MONITORING REPORT FORM

(AFOLU--FV)

Version 02

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MONITORING REPORT FORM (AFOLU--FV)

Version 02

11/14/2013

Bamboo Afforestation project in Xishuangbanna, Yunnan province

Monitoring Date: (25/02/2010~24/08/2013)

SECTION A. General description of project activity

A.1. Purpose and general description of project activity

The proposed PS afforestation project activity has planted 3582.34 hm^2 *Dendrocalamus giganteus* since 2010 in Jinghong city, Menghai county and Mengla county of Xishuangbanna prefecture. Through the implementation of the proposed project, the vegetation cover rate will reach the standards of Chinese national forest definition, thus increasing the forest carbon storage. During the process of project implementation, relevant technological standards are strictly conformed with, there is no overall tillage and site-burning. All species are locally. The proposed project is conducive to the local water and soil preservation, contributing to the local sustainable development and poverty alleviation, specifically,

(1) Soil and water conservation ability will be improved along Langcangjiang River and its tributaries;

(2)Enhance biodiversity conservation by increasing Forest ecosystem landscape connectivity;

(3) Will contribute to the alleviation of climate change through planting high-quality forest vegetation;

(4) Generate income for the local farmers and promote the local community development.

The plantation of *Dendrocalamus giganteus* is divided into two batches with a total area of 3582.34 ha. The first batch was planted on February 2010 with an area of 2158.36 ha. The second was February 2011 with an area of 1423.98 ha. The monitoring starts in August 2013,

which is 42 months apart from the plantation time of first batches of *Dendrocalamus giganteus* plantation, and 28 months from the second batch. Based on the sample survey method, the anthropogenic GHG net removals by sinks from the first monitoring period of the project are 45631tCO_2e by August 2013.

The project lands are state-owned and collectively-owned. The project activity has been implemented involving farmers/communities and forest companies through following cooperative arrangements. Shareholding arrangements between local farmers/communities and forest company. The farmers/communities contribute land and labour and local forest companies invest in planting activities, provide technical inputs and manage plantations during the crediting period. The forest companies pay farmers for labour input to the project, providing income to farmers through temporary employment. All bamboo products planted on the land and generated carbon sink belong to the Yunnan Mengxiang Bamboo Industry co., LTD.

The project implemented reforestation through direct planting of tree species to restore the degraded lands using environmental-friendly techniques. The following technical and regulatory standards have been followed:

- State Technical Regulations for Afforestation/Reforestation:(GB/T 15776-2006)
- Design regulations for Afforestation(LY/T 1607-2003)
- State Technical Regulations for Watershed Management(GB/T 16453.1-16453.6-1996)
- State standard for Forest Tending(GB/T 15781-2009)
- Yunnan Provincial Standard for Major Afforestation Tree Species and Seedlings(DB53/062-2006)
- Technical Standard for Seedling Breeding(LY1000-991)
- Yunnan Provincial Standard for Major Afforestation Tree Species and Seedlings(DB53/062-2006)
- State Regulations for Non-commercial forest construction(GB/T 18337.1-2001, GB/T 18337.2-2001, GB/T18337.3-2001)

1. Provenance and seedling tending

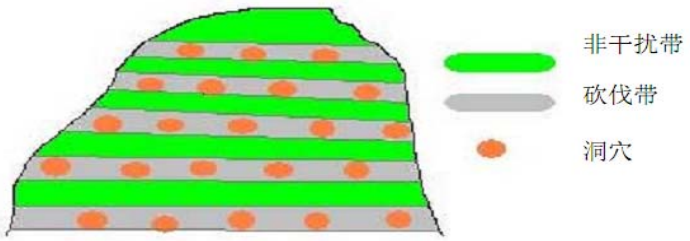
All seedlings taken by the proposed project are locally bred, taking the method of pole-burying and repeatedly division propagation. All bamboo poles needed for seedling tending are locally adopted with similar site condition. And the seedling quality is closely following Yunnan Provincial Standard for Major Afforestation Tree Species and Seedlings (DB53/062-2006). All seedlings used are up to the required seedling standards grade I and grade Ⅱ. Details are shown in TableA-1.

Table A-4 seedling grade standards

Tree species	Seedling type	Seedling Age (month)	Seedling grade				Major Controlled conditions	Note
			Grade I		Grade Ⅱ			
			Ground diameter (cm)	Height of seedling (cm)	Ground diameter (cm)	Height of seedling (cm)		
Dendrocalamus giganteus	Container seedling	12	0.5	80	0.3~0.5	50~80	flourishing root and sturdy seedling (2 poles)	DB53/062-2006

2. Soil preparation

In order to avoid water and soil erosion, minimize GHG emission, and preserve the existing carbon sink pool, site burning and overall tillage are forbidden in the proposed project. Existing non-tree vegetation will be slashed manually along landform contour with a width of 120 cm-150 cm. Planting holes will be dug with a size of 40 cm×40 cm× 40 cm. The holes will be arranged in a triangle form on slope. Details are shown in PictureA-1.



PictureA-1 Sketch map for the planting holes

3. Afforestation

The afforestation activity lasts for 2 years, starting from the spring of 2010 (afforestation plan for each plot can be seen in table 1-2).The afforestation activity will be conducted manually in rainy days as much as possible. The density of plantation of each bamboo varity will conform with State Technical Regulation for Non-commercial Forest Construction(GB/T 18337.1-2001), the density of *Dendrocalamus giganteus* is 240-270 clumps/hm^2, and the seedling row spacing is 5m×8m, and trenches will be built along the slope of planting caves for the sake of water and soil reservation.

Project lands Dajianshan, Erdongshan, Oubigejiao, Donggualin and Mansuola are interplanted with *Eucalyptus* respectively, with an area of 207.51ha in Dajianshan, 104.31ha in Erdongshan, 72.37ha in Oubigejiao, 20ha in Donghualin and 44.77ha in Mansuola. Interplantation takes the form that a row of *Dendrocalamus giganteus* interplant two rows of *Eucalyptus*, with the row space of *Eucalyptus* is 3m×2.6m, and row space of *Dendrocalamus giganteus* remains unchanged.

At the initial stage of afforestation, the forest tending will last for 2 years, once a year for the sake of a high survival rate and better growth condition, including seedling-supporting, after-replacement, intertillage, weeding, and topdressing. The survival rate will be examined 6 months after the afforestation, and big seedlings will be applied to do after-replacement if the survival rate is lower than 85%.

4. Bamboo management

The bamboo seedling density of the proposed project is about 240-270 clumps/ha, and the seedling row spacing is 5m×8m. Bamboo shooting sprouting time is divided into three periods, initial stage (from June to July), peakstage (from August to September), and last stage (from October to November). The bamboo of the proposed project is planted by means of cuttage, the seedling used is only one finger thick, and will be sprouting bamboo shoots every year until it grows into mature bamboo, but the sprouted bamboo shoot at the first three years is too thin to be used as timber. Thus, at the fourth year after being planted, the bamboo shoot will grow larger and can be taken as timber use, however, which is high in moisture content, so we can't cut them until they continue growing for the following four years to

reach the timber moisture content standard and fabric condition, i.e., at the seventh year after being planted, we can harvest the bamboo. Cutting can be conducted all year round, better to do it in spring and winter. All *Eucalyptus* planted can be cut at the age of 5, and the carbon sink stored by it will not be counted as the project carbon sink volume.

A.2. Location of project activity

The proposed project is located in Xishuangbanna prefecture(Fig A-2,FigA-3), south of Yunnan province, north latitude 21°10'~ 22°40'and east longitude 99°55'~ 101°50' respectively, it involves Jinghong City, Menghai county and Mengla County,including 16 villages of 8 townships of 3 counties in Jinghongcity, Menghaicounty and Mengla county. The total area of the project plot is 3582.34 ha. Details are as follows.

Table A-2 the project plots information

county	township	village	Plot Name	Plot No	Area (hm^2)	Afforestation year
Jinghong	Gasa	Manmeke	Nannuoshan	JH-0207	36.33	2010
		Nanpa	Manhena	JH-0220	32.16	2011
	Menglong	Nanpen	Mansuola	JH-0212	44.77	2011
			Mansuolashangxiazhai	JH-0211	36.03	2010
			Longqiudaheishan	JH-0216	393.51	2010
		Heguan	Jijiapuxishan	JH-0122	82.16	2010
			Hongguanghoushan 1	JH-0118	345.03	2010
		Bangpiao	Hongguanghoushan 2	JH-0119	108.28	2011
Sub-total					**1078.27**	
Menghai	Gelanghe	Pazhen	Erdongshan	MH-0313	104.31	2011
			Jiebudiangejiaodongnanmian	MH-0310	72.88	2011
			Jiebudiangejiaonanmian	MH-0309	73.81	2011
		Pasha	Leidashan	MH-0315	305.36	2010
	Bulangshan	Manguo	Manwai	MH-0306	74.18	2010
		Banzhang	Oubigejiao	MH-0314	154.46	2011
		Mengang	Weidong	MH-0421	108.77	2010
	Mengsong	Daan	Daan	MH-0305	127.71	2010
		Banggang	Dajianshan	MH-0404	335.49	2011
			Sangengdi	MH-0303	105.38	2011
	Menghun	Hekai	Hekai	MH-0108	214.42	2010
			Banpen	MH-0117	42.74	2010
	Xiding	Nanleng	Baye	MH-0302	55.31	2010
		Jiuguo	Jiuguo	MH-0301	336.81	2010
Sub-total					**2111.63**	
Mengla	Yiwu	Luode	Taguishan	ML-0424	206.62	2011
			Donggualin	ML-0323	185.82	2011
Sub-total					**392.44**	

county	township	village	Plot Name	Plot No	Area (hm^2)	Afforestation year
Total					**3582.34**	

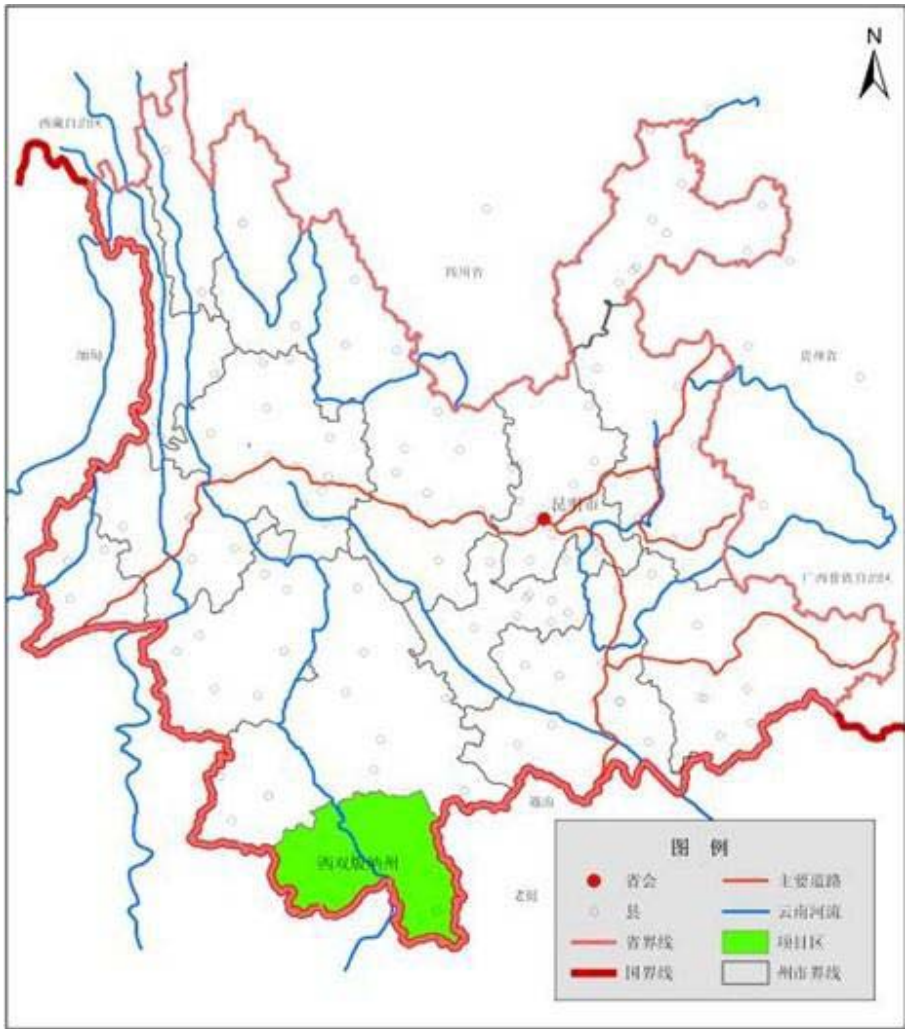
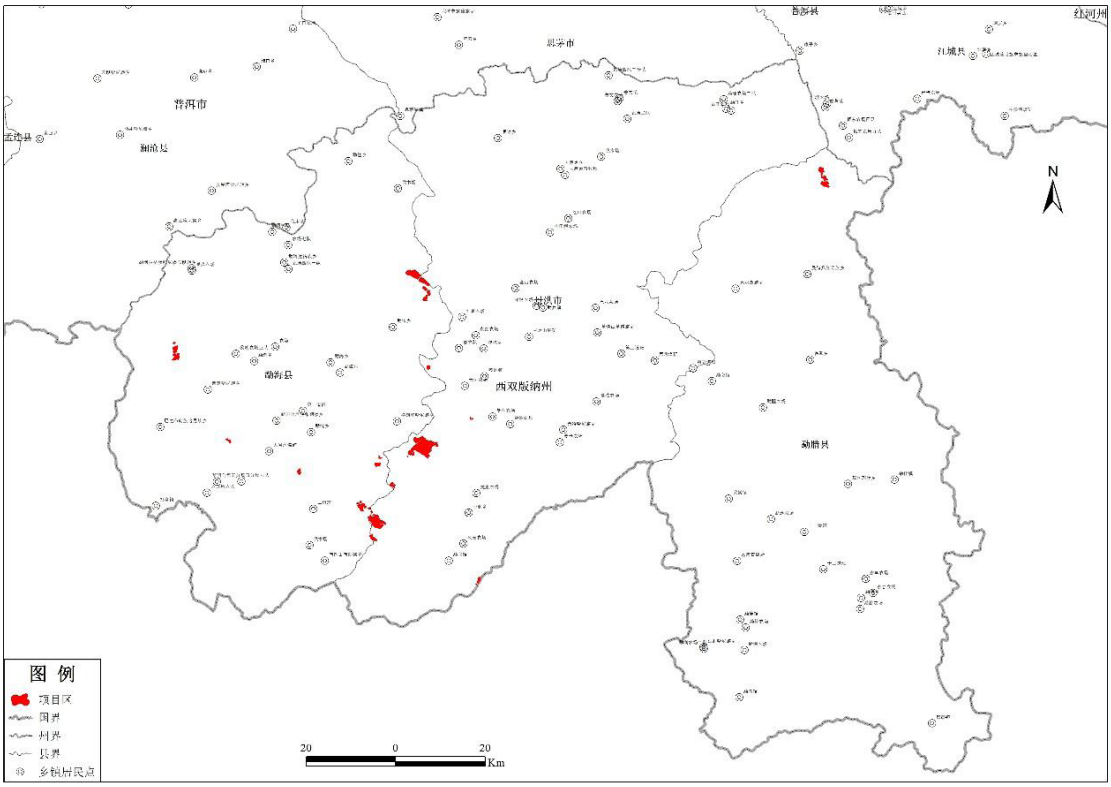


Fig A-2 Project lands schematic map



FigA-3 **Project plots distribution**

A.3. Parties and project participant(s)

entity	**contact**	**Brief introduction**	**Role and responsibility**	**Function**
Entity A	Yunnan Mengxiang Bamboo Industryco.,LTD	Co-funded with a registered capital of 225million by five shareholders like Yunnan investment holding co.,LTD and Xishuangbanna development investment co.,LTD	Project owners	Project participants

A.4. Reference of applied methodology

The project employs the approved methodology PS-AFOLU afforestation and reforestation on the degraded land (FM-001). Besides, it also applies the following latest version of the procedures, methodological tools and manuals approved by EB.

- Procedure for demonstrating the land eligibility of CDM afforestation and reforestation project,
- Manual for defining CDM afforestation and reforestation project boundary,
- Tool for identifying degraded or degrading lands of CDM afforestation and reforestation project,
- Comprehensive tools for identifying CDM A/R project baseline scenario and additionality evaluation,
- Tool for calculating samples monitored of CDM afforestation and reforestation project,
- Tool for estimating biomass combustion GHG emission (except CO2) of CDM afforestation and reforestation project,
- Tool for estimatingthe variation of soil organic carbon storage of CDM afforestation and reforestation project,
- Tool for estimating the variation of tree and shrub carbon storage of CDM afforestation and reforestation project.

A.5. Crediting period of project activity

- Crediting period start date: February 25,2010
- Crediting period: 30 years

SECTION B. Implementation of project activity

B.1. Implementation status of the project activity

According to the company's actual operation record, the first batch of Dendrocalamus giganteus was planted on February, 25th, 2010. The second was planted between February and April, 2011. Survival rate are tested at the end of the afforestation year (2010 and 2011) respectively, which is higher than 85%, but the survival rate of 14 plots are lower than 80% the next year (2011 and 2012). Before monitoring, field survey finds that these 14 plots haven't sprouted bamboo shoots alive due to the poor management, with an area of 2335.69ha. In view of the relationship between monitoring costs and carbon revenue, these 14 plots are taken as failing carbon strata. And the survival rate of the left 10 plots is higher than 90%, with a total area of 1246.65ha, accounting for 34.8% of the whole afforestation area 3582.34 ha, details are shown in Table B-1.

Table B-1 Afforestation results of all plots

Plot name	Plot No.	Area（hm^2）	Results
Nannuoshan	JH-0207	36.33	Succeed
Mannahe	JH-0220	32.16	Succeed
Mansuola	JH-0212	44.77	Succeed
Mansuolashangxiazhai	JH-0211	36.03	Failed
Longqiudaheishan	JH-0216	393.51	Failed
Jijiapuxishan	JH-0122	82.16	Failed
Hongguanghoushan 1	JH-0118	345.03	Failed
Hongguanghoushan 2	JH-0119	108.28	Failed
Erdongshan	MH-0313	104.31	Succeed
Jiebudiangejiaodongnanmian	MH-0310	72.88	Succeed
Jiebudiangejiaonanmian	MH-0309	73.81	Succeed
Leidashan	MH-0315	305.36	Failed
Manwai	MH-0306	74.18	Failed
Oubigejiao	MH-0314	154.46	Succeed
Weidong	MH-0421	108.77	Failed
Daan	MH-0305	127.71	Failed
Dajianshan	MH-0404	335.49	Succeed
Sangengdi	MH-0303	105.38	Failed
Hekai	MH-0108	214.42	Failed
Banpeng	MH-0117	42.74	Failed
Baye	MH-0302	55.31	Failed
Jiuguo	MH-0301	336.81	Failed
Taguishan	ML-0424	206.62	Succeed
Donggualin	ML-0323	185.82	Succeed

B.2. Revision of the monitoring plan

Based on PF, the baseline scenario is divided into 4 carbon strata, while the project

scenario is divided into 3 carbon strata based on afforestation date and interplant modes. The first monitoring conducted field survey and the preliminary sample monitoring on the project lands to find that there exists a huge difference among 10 *Dendrocalamus giganteus* plots in terms of bamboo growing, but within the same plot, eucalyptus interplantation has less impact on *Dendrocalamus giganteus* carbon sequestration, with an deviation less than 5% (Preliminary monitoring is conducted among three project lands, they are Dajianshan, Oubigejiao and Donggualin, which are partly interplanted with *Eucalyptus*. First, preliminary monitoring sampling is carried out on the three project lands, extracting 2 sample plots form each project land, with one sample interplanted, the other non-interplanted. Thus, there are 6 samples in total. Then, compare the biomass between the of interplanted lands and non-interplanted lands, to find that deviation is within 5%. sample results can be provided to DOE). The carbon strata interplanted with eucalyptus will not monitored as an individual stratum. Therefore, in order to keep the carbon sequestration consistency of all carbon strata, the afforestation land is divided into 10 carbon strata, besides, all afforestation failing plots are taken as a stratum, so there are 11 strata altogether. See table B-2：

Table B-2 Division of the monitoring carbon strata

Plot name	**Plot No.**	**Carbon strata**	**Area（hm^2）**
Nannuoshan	JH-0207	S—1	36.33
Manhena	JH-0220	S—2	32.16
Oubigejiao	MH-0314	S—3	154.46
Jiebudiangejiaodongnanmian	MH-0310	S—4	72.88
Jiebudiangejiaonanmian	MH-0309	S—5	73.81
Taguishan	ML-0424	S—6	206.62
Donggualin	ML-0323	S—7	185.82
Mansuola	JH-0212	S—8	44.77
Erdongshan	MH-0313	S—9	104.31
Dajianshan	MH-0404	S—10	335.49
Failing afforestation plots		S—11	2335.69

The afforestation date, afforestation species and afforestation area remain unchanged,

while the forest management change a little, there is no need to submit request for change. Details for alterations are shown in Table B-3,

Table B-3 Types of changes from the description in the registered PF as outlined in the guidelines (Annex 24, EB66) and their applicability to the implemented project）

No.	Types of changes from the project description in the PDD of an A/R CDM project activity	Applicability to the project
a)	Changes in year-wise areas planted, possibly resulting in a part of the project area not being planted;	No
b)	Changes in species composition, if the changes are demonstrated at verification to be consistent with the baseline identification and additionality demonstration made at the validation stage;	No
c)	Changes in stocking density, if the changes are demonstrated at verification to be consistent with the baseline identification and additionality demonstration made at the validation stage;	No
d)	Changes in timing and choice of silvicultural operations;	No
e)	Changes in timing of harvest occurring before the third verification;	No
f)	Changes related to collection of non-timber forest products;	No
g)	Changes in tree/shrubs propagation method;	No
h)	Changes in post-harvest replanting/regeneration methods;	Not applicable as planted areas are not harvested yet
i)	Changes in technology employed;	No
j)	Changes in inputs (e.g. fertilizers, certified seeds, watering);	Yes, AFD loan takes the expenses reimbursement system, and the reimbursement amount suffers some difficulties since 2011, which makes the afforestation enterprise fall into financial dilemma, with about 2335.69ha plots short of fertilization management, and *Dendrocalamus giganteus* almost ceases sprouting new shoots.
k)	Changes in stratification for sampling;	Yes, ex post stratification has been implemented taking into account of the changes to ex-ante strata resulting from impacts of site conditions, planting time, growth rates and other location factors.
l)	Changes in type of sample plots (e.g. temporary, permanent, point-sampling);	No
m)	Changes in number of sample plots and their allocation to strata;	Yes, as a follow up to ex post stratification, the calculation of number sample plots and their allocation is been revised.
n)	Changes in the project boundary (limited to reduction in project area), if the changes are	No

	demonstrated at verification to be consistent with the baseline identification and additionality demonstration made at the validation stage;	
o)	Changes in quality assurance/quality control (QA/QC) procedures, where it can be demonstrated that the changed QA/QC procedures are used by the National Forest Inventory or were applied in another registered A/R CDM project activity;	No
p)	Changes in parameters, equations, or methods used in tree biomass estimation, if the applicability of the changed parameters, equations, or methods is demonstrated at verification using the .Tool for demonstration of applicability of allometric equations and volume equations in A/R CDM project activities“ when available, or if the changed parameters, equations, or methods do not result in a decrease in precision of the estimate of tree biomass;	No
q)	Changes from provisions regarding shifting of pre-project activities, if the related emissions are estimated at verification using the tool —Changes from provisions regarding shifting of pre-project activities, if the related emissions are estimated at verification using the tool —Estimation of the increase in greenhouse gas (GHG) emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity“. and are accounted for as leakage;	Not Applicable
r)	Changes in use of fire in site preparation, if the related emissions are estimated at verification using the tool —Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity“ and are accounted for as project emissions;	Not Applicable
s)	Changes in extent of soil disturbance in site preparation, if the related emissions are estimated at verification using Equation (2) of the —Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities“ and are accounted for as project emissions;	No
t)	Changes in methods of estimation of changes in any carbon pool, if the method applied at verification uses the latest version of the relevant approved tool and the applicability conditions of the methodology applied are consistent with the applicability conditions of the tool.	No

B.3.Request for deviation applied to this monitoring period

No.

B.4. Notification or approval of request for changes

No（ please refer to B.2）

SECTIONC. Description of the monitoring system

C.1. Organizational structure, roles and responsibilities of personnel

The monitoring and expert team for monitoring are co-organized by Yunnan Academy of Scientific and Technical Information (YASTI), Yunnan Huixin Technical development co. LTD and the project owner. Other expert team is invited to give guidance as well. Organization graph is shown in Fig C-1.

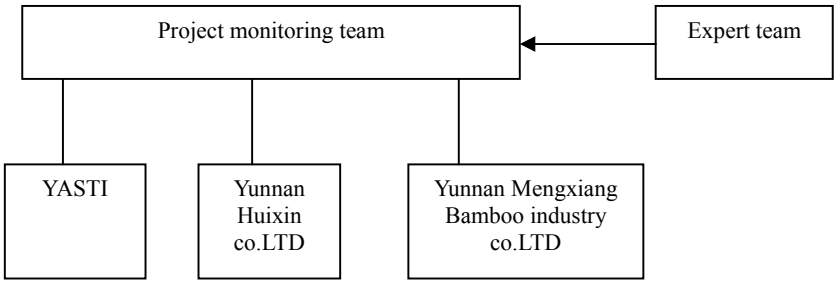


Fig C-1 Project monitoring organization graph

The monitoring team is co-organized by technicians from Yunnan Academy of Scientific and Technical Information (YASTI), Yunnan Huixin Technical development co.LTD and Mengxiang Bamboo Industry co.LTD. The team is in charge with designing monitoring plan, quality control, implementing monitoring plan, compiling monitoring report and so on.

Among them, YASTI is responsible for designing the monitoring plan and quality control system, revising the monitoring report, coordinating with DOE and project officers of AFD.

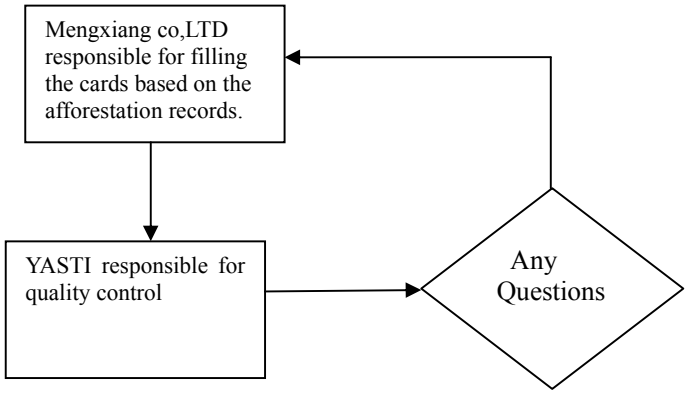
Yunnan Huixin Technical development co, LTD is responsible for on-site monitoring, organizing training for monitoring staff, documenting and inputting monitoring data and compiling monitoring draft report.

Project owner (Yunnan Mengxiang Bamboo Industry co, LTD) is responsible for implementing the proposed project, organizing monitoring staff to do on-site monitoring and

afforestation activity monitoring.

Expert team is co-organized by experts from AFD, Yunnan provincial forestry institutions and agencies, YASTI and Yunnan Huixin Technical development co, LTD, which is responsible for *Dendrocalamus giganteus* growth model construction, providing technical training, on-site monitoring data analysis and monitoring report consultation.

C.2. Flow chart for monitoring of project implementation



C.3 Flow chart for field measurement off sampling plots and data entry/analysis

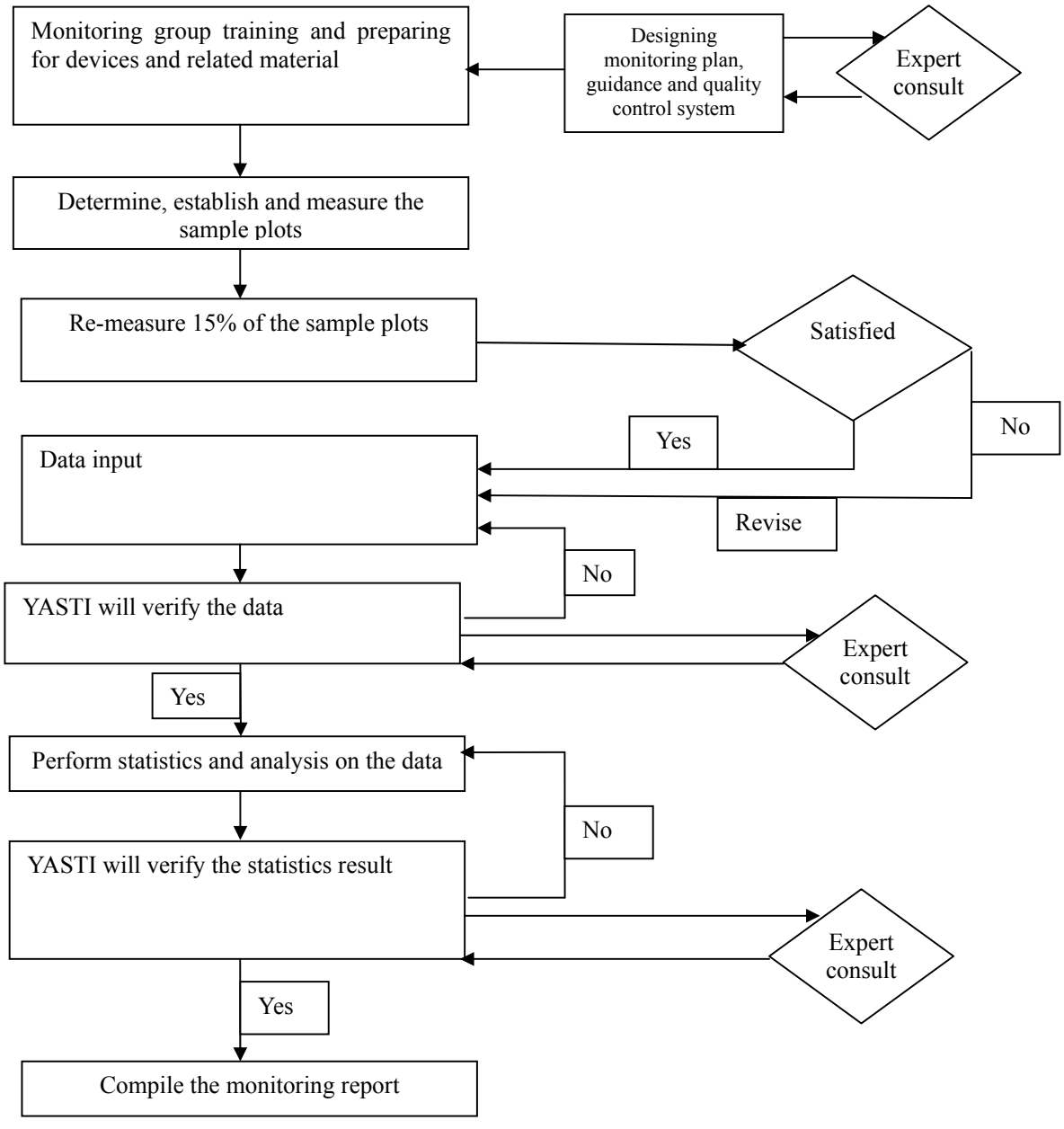


Fig C-2 sample plots on-site monitoring

C.4. QA/AC procedures

The monitoring work is strictly consistent with the quality control system and quality assurance system (QA / QC) described in PF, including,

1. Reliable field measuring

For the sake of a reliable field measuring,

——the monitoring guidance and plan are strictly followed at every stage of field measuring.

——on-site monitoring training is conducted at the field measuring plots, all staff participating have a command of using monitoring methods, and are aware of the accurate data collection is of great importance.

——on-site training pictures will be affiliated to the monitoring report.

2. Validation of the on-site data collected

In order to validate accuracy of the quadrat and the data collected, 15% of the sample plots will be re-measured twice. If measuring errors are both larger than 5%, than it has to be measured again.

3. Validation and analysis of the input data

In order to form a reliable carbon storage database, the original data input into Excel will be analyzed. During the analysis, if the data monitored is obviously flawed, we should consult with the on-site monitoring staff to solve the problem. If any insoluble problem happens on the monitored data, the sample plot data can be excluded from reliable carbon storage analysis scope.

4. Data maintenance and archiving

Data archiving takes the form of both digital and paper sheets. Consulting party and project owner each save a copy of the project data. All digital data and report copy can be permanently stored in a CD. Data archiving includes,

——all copies of on-site measuring data, experimental data, dada analysis and trial balance.

——all carbon storage calculation Excel.

——Geographic information system products.

——copies of measuring and monitoring report.

C.5. Project boundary monitoring

- After afforestation, GPS（Juno SB，accuracy of 5m）is used to measure project boundary, recording inflection point coordinates of each polygon plot. Based on the actual afforestation record, the project boundary stays intact after afforestation as described in PF. (coordinates has been submitted during the validation period).
- Inflection point coordinates will be input into geographic information system, and calculate the area of each project land and each carbon stratum.

C.6. Project afforestation activity monitoring

Bamboo afforestation activity includes clearing, soil preparation, tending, logging, and management and forest fire prevention and plant diseases and insect pests occurrence and prevention. The Plot Afforestation Monitoring Card can be used to record all happened activities in each plot (see Annex Table 1). One card is set up for one plot to make sure all project related activities are coincident to conditions of referred methodology tool. The project participant should follow the bamboo afforestation technical requirements of China and should be accord with the technical standards of forest resource investigation. The project participant must set up Standard Operation Procedure (SOP) and Quality Assessment and Quality Control (QA/QC) in monitoring activities, which should include field data collection, data record, management and archive.

C.7. Determination of the samples for monitoring

In order to make the carbon strata internally even, reduce their variability across all strata, improve the measuring precision and reduce the uncertainty, based on *Tool for calculating samples monitored of CDM afforestation and reforestation project,* Under a certain accuracy and reliability requirements, the following methods can help determine the least and constant number of the sample plots to be monitored.

$$n = \frac{N * t_{VAL}^{\ 2} * \left(\sum_i w_i * s_i \right)^2}{N * E^2 + t_{VAL}^{\ 2} * \sum_i w_i * s_i^{\ 2}} \quad (1)$$

Among which：

n	the least and constant number of the sample plots to be monitored, dimensionless;
N	The most possible number of sample plots within project boundary, dimensionless;
t_{VAL}	T distribution test values on both sides, dimensionless;
w_i	relative weight of carbon stratum i, dimensionless;
s_i	Estimated standard deviation of carbon biomass stratum i (t d.m. ha^{-1});
E	Acceptable error of biomass carbon bank (t d.m. ha^{-1});
i	1, 2, 3, .predicted stratum of biomass carbon bank within project boundary

Based on the above method, we figure out that there are 60 sample plots to be monitored beforehand. According to the field survey, preliminary sample monitoring result, and weigh the monitoring costs and precision requirements, we finally determine 81 sample plots to be monitored. Details see Table C-1,

Table C-1 sample plots of each carbon stratum of monitoring

Plot name	Carbon strata	Plot No	Area（hm^2）	Plot
Nannuoshan	S—1	JH-0207	36.33	2
Manhena	S—2	JH-0220	32.16	2
Oubigejiao	S—3	MH-0314	154.46	10
Jiebudiangejiaodongnanmian	S—4	MH-0310	72.88	5
Jiebudiangejiaonanmian	S—5	MH-0309	73.81	5
Taguishan	S—6	ML-0424	206.62	13
Donggualin	S—7	ML-0323	185.82	12
Mamsuola	S—8	JH-0212	44.77	3
Erdongshan	S—9	MH-0313	104.31	7
Dajianshan	S—10	MH-0404	335.49	22
Failing afforestation lands	S—11		1246.65	
Total			3582.34	81

In addition to above sample plots listed in the table C-1, there are 6 sample plots for

inter-plantation project plots (Oubigejiao, Donggualin and Dajianshan), hence total sample plots are 87 as shown in table C-2.

Table C-2 total sample plots of each carbon stratum

Plot name	Carbon strata	Plot No	Area（hm^2）	Plot
Nannuoshan	S—1	JH-0207	36.33	2
Manhena	S—2	JH-0220	32.16	2
Oubigejiao	S—3	MH-0314	154.46	12
Jiebudiangejiaodongnanmian	S—4	MH-0310	72.88	5
Jiebudiangejiaonanmian	S—5	MH-0309	73.81	5
Taguishan	S—6	ML-0424	206.62	13
Donggualin	S—7	ML-0323	185.82	14
Mamsuola	S—8	JH-0212	44.77	3
Erdongshan	S—9	MH-0313	104.31	7
Dajianshan	S—10	MH-0404	335.49	24
Failing afforestation lands	S—11		1246.65	
Total			3582.34	87

C.8. Stratification

Based on the monitoring plan in PF, the area of a rectangular sample land is $400m_2$（20m×20m），random middle point of samples can be set like this,

Step 1: On the computer, using geographic information system software, to divide project area into many gridding (spec as 100m×100m). To calculate the crossing points of gridding N which locate in each layer. The crossing points in each layer should be numbered from 1.

Step 2: In Excel spread sheet, using formula“ ROUND(RAND()*[max_N],0)”to create a random number. Taking the crossing point whose serial number is the same as created random number to be the middle of first plot.

Step 3: based on the fixed distance to determine the next plot. If the shortest distance from plot margin to project boundary is less than 10 meters, or a part of the plot falls out of project or carbon layer of the project, the plot should be transited toward the middle point.

According to the above steps, the middle coordinates of 87 sample plots to be monitored are listed in Table C-3.

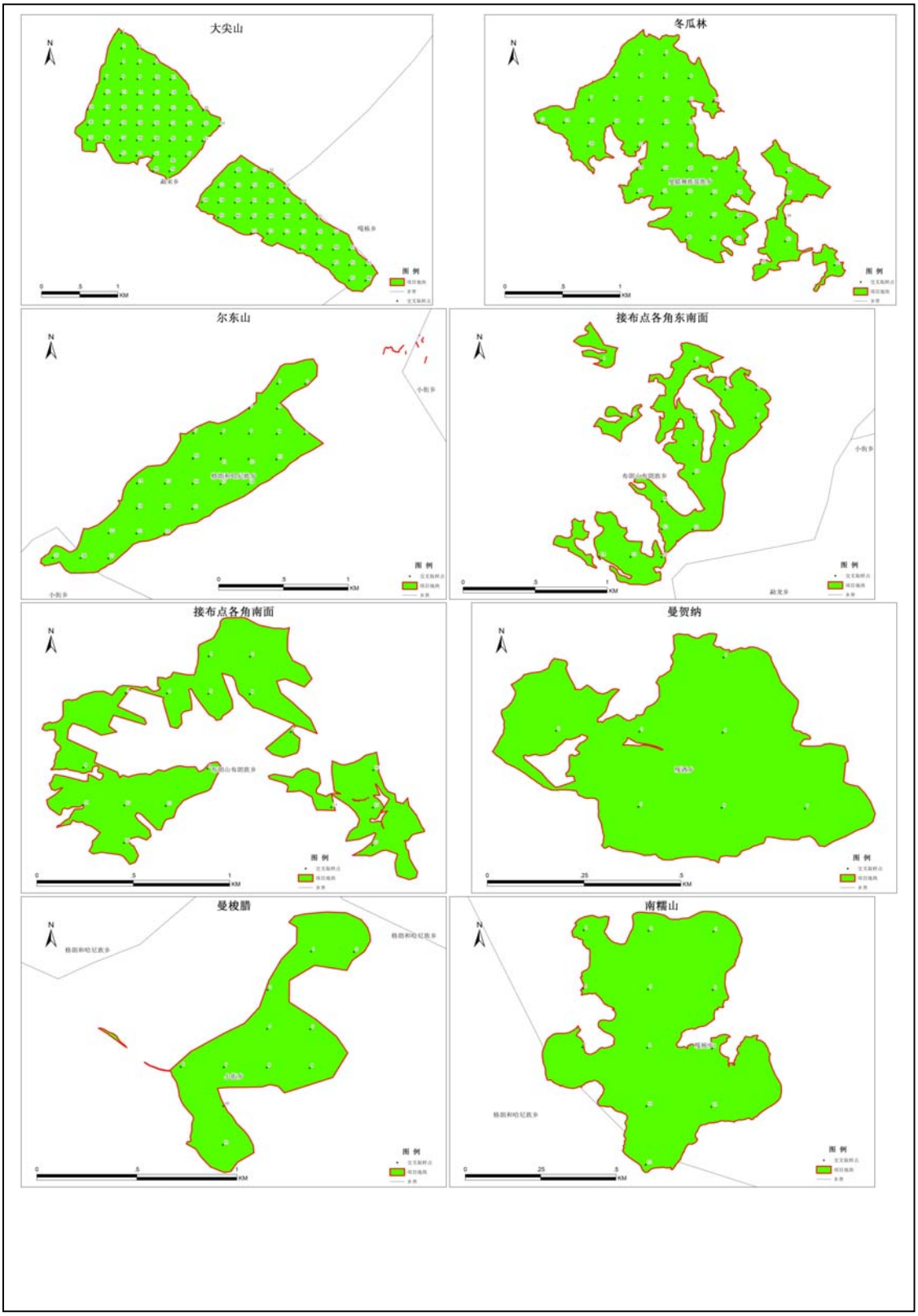
Table C-3 The middle coordinates of 81 sample plots

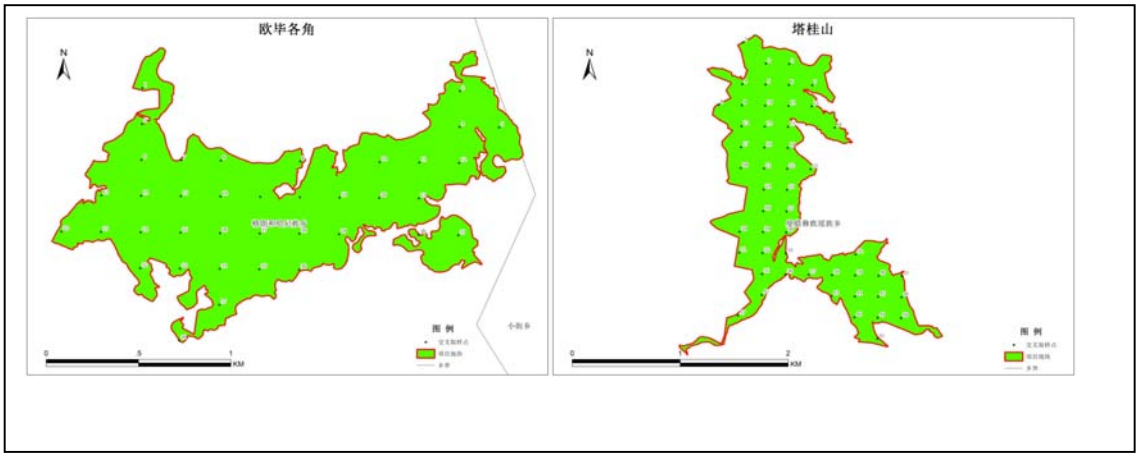
Plot name	Plot No.	Area (hm^2)	Sample quantity	Sample number	Coord X	Coord Y
Nannuoshan	JH-0207	36.33	2	NNS-01	100°38′16″	21°58′28″
				NNS-02	100°38′23″	21°58′15″
Manhena	JH-0220	32.16	2	MHN-01	100°43′46″	21°52′14″
				MHN-02	100°43′53″	21°52′07″
Oubigejiao	MH-0314	154.46	12	OBGJ-01	100°37′22″	21°49′48″
				OBGJ-02	100°36′46″	21°49′41″
				OBGJ-03	100°37′8″	21°49′41″
				OBGJ-04	100°36′26″	21°49′25″
				OBGJ-05	100°36′54″	21°49′36″
				OBGJ-06	100°36′28″	21°49′31″
				OBGJ-07	100°36′53″	21°49′31″
				OBGJ-08	100°37′19″	21°50′01″
				OBGJ-09	100°37′22″	21°49′54″
				OBGJ-10	100°36′40″	21°49′48″
				OBGJ-11	100°37′1″	21°49′42″
				OBGJ-12	100°36′47″	21°49′36″
Jiebudiangejiao dongnanmian	MH-0310	72.88	5	JDNM-01	100°30′46″	21°40′58″
				JDNM-02	100°30′45″	21°40′53″
				JDNM-03	100°30′32″	21°40′39″
				JDNM-04	100°30′32″	21°40′27″
				JDNM-05	100°30′25″	21°40′19″
Jiebudiangejiao nanmian	MH-0309	73.81	5	JNM-01	100°29′43″	21°41′44″
				JNM-02	100°29′24″	21°42′09″
				JNM-03	100°29′16″	21°42′03″
				JNM-04	100°28′53″	21°41′52″
				JNM-05	100°28′56″	21°41′46″
Taguishan	ML-0424	206.62	13	TGS-01	101°29′46″	22°20′46″
				TGS-02	101°30′13″	22°20′45″
				TGS-03	101°30′7″	22°20′39″
				TGS-04	101°30′7″	22°20′32″
				TGS-05	101°29′34″	22°21′56″
				TGS-06	101°29′41″	22°21′44″
				TGS-07	101°29′33″	22°21′38″
				TGS-08	101°29′34″	22°21′32″
				TGS-09	101°29′25″	22°21′24″
				TGS-10	101°29′40″	22°21′18″
				TGS-11	101°29′42″	22°21′14″
				TGS-12	101°29′40″	22°20′59″
				TGS-13	101°29′44″	22°20′50″
Donggualin	ML-0323	185.82	14	DGL-01	101°29′46″	22°20′28″
				DGL-02	101°29′17″	22°20′22″
				DGL-03	101°29′46″	22°20′21″
				DGL-04	101°29′43″	22°20′13″
				DGL-05	101°29′49″	22°20′7″
				DGL-06	101°30′27″	22°20′6″
				DGL-07	101°30′4″	22°20′0″

				DGL-08	101°30′6″	22°19′55″
				DGL-09	101°30′9″	22°19′45″
				DGL-10	101°30′41″	22°19′40″
				DGL-11	101°29′45″	22°20′31″
				DGL-12	101°29′40″	22°20′27″
				DGL-13	101°29′46″	22°20′40″
				DGL-14	101°29′32″	22°20′27″
Mansuola	JH-0212	44.77	3	MSL-01	100°36′11″	21°48′17″
				MSL-02	100°35′43″	21°47′58″
				MSL-03	100°35′49″	21°47′50″
Erdongshan	MH-0313	104.31	7	EDS-01	100°36′6″	21°48′31″
				EDS-02	100°36′50″	21°49′08″
				EDS-03	100°36′51″	21°49′2″
				EDS-04	100°36′40″	21°48′58″
				EDS-05	100°36′24″	21°48′51″
				EDS-06	100°36′18″	21°48′38″
				EDS-07	100°36′18″	21°48′39″
Dajianshan	MH-0404	335.49	24	DJS-01	100°38′17″	22°8′37″
				DJS-02	100°38′16″	22°8′25″
				DJS-03	100°36′40″	22°10′3″
				DJS-04	100°36′32″	22°9′46″
				DJS-05	100°37′3″	22°9′50″
				DJS-06	100°37′07″	22°9′44″
				DJS-07	100°36′32″	22°9′38″
				DJS-08	100°37′2″	22°9′31″
				DJS-09	100°36′31″	22°9′32″
				DJS-10	100°37′1″	22°9′37″
				DJS-11	100°36′25″	22°9′25″
				DJS-12	100°36′53″	22°9′24″
				DJS-13	100°36′39″	22°9′18″
				DJS-14	100°37′7″	22°9′18″
				DJS-15	100°37′35″	22°9′11″
				DJS-16	100°37′47″	22°9′4″
				DJS-17	100°37′20″	22°8′58″
				DJS-18	100°37′49″	22°8′59″
				DJS-19	100°37′36″	22°8′51″
				DJS-20	100°38′2″	22°8′52″
				DJS-21	100°37′56″	22°8′46″
				DJS-22	100°38′0″	22°8′38″
				DJS-23	100°37′42″	22°8′59″
				DJS-24	100°37′7″	22°9′38″

By taking the middle points of the sample plots in above the table, 20m×20m quadrat will be designed along the contour direction. And permanent marks will be made on the middle point and four angle points of the plot (the PVC pipe of 5cm diameter and 30 cm length, embedded 20cm into the ground, 10 cm above the ground), which is easier to precisely find out the fixed plot boundary in next monitoring activity.

The layout maps of each stratum are as follows.





1. Field measurements

After the sample plots are arranged, the bamboo age and diameter within the sample plots will be recorded starting from one angle of the quadrat. After recording the data, greasy pen will be used to mark “+ “on the bamboo pole.

The method to determine bamboo age: bamboo age will be judged by bamboo color, wax powder, moss cover situation and so on.

DBH measuring method: using DBH tape to measure bamboo diameter (with chest high) and recording them in the on-site log table (see Annex Table Two).

SECTION D. Data and parameters

D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

Data /parameter	F_{fire}			
Unit	%.			
Used in equations:	Methodology equation (2);			
Description:	Forest fire risk coefficient			
Data source:	The source of data shall be selected, in order of preference, from the following: (a) Percentage of local past ten years average forest fire inundated area and the total forest area within the same region. (b)Default value of forest fire risk coefficient listed in the following table.			
	Provinces, municipalities and autonomous regions	Forest fire risk coefficient	Provinces, municipalities and autonomous regions	Forest fire risk coefficient
	Beijing	0.028%	Hubei	0.064%
	Tianjin	0.022%	Hunan	0.088%
	Hebei	0.016%	Guangdong	0.043%
	Shanxi	0.063%	Guangxi	0.104%
	Neimenggu	0.231%	Hainan	0.030%
	Liaoning	0.007%	Chongqing	0.031%
	Jilin	0.003%	Sichuang	0.020%
	Heilongjiang	0.776%	Guizhou	0.141%
	Shanghai	0.000%	Yunnan	0.079%
	Jiangsu	0.088%	Xizang	0.012%
	Zhejiang	0.126%	shannxi	0.011%
	Anhui	0.027%	Gansu	0.016%
	Fujian	0.111%	Qinghai	0.019%
	Jiangxi	0.077%	Ningxia	0.016%
	Shandong	0.012%	Xinjiang	0.061%
	Henan	0.022%	The national	0.150%

			average	
	Calculation based on national forestry statistical data between 1995 to 2005.			
Measurement procedures（if any）	N/A			
Explanation				

Data / parameter	CF_{BAMBOO}
Unit	t C (t.d.m.)$^{-1}$
Used in equations:	"Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (Version 02.1.0) equation (1);
Description:	Carbon fraction of bamboo
Data source:	Default value is 0.5 t C (t.d.m.)$^{-1}$
Measurement procedures（if any）	N/A
Explanation	

D.2. Data and parameter to be monitored

Data /parameter	wi
Unit	Dimensionless
Used in equations:	（6.5）and（6.6）in PF
Description	Ratio of the project stratum i and the total area
Data source	Field measurements
Measurement procedures（if any）	Use national forest resources survey related technical details
Monitoring frequency	After the first verification
QA/QC procedures	Use QA/QC procedures in national forest resources survey related technical details

Data /parameter	$A_{p,i}$

Unit	hm^2
Number of the formula applied	"Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"(Version 02.1.0) equation (4) and (18);
Description	area of plot p in stratum i
Data source	Field measurements
Measurement procedures	Use national forest resources survey related technical details, specifications and standard operation procedure (SOP)
Monitoring frequency	After the first validation, monitoring will be done once in ten years
QA/QC procedures	Use QA/QC procedures in national forest resources survey related technical details, specifications, standards

Data /parameter	DBH
Unit	cm or other unit of length
Number of the formula applied	"Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (Version 02.1.0) equation (2) and (15);
Description	Usually use Breast height diameter or Eyebrow-diameter, if not, any diameter (Eyebrow-diameter) or other unit of monitoring, eg. ground diameter , basal area etc.
Data source	Field measurements
Measurement procedures	Use national forest resources survey related technical details, specifications and standard operation procedure (SOP)
Monitoring frequency	After the first verification, monitoring will be done once in ten years
QA/QC procedures	Use QA/QC procedures in national forest resources survey related technical details, specifications, standards

Data /parameter	BA
Unit	Year
Number of the formula applied	（6.1）in PF
Description	Age of bamboo
Data source	Field measurements
Measurement	Record

procedures	
Monitoring frequency	After the first verification, monitoring will be done once in ten years
QA/QC procedure	Use QA/QC procedures in national forest resources survey related technical details, specifications, standards

Data /parameter	A
Unit	hm^2
Number of the formula applied	（6.8）in PF
Description	Whole area of the project
Data resource	Field measurements
Measurement procedures	Use national forest resources survey related technical details, specifications and standard operation procedure (SOP)
Monitoring frequency	After the first verification, monitoring will be done once in ten years
QA/QC procedures	Use QA/QC procedures in national forest resources survey related technical details, specifications, standards

Data /parameter	*T*
Unit	Year
Number of the formula applied	“Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” (Version 02.1.0) equation (12) and (25);
Description	Time span between two continuous monitoring.
Data source	recorded time
Measurement procedures	not applicable
Explanation	Two continuous monitoring is the different time in t2 and t1 (eg. April t1 and September t2), so time span is not an integer year.

SECTION E. Emission reduction calculation

E.1. Baseline emissions calculation

Based on the Baseline scenario net emission reduction in PF, the total baseline scenario

net emission reduction is 3962.60 t CO_2e.

Table E-1 Scattered tree carbon storage variation unit : t CO_2e

Strata No.	Forest stand	2010	2011	2012	2013	Total
BSL-I	Soft broadleaf forest	107.0	145.8	186.1	226.2	
	Hard broadleaf forest	39.4	53.0	68.6	86.0	
BSL-II	Soft broadleaf forest	67.4	79.8	91.5	102.3	
	Hard broadleaf forest	17.5	22.7	28.5	34.7	
BSL-III	Soft broadleaf forest	253.1	311.4	367.9	421.3	
	Hard broadleaf forest	25.2	36.0	48.8	63.6	
BSL-IV	Soft broadleaf forest	160.8	178.1	193.7	207.6	
	Hard broadleaf forest	101.0	112.8	124.8	0.0	
Sub-total		**771.4**	**939.6**	**1109.9**	**1141.7**	3962.60
Grand total		**771.4**	**1711**	**2820.9**	**3962.60**	

E.2. Project emissions calculation

1. Measurement and calculation of the carbon storage variation of the bamboo forest biomass carbon bank

According to the PF, the carbon storage of the propose project is mainly from *Dendrocalamus giganteus*, the measurement and calculation of the *Dendrocalamus giganteus* are as follows,

Step 1: to measure the bamboo poles , bamboo age and DBH of each fixed sample plot,

Step 2: to calculate the biomass of each bamboo by applying the prediction model in PF,

Table E-2 Biomass prediction model

Age-class	Organ	Biomass regression equation		regression coefficient(R2)	*F-test*	$F_{0.01}$-*test*
1	Stem pole	$Ws = 0.102D^{2.099}$	n = 16	0.967**	434.912	8.68
	Twig	$Wb = -0.012D^2 + 0.306D - 0.58$	$2.8 \leq D \leq 16.3$	0.848**	38.918	6.51
	Leaf	$Wl = -0.016D^2 + 0.380D - 0.808$		0.829**	33.84	6.51
	Root	$Wr = 0.045D^{1.863}$		0.902**	138.818	8.68
	Overall	$Wt = 0.226D^{1.925}$		0.966**	419.898	8.68

2	Stem pole	$Ws = 0.334D^2 - 2.475D + 5.734$	n = 19	0.980**	391.821	6.23
	Twig	$Wb = 1.292\ln(D) - 0.630$	$1.97 \leq D \leq 18.4$	0.812**	69.29	8.4
	Leaf	$Wl = 0.100D + 0.038$		0.823**	78.938	8.4
	Root	$Wr = 0.060D^2 - 0.398D + 1.542$		0.985**	512.901	6.23
	Overall	$Wt = 0.398D^2 - 2.709D + 8.046$		0.986**	517.702	6.23
3	Stem pole	$Ws = 0.072D^{2.331}$	n = 16	0.975**	535.524	6.51
	Twig	$Wb = 1.497\ln(D) - 0.877$	$1.91 \leq D \leq 17.3$	0.934**	198.213	6.51
	Leaf	$Wl = 0.118D - 0.214$		0.972**	491.001	6.51
	Root	$Wr = 0.061D^2 - 0.388D + 1.373$		0.980**	318.366	6.7
	Overall	$Wt = 0.275D^{1.955}$		0.988**	1195.999	6.51
4	Stem pole	$Ws = 0.131D^{2.141}$	n = 12	0.986**	723.974	10.04
	Twig	$Wb = -0.010D^2 + 0.365D - 0.400$	$1.97 \leq D \leq 16.7$	0.926**	56.283	8.02
	Leaf	$Wl = 0.091D - 0.085$		0.857**	59.748	10.04
	Root	$Wr = 0.071D^2 - 0.575D + 1.675$		0.960**	108.897	8.02
	Overall	$Wt = 0.385D^{1.820}$		0.987**	787.853	10.04

Annotation: W: kg; D: cm; ** $P< 0.01$

Step 3: to calculate the biomass of project stratum i and sample plot p in year t($B_{TREE,p,i,t}$)

$$B_{TREE,p,i,t} = \sum_{j} B_{TREE,j,p,i,t} \quad (2)$$

Step 4: to calculate the biomass per ha of project stratum i and sample plot p in year t($b_{TREE,p,i,t}$)

$$b_{TREE,p,i,t} = \frac{B_{TREE,p,i,t}}{A_{p,i}} \quad (3)$$

In which , $A_{p,i}$ refers to the area of stratum i(hm^2) .

Step 5: to calculate the biomass and square deviation per ha of stratum i in year t,

$$b_{TREE,i,t} = \frac{\sum_{p=1}^{n_i} b_{TREE,p,i,t}}{n_i} \quad (4)$$

$$s_i^2 = \frac{n_i \cdot \sum_{p=1}^{n_i} b_{TREE,p,i,t}^2 - \left(\sum_{p=1}^{n_i} b_{TREE,p,i,t} \right)^2}{n_i \cdot (n_i - 1)} \quad (5)$$

In which,

$b_{TREE,i,t}$	the biomass per ha of project stratum i in year t.（t d.m. hm^{-2}）
n_i	The sample plot quantity of project stratum i
s_i^2	Biomass square deviation per ha of stratum i in year t, standard deviation per ha of stratum i in year t. (t d.m. hm^{-2})^2

Step 6: to calculate the average biomass and square deviation per ha in year t,

$$b_{TREE,t} = \sum_{i=1}^{M} w_i \cdot b_{TREE,i,t} \quad (6)$$

$$s_{b_{TREE}}^2 = \sum_{i=1}^{M} w_i^2 \cdot \frac{s_i^2}{n_i} \quad (7)$$

In which,

$b_{TREE,t}$	the average biomass per ha in year t.（t d.m. hm^{-2}）
w_i	The ratio of stratum i and the total area（dimensionless）
M	The total strata of the project

Step 7: to calculate the uncertainty of the average biomass per ha in year t,

$$u_{b_{TREE,t}} = \frac{t_{VAL} \cdot s_{b_{TREE,t}}}{b_{tree,t}} \quad (8)$$

In which,

$u_{b_{TREE,t}}$	the uncertainty of the average biomass per ha in year t.（%）

t_{VAL} A 90% confidence level, when degree so freedom is n-M, Two-side d Student's *t*-value. Where *n* is total number of sample plots within the project boundary, and *M* is the total num before tree biomass estimation strata. For instance, Two-sided Student's *t*-value for aprobability value of 10% (which implies a 90% confidence level) and 45 degrees of freedom can be obtained in Excel spread sheet as"=TINV(0.10,45)"which returns a value of 1.6794.

Step 8: to calculate the carbon storage of the bamboo biomass carbon bank in year t within the project boundary,

$$C_{TREE,t} = A \cdot b_{TREE,t} \cdot CF_{BAMBOO} \cdot \frac{44}{12} \quad (9)$$

In which,

A The bamboo forest area within the project boundary（hm^2）

$C_{TREE,t}$ the carbon storage of the bamboo biomass carbon bank in year t within the project boundary.（t CO_2-e）

CF_{BAMBOO} Bamboo carbon content ratio（t C (t d.m.)$^{-1}$）, default value is 0.5.

Table E-3The carbon storage of the bamboo biomass carbon bank

Carbon strata	Average biomass $b_{TREE\ i\ t,}$ (t d.m./ha)	Carbon strata area (ha)	Biomass square deviation (t d.m. ha-1)^2	The carbon storage and uncertainty of the bamboo biomass carbon bank
S—1	39.94	36.33	104.17	$b_{TREE,t}$ =12.25 t.d.m/ha $B_{TREE,t,}$ =43890.56 t.d.m $C_{TREE,t}$=80466.02 tCO2.e S_{bTREE} =0.46 t.d.m/ha e_{bTREE}=t_{VAL}*S_{bTREE} =1.67*0.46=0.77 e_{bTREE} /$b_{TREE\ t}$×100%=6.3%
S—2	33.51	32.16	0.57	
S—3	41.18	154.46	176.53	
S—4	24.43	72.88	36.58	
S—5	16.88	73.81	32.33	
S—6	28.56	206.62	207.36	
S—7	19.48	185.82	156.39	
S—8	39.58	44.77	164.94	
S—9	48.21	104.31	39.75	
S—10	46.66	335.49	216.34	

S—11	0.00	2335.69	0.00	
合计	338.43	3582.34		

Annotation: the precision of the biomass calculation is 6.3%, meet ±10% requirement set by the methodology.

2. Baseline tree biomass carbon storage estimation at the beginning of the project (C_{TREE_BSL})

In line with the methodology requirements, baseline tree biomass carbon storage estimation at the beginning of the project is not to be monitored, which is 27240.7t CO_2e.（see 4.3 of section 4 in PF）

3. Project scenario net emission reduction/net removal calculation

Project scenario net emission reduction equals carbon storage variation within the project boundary minus increase in GHG emissions as a result of the PS afforestation project. In line with the methodology, non-tree biomass carbon storage variation above and underground may be conservatively assumed to be zero for all strata in the project scenario. Project net removals will be calculated by following forum.

$$\Delta C_{WP} = \Delta C_P - GHG_E \quad (10)$$

Where,

ΔC_{WP}	Project net removals; t CO_2e
ΔC_P	Sum of the carbon storage variation of the selected carbon pool within the project boundary; t
GHG_E	Increase in GHG emissions within the project boundary as a result of the PS afforestation

The carbon storage variation of the selected carbon pools within the project boundary are estimated using the following equation,

$$\Delta C_P = \sum_{t=1}^{t^*} \Delta C_t \quad (11)$$

Where,

ΔC_t	carbon storage variation of selected carbon pools, in year t; t CO_2e
t	1, 2, 3, … t*years after the start of the PS project activity; yr

In line with PF, under the project scenario, non-tree vegetation biomass carbon storage variation aboveground and underground can be conservatively assumed as zero.

Therefore, project scenario net GHG emission reduction equals the selected carbon bank carbon storage within project boundary minus baseline tree biomass carbon storage at the beginning of the project.

$$\Delta C_t = \Delta C_{BAMBOO\_PROJ,t} - C_{TREE\_BSL} \quad (12)$$

$$=80466.02\text{-}27240.70=53225.32 t CO_2e$$

$$\Delta C_P = 53225 \text{ t } CO_2e$$

Where,

ΔC_t	The selected carbon bank carbon storage variation within the project boundary in year t; t CO_2e
$\Delta C_{BAMBOO\_PROJ,t}$	bamboo biomass carbon storage variation under project scenario in year t; t CO_2e
C_{TREE_BSL}	**B**iomass carbon storage at the beginning of the project. t CO_2e
t	1, 2, 3, … t*years after the start of the PS project activity 1, 2, 3, … t^*

E.3. Leakage calculation

According to PF,

LK= 0 (13)

Where,

LK GHG emission caused by leakage.（ t CO_2e）

E.4. Emission reductions calculation

Project scenario net emission reduction equals carbon storage variation within the project boundary minus increase in GHG emissions as a result of the PS afforestation project. In line with the methodology, non-tree biomass carbon storage variation above and underground may be conservatively assumed to be zero for all strata in the project scenario. Project net

removals will be calculated by following forum.

$$\Delta C_{WP} = \Delta C_P - GHG_E \quad (14)$$

Where,

ΔC_{WP}	Project net removals; t CO_2e
ΔC_P	Sum of the carbon storage variation of the selected carbon pool within the project boundary; t CO_2e
GHG_E	Increase in GHG emissions within the project boundary as a result of the PS afforestation project; t CO_2e

Table E-4 net GHG emission reduction/ removal

Project	**Value**	**Explanation**
1 Project scenario net GHG emission reduction	80466.02	Measurement
2 baseline tree biomass carbon storage at the beginning of the project.	27240.70	Measurement
3 baseline scenario net GHG emission reduction	3962.60	Predicted value in PF
4 leakage	0	
5 net GHG emission reduction/ removal	49262	

E.5. Tradable carbon credit after risk mitigation

According to the adopted Panda Standard ——the methodology of the bamboo plantation on degraded land requirement, the proposed project will follow the method in section 7.3 Option for Mitigation of Risk in PS-AFOLU.

Project Proponents may set aside, at each verification and issuance of new PS Credits, this percentage of offsets from the Project itself for deposit to the Panda storage Buffer. In this case PS Credits issued to the Proponent's account will be:

PSC_t=（ C_{t2}-C_{t1}）×(1-BUF)　　（ 15）

Where,

PSCt	Number of PS Credit generated during period t（ t2-t1）
Ct2	Cumulative total net GHG emission reduction up to time t2,including all required deductions for Leakage and uncertainty
Ct1	Cumulative total net GHG emissions reductions up to time t1,including allrequired deductions for Leakage and uncertainty
BUF	Percentage of Project credits contributed to the Panda storage Buffer

According to section 5.1 Risk Assessment result, 7.37% of the project credits is going to be stored in Panda storage Buffer. In this case, the number of PS Credits in the 30 years is:

PSC_t=（ C_{t2}-C_{t1}）×(1-BUF)（ 16）

=49262×（ 1-7.37%）

= 45631 t CO_2-e

E.6. Comparison of actual emission reductions with estimates in the registered PF

Subject	**estimated emission reduction at the project registration**	**actually measured emission reduction**
GHG emission reduction	317869	49262

E.7. Remarks on difference of estimated value

Judged from the above table, estimated emission reduction at the project registration is larger than actually measured emission reduction, due to the following reasons,

1. 7-years after the bamboo planted, the biomass reaches the crest, so the estimated emission reduction ex-ante is the annual biomass calculated on average. This kind of calculation will improve the biomass at the first several years after planted. while, actually, *Dendrocalamus giganteus* growing in first several years is relatively slow to obtain

biomass, which results in the shrink of actually measured emission reduction.

2. The estimated emission reduction ex-ante takes 24 project plots with an area of 3582.34 ha, while the actually monitored area is 1246.65 ha, accounting for 34.8% of the ex-ante estimated area, which significantly contributes to the shrinking of actually measured emission reduction.

3. Natural environment and lack of proper human management also impair bamboo forest growing of several project plots, which results in a low carbon sequestration.

4. Net emission reduction equals project scenario net GHG emission reduction minus scattered tree carbon sequestration at the beginning of the project (24 project plots). While there are only 10 carbon sequestration lands, which has to minus carbon sequestration of 24 lands, obviously, the actually measured emission reduction is less than that of the estimated amount at the project registration.

Annex 1 the Plot Afforestation Monitoring Card

<table>
<tr><th>Monitoring Item</th><th colspan="3">Record content</th><th colspan="2">Remark</th></tr>
<tr><td rowspan="6">Geographic location</td><td>Plot No.</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>County</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>Township</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>Village</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>Forest No.</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>Working Plot No.</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>Land owner</td><td colspan="5"></td></tr>
<tr><td rowspan="3">Bamboo type</td><td>Type 1</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>Type 2</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>Hybrid way and proportion</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td rowspan="2">Area (hectare)</td><td>Designed area for each plot</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>Actual working area</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td rowspan="7">Boundary monitoring</td><td></td><td>Monitoring date</td><td colspan="2">Comparison with previous monitoring result</td><td rowspan="7">Attached project boundary coordinates</td></tr>
<tr><td>First</td><td></td><td colspan="2"></td></tr>
<tr><td>Second</td><td></td><td colspan="2"></td></tr>
<tr><td>Third</td><td></td><td colspan="2"></td></tr>
<tr><td>Fourth</td><td></td><td colspan="2"></td></tr>
<tr><td>Fifth</td><td></td><td colspan="2"></td></tr>
<tr><td>Sixth</td><td></td><td colspan="2"></td></tr>
<tr><td rowspan="3">Forest land clearing</td><td>Date</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>Method</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>Spec</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td rowspan="3">Soil preparation</td><td>Date</td><td colspan="2"></td><td colspan="2" rowspan="3">Keeping implementation contract</td></tr>
<tr><td>Method</td><td colspan="2"></td></tr>
<tr><td>Spec</td><td colspan="2"></td></tr>
</table>

Monitoring Item	**Record content**			**Remark**	
Planting	Date			Keeping implementation contract	
	plant/hectare				
Fertilizing	Date	Type	Amount of fertilizer	Keep related photos and purchase invoice and other related other evidence.	
Survival rate and preservation rate investigation	Date	Survival rate/preservation rate		Provide investigation method	
Complementary planting	Date	Type	plant/hectare	Keeping implementation contract	
Tending management	Date	Content	Method and Spec		
Disease and insect	Time				Measuring the GPS coordinates of infected boundary.
	Name of disease and insect				
	Infected area(hectare				
	Infected level				
	Prevention				

Monitoring Item	**Record content**			**Remark**	
	method				
	Prevention result				
Fire	Time				Measuring the GPS coordinates of infected boundary.
	Infected area(hectare)				
	Type of fire				
	Infected degree				
Felling	Date	Method	Felling volume	Purpose	
Other operation managing activities and issues	Date	Description			

Annex 2 On-site monitoring log sheet

Plot name		Plot label		Carbon stratum label	
Plot No.		Afforestation date		Sample plot area	
Middle point coordination		Record person		Monitoring date	
Remarks					
No.	Bamboo age	DBH	No.	Bamboo age	DBH