirely in compliance with applicable legal and regulatory requirements, currently and in the foreseeable future.

STEP 3: Barrier analysis

Sub-step 3a: Identify barriers that would prevent the implementation of the type of the proposed project activity:

a) Investment barriers

- Agriculture is the main source of income for local communities in the project area. Agricultural production is often subjected to climate risks and other disasters, leading to severe soil erosion. Food productivity is very low and the mean annual income per capita in the project areas is only US$1,500. Under this situation, many farmers still live below the national poverty level. It is hardly possible for local people to afford the high establishment investment in the early stage, because all incomes from timber, non-wood products and lCERs, may occur five years after the start of the proposed A/R CDM project activity.

- The ability to qualify and receive commercial loans from banks for the purpose of reforestation activities is very small (loans for agricultural activities are much easier to obtain) because of the high market risk and economical unattractiveness in the context of degraded land.

b) Institutional barriers: Individual farmer households are too weak to successfully manipulate the chain from investment, production to market especially for the timber and non-wood forest products which will take a much longer period than food production. In addition, the lack of organizational instruments also prevents them from overcoming technological barriers mentioned below.

c) Technological barriers: Interviews with local communities indicates that local farmers are usually short of access to quality seed sources and lack skills for producing high quality seedlings and for successful tree planting, as well as for preventing planted trees from being subject to fire, pest and disease attack.

d) Barriers related to land tenure, ownership, inheritance and property rights: Land ownership in the Philippines is defined by occupation. Land owners are not likely to abandon their land, without compensation, for risk of loss. Land ownership, in combination with the necessity for a continuous income stream, makes the abandonment of land to natural forest regrowth highly unlikely;

Thus, the continuation of the current situation (no project activity or other alternatives undertaken) represents the only alternative to the project activity.

Sub-step 3b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity).

The alternative land use (continued status as marginal agricultural land) does, of course, not face the above-mentioned barriers.

STEP 4: Impact of CDM registration

The approval and registration of the proposed A/R CDM project activity will alleviate economic and financial hurdles, as well as the other identified barriers, and thus enable the proposed A/R CDM project activity to be undertaken and generate the following benefits:

- Removals of carbon from the atmosphere, and resulting sale of tCERs. In absence of the project, carbon stocks in the project areas are expected to remain at low steady status due to the continued use as marginal agricultural land.
- The project will provide seeds, seedlings and training to overcome technological barriers to reforestation activities. The project also provides an organizational instrument to empower stakeholders in the market place.
- Reducing the perceived investment risks of the project activity, by providing a more steady (timing), and guaranteed (fixed purchase price of CO_2) income stream that makes the project more independent from timber market price fluctuations. The carbon sequestered by the growing trees creates a new 'virtual' cash crop for the participants at a guaranteed price (subject to negotiation with the funding entity upfront), which is more secure and thus advantageous to add to the other products (such as wood products) which have an uncertain market price in the future. Income from CERs depends only on reaching the growth objectives, whereas income from timber and even agroforestry products depends both on reaching growth objectives and on a viable market in the future, including established means of transportation. The cost of the latter is uncertain, and thus the CERs are the only income of the project that can be estimated and expected with a reasonably low market risk. Thus CERs can be seen as the guarantee that, even if timber and agroforestry products have a lower market price in the future, a financial loss does not occur. Therefore, without CDM registration, the reforestation investment and the financial, social and environmental benefits that will accrue due to the reforestation would not be possible.
- As stated above, local farmers themselves lack the financial resources to initiate stand establishment and it is hard for them to get loans from banks for the purpose of reforestation activities. With project financing reforestation will occur in each of the project components: forest restoration, commercial plantations and agroforestry.

With step 4 being satisfied, the proposed A/R CDM project activity is not the baseline scenario, and is thus additional.

C.7. Estimation of the *ex ante* baseline net GHG removals by sinks:

>>

The project area satisfy the following two conditions:

(a) no growing trees or woody perennials exist, and

(b) no trees or other woody perennials will reach the threshold for the national definition of forest due to ongoing cutting and burning cycles that are part of shifting cultivation systems.

Therefore, the baseline net greenhouse gas removals by sinks are expected to be negative due to ongoing degradation. For these strata the methodology conservatively assumes that baseline net greenhouse gas removal by sinks is zero.

ID number[1]	Data variable	Data unit	Value applied	Data Source	Comment

[1] Please provide ID number for cross-referencing in the PDD.

Please present final results of your calculations using the following tabular format.	
Year	**Annual estimation of baseline net anthropogenic GHG removals by sinks in tonnes of CO_2 e**
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	0
28	0
29	0
30	0
Total estimated baseline net GHG removals by sinks (tonnes of CO2 e)	0
Total number of crediting years	30
Annual average over the crediting period of estimated baseline net GHG removals by sinks (tonnes of CO2 e)	0

C.8. Date of completion of the baseline study and the name of person(s)/entity(ies) determining the baseline:

>>

XX/XX/2008

SECTION D. Estimation of *ex ante* actual net GHG removals by sinks, leakage and estimated amount of net anthropogenic GHG removals by sinks over the chosen crediting period

D.1. Estimate of the *ex ante* actual net GHG removals by sinks:

>>

The actual net GHG removals by sinks was estimated by applying Section II.7 of AR-AM0004. The actual net GHG removals by sinks consist of 1) the changes in living biomass carbon stocks in the project scenario and 2) increase in GHG emissions by sources within the project boundary.

1) The changes in living biomass carbon stocks in the project scenario
This component is further divided to a) increase in carbon stocks due to growth of planted tree and b) decrease in carbon stocks due to loss of existing vegetation.

a) Tree growth
The increase in carbon stocks was estimated using carbon gain-loss method, equations 5, 6, and 7 in Section II 5 of AR-AM0004. The areas used in this estimation were obtained from Tables 1-3 and Table 4 below.

Table 4 annual plantation area

	annual plantation, ha				
	year 1	year 2	year 3	year 4	year 5
Reforestation		500	1,000	1,260	1,260
Agroforestry		500	500	500	500

Table 5 The parametes used for the estimation of increase in carbon stock due to tree growth

Species Name	MAI (m^3/ha/y)	Wood density (t.d.m/m^3)	BEF	Growth rate of aboveground (t/ha/y)	Root shoot ratio	CF	Ref.
Reforestation							
Pterocarpus indicus	13	0.53	1.5	---	0.5	0.45	1
Swietenia macrophylla	15	0.503	1.5	---	0.5	0.45	1
Gmelina arborea	25	0.411	1.5	---	0.5	0.45	1
Acacia mangium	30	0.462	1.5	---	0.5	0.45	1
Samanea saman	25	0.462	1.5	---	0.5	0.45	1
Vitex parviflora	6	0.638	1.5	---	0.5	0.45	2
Shorea astylosa	6	0.638	1.5	---	0.5	0.45	2
Shorea guiso	6	0.638	1.5	---	0.5	0.45	2
Muntingia calabura	6	0.638	1.5	---	0.5	0.45	2
Macaranga tanarius	6	0.638	1.5	---	0.5	0.45	2
Diospyros philippinensis	6	0.638	1.5	---	0.5	0.45	2
Dillenia philippinensis	6	0.638	1.5	---	0.5	0.45	2
Ficus nota	6	0.638	1.5	---	0.5	0.45	2
Dracontomelon dao	6	0.638	1.5	---	0.5	0.45	2
Agroforestry							
Average	---	---	---	3.1	0.2	0.45	3

(1) MAI, ERDB (1998); wood density, Alipon et al (2005)[2]; others, IPCC (2006)[3]
(2) IPCC (2006)
(3) 2004 field survey and Cairns et al.(1997)[4]

b) Loss of existing vegetation
Following the AR-AM0004, the existing vegetation is assumed to be cleared in year zero even though some vegetation will remain to be out-competed in later years. Since there are no growing trees within the project boundary, the calculation was conducted using only equation 15 in Section II 7.1 of AR-AM0004. The amount of carbon stock in each stratum was determined as the largest amount among those obtained from the field survey . As the root-shoot ratio, 1.6 which is for tropical grassland shown in Table 3A.1.8 of GPG LULUCF. The amounts of carbon stocks in above- and below-ground biomass of existing non-tree vegetation are shown in エラー! 参照元が見つかりません。. As CF, 0.45 which is a common value in the Philippines[5] was used.The calculated results are shown in Table 7

able 6 Carbon stocks in above- and below-ground biomass of existing vegetation

	Strata	Amount of carbon stocks (ton CO_2-e / ha)
Reforestation	RF1	164
	RF2	76
	RF3	88
Agroforestry	AF1	158
	AF2	104
	AF3	107
	AF4	141

2) Increase in GHG emissions by sources within the project boundary
The direct N2O emissions due to N input is considered to be the only source of increase in GHG emissions within the project boundary. The estimation was carried out using equation 31-33 in Section II 7.2.3 of AR-AM0004 and default factors in IPCC 2006 Guidelines for National Inventories. The amount of N input were 80gN/tree in the 1st and 2nd years for reforestation, and 140gN/tree in the 1st year 200gN/tree in the 2nd year for agroforestry. The calculated results are shown in Table 7.

Table 7 Estimated net actual GHG removals by sinks

[2] Alipon, MA, EO Bondad, and PC Cayabyab. 2005. Relative density of Philippine woods. FPRDI Trade Bulletin Series No. 7. ISSN 0117-4045. FPRDI Department of Science and Technology, College, Laguna, Philippines.

[3] IPCC (2006) Guidelines for National Greenhouse Gas Inventories

[4] Cairns, M.A., Brown, S., Helmer, E.H., Baumgardner, G.A. (1997) Root biomassa allocation in the world's upland forests. *Oecologia* 111: 1-11

[5] Lasco, R.D., I.Q. Guillermo, R.V.O. Cruz, N.C. Bantayan, and F.B.Pulhin.(2004) Carbon stocks assessment of a tropical secondary forest in Mt. Makiling, Philippines. J of Tropical Forest Sci 16:35-45.

Lasco, R.D., R.F. Sales, R. Estrella, S.R. Saplaco, A.S.A. Castillo, R.V.O. Cruz and F.B. Pulhin.(2001). Carbon stocks assessment of two agroforestry systems in the Makiling Forest Reserve, Philippines.Philippine Agricultural Scientist, 84(4):401-407

year	CO2 sequestration by planted trees (ton CO2/yr)			GHG emission (tonCO2/yr)	net CO2 removal
	reforestation	agroforestry	total		mean
1	0	0	0	0	0
2	12,281	3,069	15,350	310	−37,641
3	36,844	6,138	42,982	851	−63,231
4	67,793	9,207	77,000	1,197	−56,954
5	98,743	12,276	111,019	1,552	−23,185
6	98,743	12,276	111,019	195	110,824
7	98,743	12,276	111,019	0	111,019
8	98,743	12,276	111,019	0	111,019
9	98,743	12,276	111,019	0	111,019
10	98,743	12,276	111,019	0	111,019
11	98,743	12,276	111,019	0	111,019
12	98,743	12,276	111,019	0	111,019
13	98,743	12,276	111,019	0	111,019
14	98,743	12,276	111,019	0	111,019
15	98,743	12,276	111,019	0	111,019
16	98,743	12,276	111,019	0	111,019
17	98,743	12,276	111,019	0	111,019
18	98,743	12,276	111,019	0	111,019
19	98,743	12,276	111,019	0	111,019
20	98,743	12,276	111,019	0	111,019
21	98,743	12,276	111,019	0	111,019
22	98,743	12,276	111,019	0	111,019
23	98,743	12,276	111,019	0	111,019
24	98,743	12,276	111,019	0	111,019
25	98,743	12,276	111,019	0	111,019
26	98,743	12,276	111,019	0	111,019
27	98,743	12,276	111,019	0	111,019
28	98,743	12,276	111,019	0	111,019
29	98,743	12,276	111,019	0	111,019
30	98,743	12,276	111,019	0	111,019
total	2,684,226	337,590	3,021,816	4,104	2,594,258

D.2. Estimate of the *ex ante* leakage:

>>

The possible sources of leakage are 1) GHG emissions due to fossil fuel combustion from vehicle and 2) leakage due to activity displacement.

1) Estimation of leakage due to fossil fuel consumption, $LK_{Vehicle}$

Vehicles will be used for forest monitoring and transportation of seedlings.

The monitoring will be made twice a week during the 1 – 5th year after planting, twice a month during the 6 – 10th year, and once a month afterward for average travel distance of 183.8 km using a diesel car with efficiency of 12 litters/km.

The seedlings will be transported twice a year during the 2nd – 5th year after the project started. The average distance between the project sites and nurseries were calculated as 736 km. The vehicle to be used will be diesel light truck with the efficiency of 9 litters/km.

The leakage caused by vehicle uses was estimated using equations (35) – (37) in Section II.8.1 of the AR-AM0004.The emission factor applied is 3.19 kg CO2/litter.

2) Estimation of leakage due to activity displacement, $LK_{ActivityDisplacement}$

The parts of the project boundary are currently used as cropland, and therefore displacement of agricultural activities outside of project boundary may result in leakage due to conversion of land to cropland. The leakage due to conversion of land to cropland was estimated by following Section II 8.5 of AR-AM0004. The area of land used as cropland accounts for 702ha. For the conservative choice, we assume all these areas will be displaced to forests outside the boundary. As the amount of biomass in the forests, 250.8 tones CO2-e/ha which is default factor shown in GPG LULUCF was applied.

The estimated amount of leakage is shown in A4.6. For simplicity, the leakage due to conversion of land to cropland was assumed to occur at the time of project started.

SECTION E. Monitoring plan

E.1. Monitoring of the project implementation:

>>

- Geographical information of each stratum will be measured using GPS
- Compare the actual boundary measured above and proposed boundary in PDD.
- If the part of actual boundary locates outside of the proposed boundary, land eligibility, additionality and baseline will be examined. The results will be proposed for DOE.
- Information of the boundary and forestation site will be stored in GIS.

E.1.1. Monitoring of forest establishment and management:

>>

- Count numbers of seedlings planted.
- Check the survival of seedlings.
- If it is not survived, the seedlings will be replanted

ID number[6]	Data variable	Data unit	Measured (m), calculated (c) estimated (e) or default (d)[7]	Recording frequency	Number of data points / Other measure of number of collected data.	Comment

E.1.2. If required by the selected approved methodology, describe or provide reference to, SOPs and quality control/quality assurance (QA/QC) procedures applied.

>>

[6] Please provide ID number for cross-referencing in the PDD.

[7] Please provide full reference to data source.

ID number[8]	Data variable	Data unit	Measured (m), calculated (c) estimated (e) or default (d)[9]	Recording frequency	Number of data points / Other measure of number of collected data.	Comment

E.2. Sampling design and stratification

>>

Sampling will take place using the methods described in the methodology document. Standard operating procedures (SOPs) will be used for all field sampling. The SOPs are listed at the end of the monitoring plan in Appendix I.

Sample Size

The methods described in the methodology AR-AM0004 will be used to determine the number of plots necessary; however the methods will be briefly repeated here.
Preliminary data for the sample size equation will be collected in areas with land cover similar to the expected land cover under the project. Data will be collected for all stratum types using the same methods as described below. From this field sampled data, estimated mean carbon stocks and variance will be calculated for each stratum. The below equation, from methodology AR-AM0004, will be used to estimate the number of plots to be established:

$$n = \left(\frac{t}{E}\right)^2 \left[\sum_{h=1}^{L} W_h \cdot s_h \cdot \sqrt{C_h}\right] \cdot \left[\sum_{h=1}^{L} W_h \cdot s_h \Big/ \sqrt{C_h} \cdot\right]$$

$$n_h = n \cdot \frac{W_h \cdot s_h \Big/ \sqrt{C_h}}{\sum_{h=1}^{L} W_h \cdot s_h \Big/ \sqrt{C_h}}$$

where:

L	total number of strata
T	t value for a confidence level (95%)
E	allowable error ($\pm 10\%$ of the mean)

[8] Please provide ID number for cross-referencing in the PDD.

[9] Please provide full reference to data source.

s_h standard deviation of stratum h
n_h number of samples per stratum that is allocated proportional to

The number of plots actually established will be at least 10% greater than that determined using the sample size equation. This will allow for greater variability to occur in growth than measured in preliminary data and unexpected losses of permanent plots due to unforeseen events. The plots will be treated in the same way as other lands within the project boundary, e.g. during site and soil preparation, weeding, fertilization, etc and will be prevented from being deforested over the crediting period.

Plot Location

To maintain rigor in the field measurements, sample units will be located without bias and the entirety of the project site will be sampled. Permanent plot locations will be determined in a GIS and will ensure random and even distribution of plots.

Plot Size

The size of plots will ensure that all diameter classes of trees within the plots are sufficiently sampled at all stages of the project. It is expected that plot size will be 400 m^2, however the exact size will be assessed during the preliminary data collection.
Sample plots, containing smaller sub-units of various shapes and sizes, are cost efficient for forest monitoring. It is expected that 3 sizes of nested plots will be used. These sub-plots or 'nests' will be nested inside of each other. The smallest nest will be used to measure and monitor small trees, the medium nest used to measure medium trees, and the largest nest to measure large trees. When trees attain the minimum size for one of the nested plots they are measured and included, and when they exceed the maximum size, measurement of that tree in that nest stops and begins in the next larger nest. The exact size of the nests will be determined during preliminary data collection; however, an example of nest sizes is given below:

Stem Diameter (cm)	Circular Plot Radius (m)	Square Plot Dimensions (m)
5-20	4	7 x 7
20-50	11	20 x 20
> 50	20	35 x 35

Plot establishment

Permanent plots will be established in order t to ensure efficient and accurate carbon estimation over time. "SOP 1 Establishment of Plots" will be utilized.

Measuring and estimating carbon stock changes

As discussed in the methodology AR-AM0004, only the above and below ground biomass of trees will be estimated and monitored. The growth of individual trees will be tracked over time. Field measurements will be taken by employing "SOP 2 Measurement of trees" listed in Appendix I.

MONITORING FREQUENCY

Planting will take place in 2008. Subsequent monitoring periods will be conducted every five years following this planting time.

E.3. Monitoring of the baseline net GHG removals by sinks, if required by the selected approved methodology:

>>

No monitoring will be carried out for baseline net GHG removals.

ID number [10]	Data variable	Data unit	Measured (m), calculated (c) estimated (e) or default (d)[11]	Recording frequency	Number of sample plots at which the data will be monitored	Comment

E.4. Monitoring of the actual net GHG removals by sinks:

>>

E.4.1. Data to be collected in order to monitor the verifiable changes in carbon stock in the carbon pools within the project boundary resulting from the proposed A/R CDM project activity:

>>

ID number [12]	Data variable	Data unit	Measured (m), calculated (c) estimated (e) or default (d)[13]	Recording frequency	Number of sample plots at which the data will be monitored	Comment
3.1.1.01	*Stratum ID*	*Alpha*		*Before start of*	*100%*	

[10] Please provide ID number for cross-referencing in the PDD.

[11] Please provide full reference to data source.

[12] Please provide ID number for cross-referencing in the PDD.

[13] Please provide full reference to data source.

		numeric		*project*		
3.1.1.02	*Confidence level*		*%*	*Before start of project*	*100%*	*For the purpose of QA/QC and measuring and monitoring precision control*
3.1.1.03	*Precision level*	*%*		*Before start of project*	*100%*	*For the purpose of QA/QC and measuring and monitoring precision control*
3.1.104	*Sample plot ID*	*Alpha numeric*		*Before start of project*	*100%*	*Numeric series ID will be assigned to each permanent sample plot*
3.1.1.05	*Plot location*		*m*	*5 years*	*100%*	*Using GPS to locate before start of the project and at time of each field measurement*
3.1.1.06	*Tree species*			*5 years*	*100%*	
3.1.1.07	*Age of plantation*	*year*	*m*	*5 years*	*100%*	
3.1.1.08	*Number of trees*	*number*	*m*	*5 years*	*100%*	*Counted since the planted year*
3.1.1.09	*Diameter at breast height (DBH)*	*cm*	*m*	*5 years*	*100%*	*Measuring at each monitoring time per sampling method*
3.1.1.10	*Mean DBH*	*cm*	*c*	*5 years*	*100%*	*Calculated via 3.1.1.08 and 3.1.1.09*
3.1.1.11	*Tree height*	*m*	*m*	*5 years*	*100%*	*Measuring Aat each monitoring time per sampling method*
3.1.1.12	*Mean tree height*	*cm*	*c*	*5 years*	*100%*	*Calculated via 3.1.1.08 and 3.1.1.11*
3.1.1.13	*Merchantable volume*	$M^3 ha^{-1}$	*c/m*	*5 years*	*100%*	*Calculated via 3.1.1.09 and 3.1.1.11*
3.1.1.14	*Wood Density*	$T\ d.m.m^{-3}$	*e*	*5 years*	*100%*	*Species specific*
3.1.1.15	*Biomass*	*Dimensionless Literature or measured destructively*	*e*	*5 years*	*100%*	*Species specific and paper*
3.1.1.16	*Carbon fraction*	$T\ C.\ (td.m^{-1)}$	*e*	*5 years*	*100%*	*IPCC default value*
3.1.1.17	*Root-shoot ratio*	*dimensionless*	*c*	*5 years*	*100%*	*Species specific*
3.1.1.18	*Carbon stock change in aboveground biomass of plots per unit area*	$t\ C\ ha^{-1}$	*c*	*5 years*	*100%*	*Calculated using equations 2-6, 8,19,21-23, via 3.1.1.09 or equation 13 via 3.1.1.13*
3.1.1.19	*Carbon stock change in belowground biomass of plots per unit area*	$t\ C\ ha^{-1}$	*c*	*5 years*	*100%*	*Calculated using equations 7 and 20 via 3.1.1.18 or equation 14 via 3.1.1.18 and 3.1.1.17*
3.1.1.20	*Area of stratum*	*ha*	*m*	*5 years*	*100%*	*Actual area of each stratum*

3.1.1.21	*Carbon stock change in aboveground biomass of stratum*	*t C*	*c*	*5 years*	*100%*	*Calculated using equations 10 or 15 via 3.1.1.18 and 3.1.1.20*
3.1.1.22	*Carbon stock change in belowground biomass of stratum*	*t C*	*c*	*5 years*	*100%*	*Calculated using equations 11 or 16 via 3.1.1.19 and 3.1.1.20*
3.1.1.23	*Total carbon stock change*	*T CO_2.e yr^{-1}*	*c*	*5 years*	*100%*	*Summing up carbon stock change in 3.1.1.21 and 3.1.1.22 for all strata*

E.4.2. Data to be collected in order to monitor the GHG emissions by the sources, measured in units of CO_2 equivalent, that are increased as a result of the implementation of the proposed A/R CDM project activity within the project boundary:

>>

ID number[14]	Data variable	Data unit	Measured (m), calculated (c) estimated (e) or default (d)[15]	Recording frequency	Number of sample plots at which the data will be monitored	Comment
3.1.2.01	*Amount of synthetic fertilizer N applied per unit area*	*Kg N ha^{-1} yr^{-1}*	*m*	*annually*	*100%*	*For different tree species and or/management activity*
3.1.2.02	*Amount of organic fertilizer N applied per unit area*	*Kg N ha^{-1} yr^{-1}*	*m*	*annually*	*100%*	*For different tree species and or/management activity*
3.1.2.03	*Area of land with N applied*	*Ha yr^{-1}*	*m*	*annually*	*100%*	*For different tree species and or/management activity*
3.1.2.04	*Amount of synthetic fertilizer N applied*	*t N yr^{-1}*	*c*	*annually*	*100%*	*Calculated using equation 31 via 3.1.2.01 and 3.1.2.03*
3.1.2.05	*Amount of organic fertilizer N*	*t N yr^{-1}*	*c*	*annually*	*100%*	*Calculated using equation 32 via 3.1.2.02 and 3.1.2.03*

[14] Please provide ID number for cross-referencing in the PDD.

[15] Please provide full reference to data source.

	applied					
3.1.2.06	*Fraction that volatizes as NH3 and NOx for synthetic fertilizers*	*dimensionless*	*e*	*Before start of monitoring*	*100%*	*IPCC default value (0.1) is used*
3.1.2.07	*Fraction that volatizes as NH3 and NOx for organic fertilizers*	*dimensionless*	*e*	*Before start of monitoring*	*100%*	*IPCC default value (0.2) is used*
3.1.2.08	*Emission factor for Emission from N input*	*dimensionless*	*e*	*Before start of monitoring*	*100%*	*IPCC default value (1.25%) is used*
3.1.2.09	*Direct N_2O emission of N input*	*dimensionless*	*c*	*annually*	*100%*	*Calculated using equation 33 via 3.1.2.04 – 3.1.2.08*

E.5. Leakage:

>>

E.5.1. If applicable, please describe the data and information that will be collected in order to monitor leakage of the proposed A/R CDM project activity:

>>

ID number [16]	**Data variable**	**Data unit**	**Measured (m), calculated (c) estimated (e) or default (d)** [17]	**Recording frequency**	**Number of data points**	**Comment**
4.1.01	Hectares deforested due to displacement	Ha	m	Years 1,5	100% of sampling households	Monitoring area deforested

[16] Please provide ID number for cross-referencing in the PDD.

[17] Please provide full reference to data source.

4.1.02	Average carbon stock of manure forest (t CO_2-e)	T CO_2-e/ha	e	Once		GPG-LULUCF cited value should be multiplied by 1.83 to convert from biomass to t CO_2-e
4.1.03	Area of land displaced by project activities for household which emigrated from area	Ha	m	Years 1, 5	100% sampling of households	Monitoring leakage
4.1.04	Leakage due to deforestation	T CO_2-e	C	Years 1, 5	100% sampling households	Calculated using equation (38) via 4.1.01-03
4.1.05	Number of vehicle type used	number		Annually	100%	Monitoring number of each vehicle type used
4.1.06	Emission factors for road transportation	Kg CO_2-e l^{-1}	E	Annually	100%	National or local value has the priority
4.1.07	Kilometers traveled by vehicles	km	M	Annually	100%	Monitoring kilometers for each vehicle type and fuel type used
4.1.08	Fuel consumption per km	Liter km^{-1}	C	Annually	100%	Estimated for each vehicle type and fuel type used
4.1.09	Fuel consumption for road transportation	litre	C	Annually	100%	Calculated using equation (40) via 4.1.05, 4.1.07, 4.1.08
4.1.10	Leakage due to vehicle use for transportation	T CO_2-e yr^{-1}	c	Annually	100%	Calcualted using equation (39) via 4.1.06, 4.1.09

E.5.2. Specify the procedures for the periodic review of implementation of activities and measures to minimize leakage, if required by the selected approved methodology:

>>

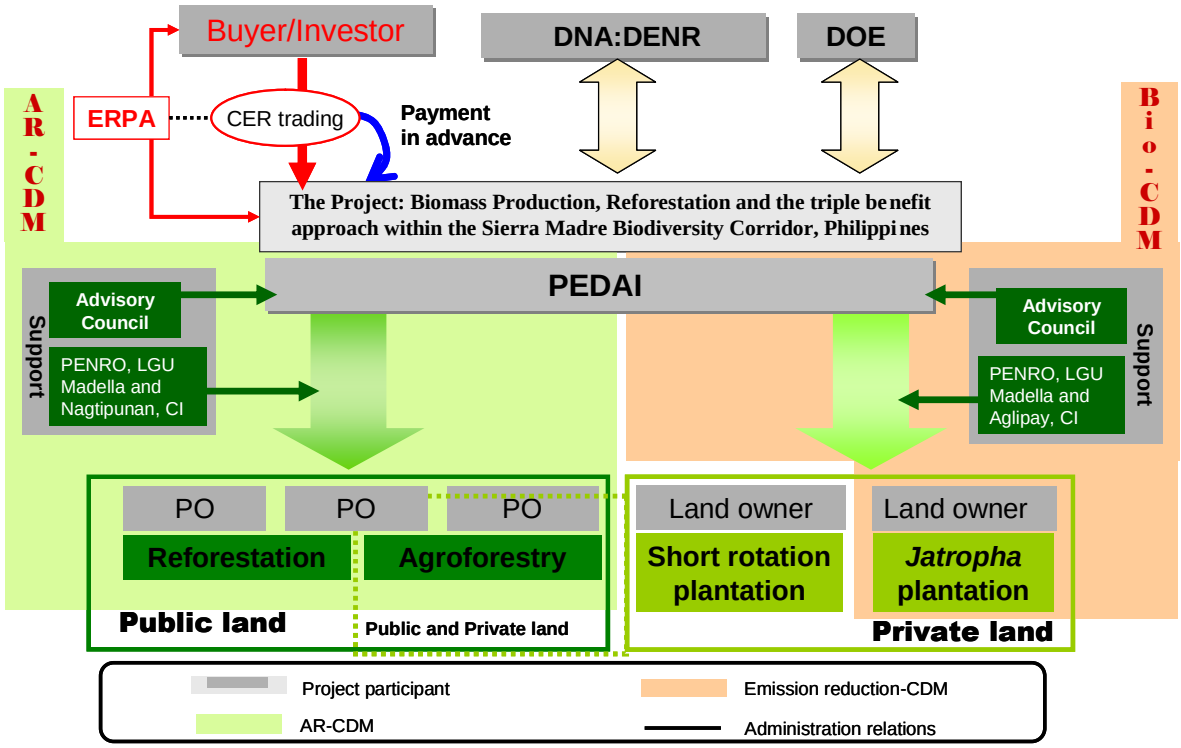
E.6. Provide any additional quality control (QC) and quality assurance (QA) procedures undertaken for data monitored not included in section E.1.3:

>>

Data *(Indicate ID number)*	Uncertainty level of data (High/Medium/Low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.

E.7. Please describe the operational and management structure(s) that the project operator will implement in order to monitor actual GHG removals by sinks and any leakage generated by the proposed A/R CDM project activity:

>>



E.8. Name of person(s)/entity(ies) applying the monitoring plan:

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SECTION F. Environmental impacts of the proposed A/R CDM project activity:

F.1. Documentation on the analysis of the environmental impacts, including impacts on biodiversity and natural ecosystems, and impacts outside the project boundary of the proposed A/R CDM project activity:

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The environment impact of the project is evaluated by CCB (.The Climate, Community and Biodiversity) standards desk review . The Standards were created to foster the development of projects that deliver credible and significant benefits in an integrated, sustainable manner. The CCB Standards are designed primarily for climate change mitigation projects. They Standards can be used in developing, developed or emerging economies, and can be used for projects funded with privateand/or public investment.
The project will be approved as Gold level of CCB standards

F.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:

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No negative impact was found.

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

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

G.1. Documentation on the analysis of the major socio-economic impacts, including impacts outside the project boundary of the proposed A/R CDM project activity:

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Out of the total 498 respondents, 444 persons or 89% mentioned that they were willing to include their farms in the CDM project. Twenty two respondents or mere 4% however deliberately said that they were not willing to include their farms in the project while 32 persons were still undecided whether they would include their farms or not.

G.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 supporting documentation:

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No negative impact was found.

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

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SECTION H. Stakeholders' comments:

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

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Through discussions with Local governments, DENR (central/ local governments) and the local community led by barangay captain, we have obtained opinions and ideas from the stakeholders. From October to November of 2006, we have visited each barangay and conducted socio-economic survey through consultations and questionnaires. Every survey result is recorded and saved in English.

Also, we have consulted a Japanese expert. Professor Noriyuki Kobayashi of Graduate Law School, Nihon University, is recognized as an expert on A/R CDM development from while he worked in Sumitomo Forestry Company. Prof. Kobayashi has participated in our project from August of 2006 as part of his own research. We were able to obtain some comments from him regarding our project and A/R CDM as a whole.

H.2. Summary of the comments received:

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a) Governor of Quirino Province : Mr. Pedro L. Bacani

Mr. Pedro L. Bacani give his approbation to the project, and we confirm to make continuous collaboration for success of the project. Quirino Province has the master plan to conserve and recover the nature for the sustainable development of their community. And, he requests to implement the project as a hybrid project with A/R CDM and Biomass CDM project using *Jatropha* to maximize the benefit of local community and people.

b) Local Residents:

Many of the respondents believe that overall, they will be better off if they join the project. There were 451 persons or 90% of the total respondents who said that they think their situation will improve once they join the project because of the economic and environmental benefits that the project will be bringing. Two persons answered otherwise while 45 persons or mere 9% do not know if they will be better off or not once they join the project. Result of the survey shows that there is high acceptability of the project among the local community or the potential project participants because they believe that their current situation will improve with the implementation of the project in their area.

c) Graduate Law School, Nihon University: Prof. Noriyuki Kobayashi

The professor has visited the Madera and surrounding towns in August of 2006 for A/R CDM research. The area has been used for afforestation for the past 50 years, and in the recent years, there has been an increase in farming corn and other cash crops. Adjacent to Madera, there is the Sierra Madre Biodiversity Corridor, a very important forest area for biodiversity conservation. Madera and surrounding towns are in a remote area with bad access from Manila, and as a result, left out of the economic development in the past (and that is why there is much area of natural forest untouched). Any agricultural development linked with the market economy is a welcomed as an economic development opportunity for the local residents. It is unrealistic to stop the spread of agricultural land in the area; there is a need to come up with a solution that would protect the forests and at the same time, encourage agricultural development. This solution will be the key to the development of Madera and the province of Quirino.

The biomass energy CDM project has the potential to be one of the solutions to realize Quirino province's sustainable development, due to its global warming prevention and development of the local economy aspects.

The below are some of the issues that needs to be resolved for a successful CDM project.

(1) The current CDM regulation requires A/R CDM and energy conversions to be submitted as separate project with different PDDs, but it would be more efficient to combine the two projects into one through some unique method.

(2) Afforestation projects are categorized into either A/R CDM approved forests or non-approved, and this Jatropha cultivation project will be categorized as the latter. It would be better if the project can be categorized as A/R CDM approved in order to strengthen its status as a CDM project.

(3) It is important to establish from the start each person or organization's role and responsibilities, despite the conflict of interests arising among participants from public and private sectors. For the A/R project, PENRO, and for the bioenergy, PEDAI, are the reasonable managing organizations, but it will be necessary for a central organization to manage the two.

(4) A system to fairly divide the income generated from CDM credit among local communities and project participants. (How to grant incentives for continuous forest conservation and maintenance.)

(5) Environmental and Economic Effect Evaluation: In order to fully assess the project, it would be important to evaluate the cash crop cultivation from environmental and socio-economic point of view, and in comparison with the Quirino project.

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

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Issues	Solutions
Potential for launching a new program using micro-finance mechanism to provide seeds and seedlings for agroforestry.	We will consider micro-finance program for participants, since the local residents do not have any initial funds to buy seeds and seedlings.
Combine A/R CDM and Biomass CDM	Set up the project so that the combining effect is maximized. Through the integration, it will be possible for the local communities and the government to join force in participating in this environmental conservation and poverty reduction project.
Establish and clarify responsibilities and distribution of income among the interested parties in both A/R CDM and Biomass CDM project	The project will be run by an independent organization, but we will establish a system that will include the Philippines government, which has promised an active involvement.
Distribution of income from CDM credit among local residents and interested parties	We will come up with a system to fairly divide the income according to the level of participation in the project.
Evaluate cash crop cultivation from socio-economic aspect in comparison with this project for a fair assessment	We will it consider during the project implementation. With regard to cash crop like corn, it is mainly cultivated for short-term results, and it is important to evaluate the possibility of continuous use of land.