MONITORING REPORT FORM (F-CDM-MR)
Version 02.0

MONITORING REPORT

Title of the project activity	Reforestation on Degraded Lands in Northwest Guangxi
Reference number of the project activity	Ref 3561
Version number of the monitoring report	01
Completion date of the monitoring report	05/07/2012
Registration date of the project activity	15/09/2010
Monitoring period number and duration of this monitoring period	1st monitoring period (01/01/2008 - 30/06/2012)
Project participant(s)	• Guangxi Longlin Forestry Development Company Ltd. • The International Bank for Reconstruction and Development (IBRD) as Trustee of the BioCarbon Fund • Kingdom of Spain - Ministry of Environment and Rural and Marine Affairs & Ministry of Economy and Finance ; Zeroemissions Carbon Trust, S.A. • Government of Ireland-Department of the Environment, Community and Local Government
Host Party(ies)	People's Republic of China
Sectoral scope(s) and applied methodology(ies)	14 : Afforestation and reforestation AR-ACM0001 ver. 5.2.0 - Afforestation and reforestation of degraded land
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	232,941 metric tonnes CO2 equivalent
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	36,500 metric tonnes CO2 equivalent

SECTION A. Description of project activity
A.1. Purpose and general description of project activity

The A/R CDM project activity, Reforestation on Degraded Lands in Northwest Guangxi, has been under implementation since 2008 in the Guangxi Zhuang Autonomous Region of China. The project has been implemented afforestation and reforestation (A/R) activities to achieve multiple objectives of restoring the degraded areas, including soil, water and biodiversity conservation and poverty alleviation. The specific objectives of the project are:

(1) To control soil and water erosion and land degradation in the selected project areas;
(2) To enhance biodiversity conservation by increasing forest cover and nature habitat connectivity;
(3) To generate income for the local farmers and promote the local community development.

To achieve the objectives, the 4,670.8 ha of multiple-use forests have been established on degraded lands in Longlin County, Tianlin County and Lingyun County of Guangxi Province. 2,178.3 ha of forests will be established by the end of 2012. The major species covered in the forestation models are: *Pinus massoniana* (3,259.4 ha), *Cunninghamia lanceolata* (2,071.0 ha), *Taiwania flous* (156.7 ha), *Eucalyptus* sp. (359.4 ha), *Betula luminifera* (884.3 ha), and *Choerospondias axillaries* (115.3 ha). The anthropogenic GHG net removals by sinks from the first monitoring period of the project are 36,500.9 t CO_2 e.

The A/R CDM project activity has been implemented involving farmers/communities and forest companies. The farmers and communities contribute land and labour and local forest companies invest in planting activities, provide technical input and manage the plantations during the crediting period. The contractual arrangements between the farmers/communities and the companies cover the plantation establishment and management responsibilities, inputs and benefit sharing. The forest companies pay farmers for labour input to the project, providing income to farmers through temporary employment.

The farmers/communities of the project have contacted the forest company to conduct project registration, implementation and monitoring of the A/R CDM project activity, and sale of CERs on behalf of the project.

The A/R CDM project activity has been implemented separately, but linked with a larger umbrella Guangxi Integrated Forestry Development and Conservation Project (GIFDCP), which supports monitoring of environmental and social impacts of the project in relation to natural forest, watershed and biodiversity aspects of the Guangxi Zhuang Autonomous Region.

The project implemented reforestation through direct planting of tree species to restore the degraded lands using environmental-friendly techniques. Good practice guidance of reforestation and experience gained from the World Bank financed forestry projects were adopted in the project. The following technical and regulatory standards have been followed:

- Artificial Afforestation Technical Regulation: GB/T 15776-2006;
- Non-commercial Forest Construction: GB/T 18337.1-2001, GB/T 18337.2-2001, GB/T 18337.3-2001;
- Non-commercial forest construction-verification regulation: GB/T 18337.4-2008;;
- Design Code for Afforestation Operation: LY/T 1607-2003
- Regulations for Tending of Forest: GB/T 15781-1995;
- Tree Seedling Quality Grading of Major Species for Afforestation: GB 6000－1999;
- Technical Regulations for Cultivation of Tree Seedlings: GB/T 6001-1985;
- Technical Standard for Cultivation of Container Seedlings: LY1000-1991.
- Seed Certification Regulations (GB2772-1999)
- Technical regulations for forest harvest and regeneration
- Technical Regulations for Chinese fir plantation in Guangxi
- Technical Regulations for masson pine plantation in Guangxi
- Technical Regulations for birch plantation in Guangxi

The local forestry agencies, i.e., Guangxi Provincial Forestry Department, Longlin, Tianlin and Lingyun County Forestry Bureaus, Guangxi Forestry Inventory and Design Institute and Guangxi Forestry Research Institute provided guidance, and quality control in the implementation of the A/R CDM project activity. The up-to-date technologies and silvicultural models were adopted. No technology has been transferred to the host party.

To prevent soil erosion, reduce GHG emission and protect existing carbon stocks, site burning and overall tillage were not employed. Small pits of diameter 40-50cm and depth of 40cm were dug along the contours. To minimize risk of natural events (fire, pest, insects and disease) and to maximize environmental and social benefits, mixed species arrangements were adopted. All species except eucalyptus are native to the region.

Seedlings of eucalyptus developed using tissue culture method were purchased from Guangxi Dongmen Forestry Farm or Guangxi Institute of Forestry, and then cultured in the nurseries of Tianlin County. Seeds of other species were collected from local seed orchards or parent tree gardens and grown in temporary on-site nurseries. All seed and tissue cultured seedlings were subjected to quality, quarantine and inspection certification. Seedlings of Masson pine, shiny-bark birch and eucalyptus are produced in plastic tubes (5 cm in diameter and 15 cm length). This technique ensures the control of growing conditions in the early stages of planting, and improves the growth and survival of planted seedlings.

- Planting activities are completed over five years, starting in 2008. The major species of the project and their spacing is as follows:
  - *Eucalyptus* sp.: 2 m × 4 m, 2 m × 3 m;
  - *Pinus massoniana:* 2 m × 3 m;
  - *Cunninghamia lanceolata*: 2 m × 2 m;
  - *Betula luminifera*: 2 m × 3 m;
  - *Choerospondias axillarie*: 2 m × 3 m;
  - *Taiwania flous*: 2 m × 3 m.
- To ensure high survival rates and good growth in the early stages, manual weeding was conducted two to three times a year during the first three years of planting. Survival rates were checked and re-planting was conducted as necessary such as on lands affected from severe drought.
- Phosphorous fertilizer and synthetic compound fertilizer (nitrogen content around 12%) were applied at the time of planting and also after planting.
- No harvesting has been conducted in the project during the first monitoring period.

A.2. Location of project activity

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The A/R CDM project activity is located in Longlin County, Tianlin County and Lingyun County in the north-western Guangxi Zhuang Autonomouse Region, in southern China (Fig.A-1).

Lands to be reforested are located in 43 villages of 13 townships and 2 sub-farms of Jinzhongshan Forestry Farms in Longlin County, 22 villages of 11 townships in Tianlin County, and 3 villages of 2 townships and 4 sub-farms of Jiuhiang Forestry Farm in Linyun County (Table A-2).

Table A-2 List of Counties, townships and villages involved[1]

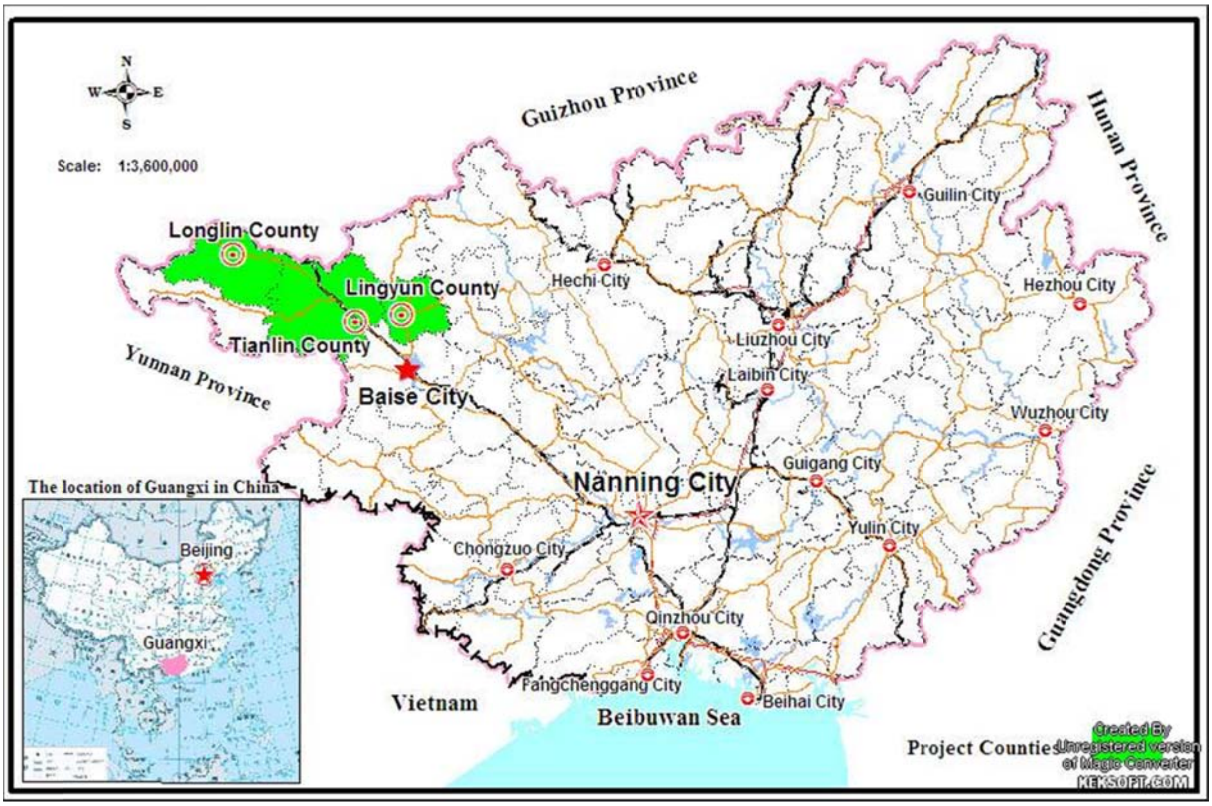
Townships	Villages	Coordinate	
		Longitude (E, degree)	Latitude (N, degree)
LongLin County			
ShaLi	Weigan	105.60236-105.67526	24.739561-24.785588
	WeiRao	105.56910-105.614058	24.760254-24.810966
PingBan	WeiLong	105.54662-105.575851	24.754467-24.800739
	BianYa	105.42689-105.497895	24.72101-24.775827
	MinLe	105.39417-105.46438	24.783535-24.821099
	MuGu	105.436314-105.48577	24.759388-24.809359
	GongHeChang	105.39289-105.45226	24.702059-24.764923
LongHuo	WeiLing	105.481388-105.54588	24.625555-24.673548
	YuTang	105.50061-105.54518	24.648746-24.701743
ZheBao	TongLiu	105.39191-105.48975	24.827213-24.889658
	BanZhiHua	105.347742-105.45146	24.882029-24.946602
ZheLang	ZheYan	105.26979-105.301313	24.781569-24.823208
GeBu	Zheyan	105.05451-105.13100	24.792719-24.838543
	ZuoTeng	105.05602-105.12148	24.747751-24.807688
	ZheJiang	105.02372-105.07829	24.80899-24.850016
	HongYan	105.098481-105.16709	24.73772-24.804873
De′e	BaKe	105.15746-105.26303	24.58609-24.634993
	YanTou	105.16488-105.229436	24.573357-24.607754
	JinPing	105.12856-105.17163	24.551584-24.603495
	ShuiJing	105.139414-105.21735	24.660671-24.738968
	LongYing	105.25519-105.33508	24.645823-24.706753
Zhuchang	YangJie	105.058853-105.15303	24.706938-24.758263
	NaYan	104.973878-105.0716	24.567415-24.624638
SheChang	LeXiang	105.28477-105.34425	24.527533-24.582968
	XinMin	105.24549-105.29403	24.517004-24.58534
	XinLi	105.34095-105.41039	24.513315-24.576408
	Machang	105.21479-105.27247	24.516352-24.590862

[1] The coordinates listed in the table represent the geographical ranges of the villages, which are based on Beijing 1954 3 degree zone and Gauss-kruger projection.

KeChang	HaiChang	105.37226-105.44426	24.554058-24.609339
	HePing	105.39348-105.44412	24.53883-24.578779
	KeNiang	105.43903-105.49259	24.625023-24.675657
	XinHe	105.25155-105.31525	24.577288-24.653303
	XinHua	105.27733-105.33849	24.57481-24.653801
	HouChang	105.31890-105.39149	24.638981-24.717844
	DaQing	105.29261-105.3317	24.671701-24.706352
YanCha	LengDu	105.45530-105.52928	24.438459-24.504124
	PingTai	105.40021-105.49588	24.390295-24.448271
	LongTai	105.37083-105.47046	24.44141-24.491156
	PingBan	105.41013-105.51616	24.500202-24.563868
JieTing	NaDa	105.47292-105.54466	24.381567-24.456039
	NongXi	105.53310-105.62213	24.372391-24.425165
	NaSang	105.510827-105.58971	24.479509-24.544373
XinZhou	NongSang	105.26918-105.35068	24.704311-24.750227
	PoYan	105.458734-105.50881	24.644657-24.695047
Jinzhongshan Forestry centre	WuChong	104.84013-104.93601	24.681383-24.749472
	MaLan	104.93263-104.9908	24.659658-24.70019
TianLin County			
lizhou	nanglao	106.364219-106.364219	24.297103-24.338214
	fanchang	106.371444-106.437104	24.325814-24.388769
langping	xiangwei	106.238345-106.271855	24.44079-24.548795
	hongxing	106.238135-106.315628	24.582321-24.651086
lucheng	yingpan	105.976337-106.102209	24.413741-24.501745
	nama	105.79936-105.889628	24.500879-24.569645
baile	baile	106.045501-106.171097	24.633296-24.712869
	genbiao	106.035818-106.156874	24.547235-24.653112
jiuzhou	pinglin	105.824614-105.966449	24.638765-24.709809
	guanglong	105.879844-105.973972	24.602742-24.654942
	yangbai	105.774751-105.833917	24.54016-24.584198
	zhenian	105.661758-105.751817	24.646736-24.749523
Ding'an	anding	105.642281-105.744069	24.299259-24.33888
	namen	105.567093-105.673907	24.323832-24.378311

	yangrong	105.601441-105.667623	24.343642-24.416217
	changjing	105.660084-105.70993	24.359643-24.435266
gaolong	zheche	105.581963-105.637464	24.130679-24.23297
zhemiao	bailong	105.737471-105.807633	24.471013-24.551289
liulong	lietun	106.160643-106.205673	24.059159-24.100444
	zhouma	105.993301-106.069328	24.091652-24.160078
nabi	nala	105.628249-105.762918	24.042485-24.159633
Yangya Field	banyang	105.921254-106.02367	24.51527-24.631275
Linyun County			
Jiujiang Forestry centre	Yaoma	106.47461-106.53654	24.31401-24.36095
	Shangmeng	106.53236-106.58782	24.27782-24.31509
	Yangnang	106.45436-106.50953	24.26637-24.34819
	Lantai	106.41192-106.48079	24.25961-24.37997
sicheng	Longzhao	106.60063-106.64282	24.34982-24.40664
Jiayou	Moxian	106.68631-106.77443	24.5138-24.58
	Dongha	106.67946-106.75025	24.55669-24.60651

Figure 1: Location of project in Longlin, Tianlin and Lingyun counties



A.3. Parties and project participant(s)

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 project participant (Yes/No)
People's Republic of China (host)	Private Entity: Guangxi Longlin Forestry Development Company Ltd.	No
Spain	The International Bank for Reconstruction and Development (IBRD) as Trustee of the BioCarbon Fund; Kingdom of Spain - Ministry of Environment and Rural and Marine Affairs & Ministry of Economy and Finance ; Zeroemissions Carbon Trust, S.A.	Yes
Ireland	Government of Ireland-Department of the Environment, Community and Local Government	Yes

A.4. Reference of applied methodology

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The Consolidated afforestation and reforestation baseline and monitoring methodology "Afforestation and reforestation of degraded land"(AR-ACM0001/version 05.2.0); and methodological tools, guidelines and guidance listed below have been implemented in the project.

- A/R Methodological Tool "Calculation of the number of sample plots for measurements within A/R CDM project activities" (Version 02.1.0);
- A/R Methodological Tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (Version 02.1.0);
- A/R Methodological Tool "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities" (Version 01.1.0);
- Guidelines on application of specified versions of A/R CDM methodologies in verification of registered A/R CDM project activities (Version 01.0)
- Guidelines on accounting of specified types of changes in A/R CDM project activities from the description in registered project design documents (Version 02.0)
- A/R Methodological Tool "Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity" (Version 03.1.0)
- A/R Methodological Tool "Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities" (Version 01.0.0)

In addition, relevant technical guidelines for national and local forest inventory followed in the project, include:

- Technical guidelines for forest resource planning and design. State Forestry Administration (SFA), April 2003
- Technical guidelines for national forest inventory. SFA 2004 No.25

- Technical guidelines for forest resource planning and design in Guangxi. Guangxi Forestry Department, Feb 2009
- Standard Operation Procedures for 8th forest inventory in Guangxi. Guangxi Forestry Department, April 2010

A.5. Crediting period of project activity

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Start date: 01/01/2008

Crediting period: 20 years (from 01/01/2008 to 31/12/2027), renewable.

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

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The project started on August 1st 2008. As outlined in the PDD, 8,671.3 ha was proposed to be planted from 2008 to 2010. However, the actual planted area in the project by the first monitoring period is 4,670.8 ha, and 2178.3 ha is expected to be planted by the end of 2012. The details of area planted in each land parcel by year are outlined in Annex I. The comparison of the planted area by year vis-à-vis area proposed for planting in the registered PDD is presented in table B.1 below.

The adverse climate events such as snow/ice storms and droughts damaged significant area of the project. The snow/ice storms in early 2008 damaged 429.7 ha of plantation. 645.8 ha plantation were suffered from severe drought in 2010-2011. All these damaged young plantation had to be replanted. The re-established area again suffered from the snow/ice storms or drought . Furthermore, gap filling was conducted on a large area of young plantation after natural disaster (drought and snowstorm).

Table B.1 Planted area in project as compared to planting plan in PDD (ha)

Plantation model	Year					
	Total	2008	2009	2010	2011	2012
Masson pine - actual area planted or to be planted	3259.4	724.6	297.3	96.6	219.9	1921.0
- area proposed in the PDD	1185.1	505.5	446.4	233.2		
Chinese fir - actual area planted or to be planted	2074.0	757.8	171.0	162.2	316.4	666.6
- area proposed in the PDD	863.2	863.2				
Shiny-bark birch - actual area planted	884.3	474.3	391.9	6.7	11.4	
- area proposed in the PDD	3112.1	1430.4	1038.1	643.6		
Choerospondias axillaris - actual area planted or to be planted	115.3	44.0				71.3
- area proposed in the PDD	121.4	121.4				
Masson pine＋Schima - actual area planted						
- area proposed in the PDD	929.0	243.2	49.7	636.1		
Masson pine＋Maple - actual area planted						
- area proposed in the PDD	408.7	51.5		357.2		
Eucalyptus (2 m × 4 m) - actual area planted	41.0	41.0				
- area proposed in the PDD	76.8	76.8				

Eucalyptus (2 m × 3 m) - actual area planted or to be planted	318.4		30.4	61.1	135.2	91.7
- area proposed in the PDD	1326.7	303.1	608.5	415.1		
Flous - actual area planted	156.7		156.7			
- area proposed in the PDD	648.3	222.4	217.5	208.4		
Total area planted or to be planted	**6849.1**	**2041.7**	**1047.3**	**326.6**	**682.9**	**2750.6**
Total area proposed in the PDD	8671.3	3817.5	2360.2	2493.6		

B.2. Post registration changes

B.2.1. Temporary deviations from registered monitoring plan or applied methodology

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N.A

B.2.2. Corrections

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N.A

B.2.3. Permanent changes from registered monitoring plan or applied methodology

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N.A

B.2.4. Changes to project design of registered project activity

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N.A

B.2.5. Changes to start date of crediting period

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N.A

B.2.6. Types of changes specific to afforestation or reforestation project activity

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The revision of monitoring plan has not been undertaken considering that the paragraph 6 of the "Procedures for notifying and requesting approval of changes from the project activity as described in the registered project design document (EB 48, annex 66). As per the "Guidelines on accounting of specified types of changes in A/R CDM project activities from the description in registered project design documents" (Version 02.0) (Annex 24, EB 66), the types of changes from the project description of the A/R CDM project activity in the PDD as listed below are identified as minor in nature. Therefore as per shall be addressed through the verification stage by the designated operational entity without the need for submitting a notification of changes to the PDD or a request for revision to the monitoring plan.

The changes in species composition and planting time and the reduction of project area have not impacted the baseline scenario and additionality of the project. Therefore, as per the paragraph 6 of the "Procedures for notifying and requesting approval of changes from the project activity as described in the registered project design document" (EB 48, annex 66) and the "Guidelines on accounting of specified types of changes in A/R CDM project activities from the description in registered project design documents" (Version 02.0) (Annex 24, EB66), these changes are identified as minor in nature, and are to be confirmed

by the designated operational entity at the verification stage without the need for submitting a notification or a request for approval, as listed in table B.2 below.

Table B.2 Types of changes from the description in the registered PDD 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;	Yes, as a result of changes in year-wise area planted relative to the schedule of planting proposed in the PDD, about 4,670.8 ha out of 8,671.3 ha was planted, and 2,178.3 ha will continue to be planted in 2012. Therefore, 1,822.2 ha of the project area was not planted or will not be planted.
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;	Yes, changes in species composition and stand models occurred during the project implementation. It was found that due to poor site conditions and location specific factors, survival and growth rates of some species were not as projected in the PDD. In addition, small changes to the stand models needed to be made as per the project implementation requirements. The changes in species and composition of the project are consistent with the baseline identification and additionality demonstration made at the validation stage. **For the baseline identification:** As the changes in project area do not affect the baseline information. The baseline net removals by sinks remain same as PDD, which is conservative. **For the additionality**: - In the project design the revenue from the project activity was expected from the short rotation eucalyptus (6 years). The area of eucalyptus actually planted or to be planted is 5.2% of total area planted or to be planted, compared to 16.2% designed in PDD. The revenue will reduce relative to PDD; - Price level (for labors and seedlings) in China has been increasing year after year, while the unit costs in PDD were based on 2007 price level. The actual cost is much higher than those used in PDD; - The adverse climate events such as snow/ice storms and droughts damaged significant area of the project. The snow/ice storms in early 2008 damaged 429.7 ha of plantation. 645.8 ha plantation were suffered from severe drought in 2010-2011. All these damaged young plantation had to be replanted. The re-established area suffered from the snow/ice storms or drought again. Furthermore, gap filling was conducted on a large area of young plantation after natural disaster (drought and snowstorm). The repeated planting has significantly increased the project cost. - In summary, the reduction of project revenue and increase of the project cost would reduce the project internal return rate relative PDD. Therefore the change in the project area will not affect the additionality.

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 changes in stocking density
d)	Changes in timing and choice of silvicultural operations;	Yes, changes in species composition and stand models resulted in the changes to timing and choice of silvicultural operation.
e)	Changes in timing of harvest occurring before the third verification;	Yes, changes in species composition and stand models resulted in changes to potential timing of harvest before the third verification (harvesting of eucalyptus and thinning for other species).
f)	Changes related to collection of non-timber forest products;	Yes, changes in species composition and stand models resulted in the changes to the collection of non-timber forest products.
g)	Changes in tree/shrubs propagation method;	No
h)	Changes in post-harvest re-planting/regeneration methods;	Not applicable as planted areas are not harvested
i)	Changes in technology employed;	No
j)	Changes in inputs (e.g. fertilizers, certified seeds, watering);	No
k)	Changes in stratification for sampling;	Yes, *ex post* stratification has been implemented taking into account of the changes to *ex ante* strata due to factors related to changes in planting time, growth rates of species, impacts of site conditions, and other location specific 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 to the project strata has been revised.
n)	Changes in the project boundary (limited to reduction in project area), if the changes are demonstrated at verification to be consistent with the baseline identification and additionality demonstration made at the validation stage;	Yes, Changes in project boundary occurred as a consequence of the reduction in project area by 1,822.2 ha. The changes to project boundary as a consequence of reduction in project area are consistent with the basline identification and additionality demonstration 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	Yes, Changes in quality assurance/quality control procedures are consistent with procedures used by the national forest inventory and are applied in another registered A/R CDM project activity.

	Inventory or were applied in another registered A/R CDM project activity;	
p)	Changes in parameters, equations, or methods used in tree biomass estimation, if the applicability of the changed parameters, equations, or methods is project activities" when available, or if the changed parameters, equations, or applicability of allometric equations and volume equations in A/R CDM demonstrated at verification using the "Tool for demonstration of methods do not result in a decrease in precision of the estimate of tree biomass;	No changes in the parameters. The equations used in tree biomass estimation are consistent with the A/R Methodological Tool - "*Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities" (Annex 29, EB 65)*
q)	Changes from provisions regarding shifting of pre-project activities, if the related emissions are estimated at verification using the tool "Estimation of the of pre-project agricultural activities in A/R CDM project activity" and are increase in greenhouse gas (GHG) emissions attributable to displacement 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;	Not Applicable

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.	Yes. The projects adopts the latest versions of A/R methodological tool(s) and the applicability conditions of the methodology are consistent with the applicability conditions of the tool(s)

As per the "Guidelines on application of specified versions of A/R CDM methodologies in verification of registered A/R CDM project activities" (Version 01.0), several early versions of methodologies applied in registered A/R CDM project activities contain requirements that were withdrawn during revisions/improvements of these methodologies as part of the improvement process of the standards, and the guidelines allow a registered A/R CDM project activity to apply, at the time of verification, the improvements in the methodology that occurred after the date of registration of the project activity. The applicability of these guidelines to the implemented project are listed in table B.3 below.

Table B.3 Applicability of guidelines to the implemented project

Requirement	Methodology	Guidelines	Applicability to the project
Monitoring of data and parameters	AR-AM0001 v.02, et al	(i) Only data and parameters obtained from field measurement are required to be monitored; (ii) Monitoring is not required for data, parameters, or variables appearing as intermediate values in calculation steps and those taken from existing sources (e.g. published literature)	Not applicable to the methodology applied
Sampling design, sample plot lay-out, and marking of permanent sample plots	AR-ACM0001 v.03 AR-AM0001 v.02, et al	(i) Use of temporary sample plots; (ii) Random lay-out of sample plots; (iii) A maximum allowable relative margin of error of the mean, for estimation of aboveground tree biomass, of ± 10% at 90% confidence level shall be allowed.	Yes, 90% confidence level was applied
Accounting for uncertainty	AR-ACM0001 v.03 AR-AM0001 v.02, et al	Requirements related to uncertainty assessment, uncertainty analysis, methods of combining uncertainties, and uncertainty in expert judgement is superfluous and compliance with these requirements shall not be enforced.	Yes, uncertainty analysis was conducted following the methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"
Field measurement	AR-AM0002 v.01	(i) Instead of field measurement of soil organic carbon, the "Tool for estimation of	Not applicable to the methodology

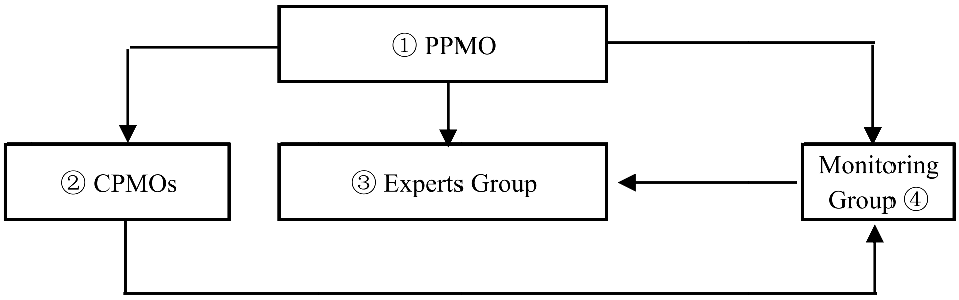
of soil organic carbon		change in soil organic carbon stocks due to the implementation of A/R CDM project activities" shall be used for areas which meet the applicability conditions of the tool; or (ii) The value of change in soil organic carbon shall be set to zero. Consequently, monitoring of data and parameters related to estimation of changes in soil organic carbon shall not be required.	applied
Clearance or burning of herbaceous vegetation	AR-AM0001 v.02, et al	(i) Changes in carbon stocks resulting from clearance of herbaceous vegetation shall be set to zero; (ii) Emissions resulting from clearance or burning of herbaceous vegetation shall be set to zero. Consequently, monitoring of data and parameters related to (i) and (ii) above shall not be required.	Not applicable to the methodology applied
Estimation of emissions of nitrous oxide from use of fertilizers	AR-AM0001 v.02, et al	Estimation and accounting of emissions of nitrous oxide from use of fertilizers shall not be required. Consequently, monitoring of data and parameters related to the above-mentioned emissions shall not be required.	Not applicable to the methodology applied
Burning of fossil fuel	AR-AM0001 v.02, et al	Estimation and accounting of emissions from burning of fossil fuel, both within and outside the project boundary, shall not be required. Consequently, monitoring of data and parameters related to the above mentioned emissions shall not be required.	Not applicable to the methodology applied

SECTION C. Description of monitoring system
>>

For the purpose of the monitoring, standard operating procedures have been developed and followed throughout the monitoring process. The monitoring system is summarized as follows.

1. Organizational structure, roles and responsibilities of personnel

The figure below shows the organizational structure with responsibilities for the management of the project.



Responsibility and roles

① **Provincial Project Management Office (PPMO)**

(1) Organization of project management works;
(2) Coordination the related participants;
(3) Communicating with World Bank Carbon Finance team and country representative staff;
(4) Supervising and facilitation of project implementation;
(5) Organization training for CPMO, entities/farmer households;
(6) Review of monitoring schedule and annual monitoring reporting;
(7) Coordination of key technical and economic issues encountered during project implementation;
(8) Organization of monitoring and verification arrangements;
(9) Quality assurance for monitoring.

② **County Project Management Office (CPMOs)**

(1) Organization of project implementation on the sites located in the county;
(2) Supervising project implementation progress of the areas located in the county;
(3) Development and implementation of annual plan of operations;
(4) Supervision and facilitation of entities/farmer households to raise funds;
(5) Reporting of project implementation progress on the sites in the county;
(6) Organization of trainings for forest farms/farmer households participating in the project;
(7) Provision of technical guidance and supervision of project activities;
(8) Survival check of planted areas in the first three years;
(9) Organization of technical staff for field measurement;
(10) Archival and management of data at county level (including farmer groups);
(11) Coordinating of communication with the forest farms/companies and communities/households;
(12) Management of the carbon revenue sharing among the farmers
(13) Coordination to resolve technical problems in project implementation.

③ **Experts Group**

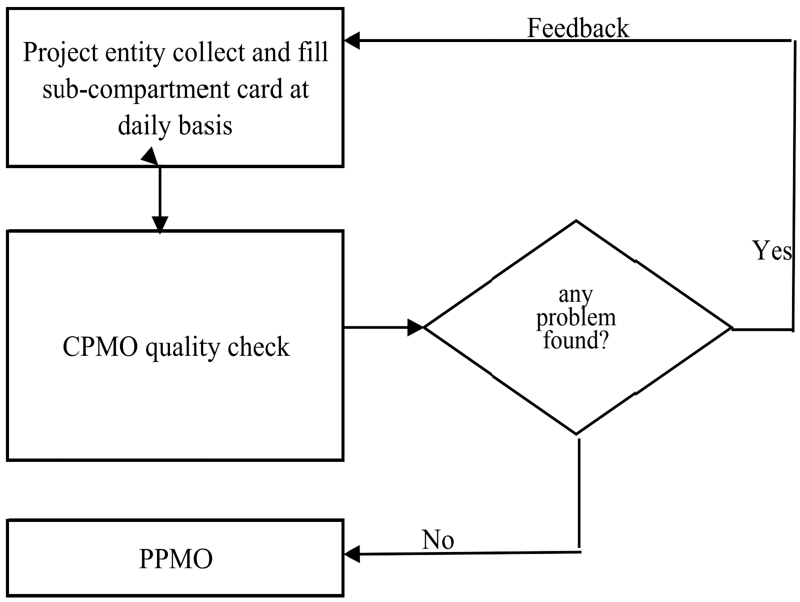
(1) Development of guidance manuals to support project monitoring and verification, standard operational guidelines for measuring forest growth, etc;
(2) Provision of technical training and consultation to the monitoring personnel;
(3) Checks of field data collected, e.g., data on survival rates of planted areas;
(4) Review of quality control and quality assurance procedures of field measurement;
(5) Preparation of monitoring report.

④ **Monitoring Group**

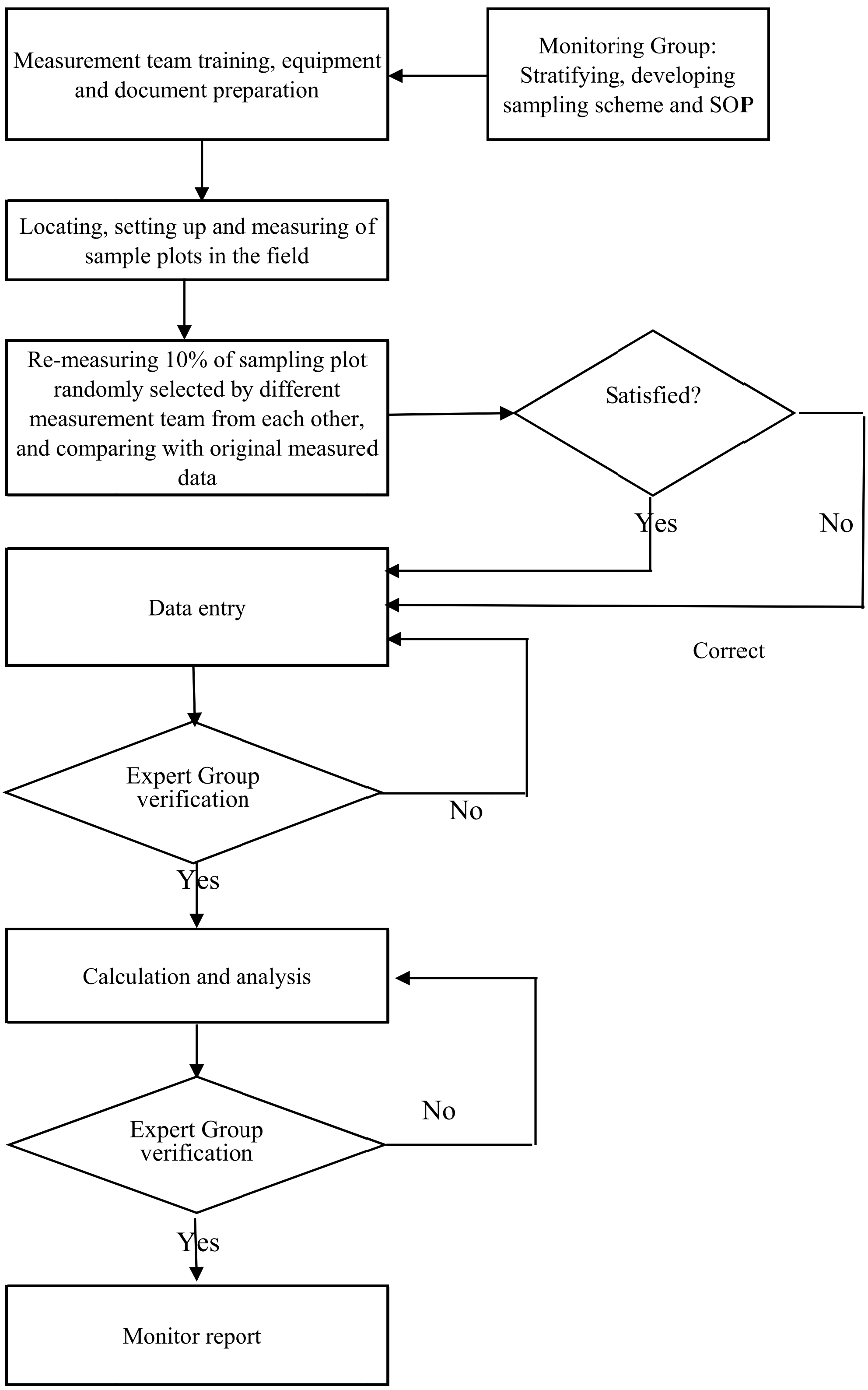
The monitoring group is composed of forestry experts and technicians from Guangxi Forestry Planning and Inventory Institute, and is responsible for:

(1) Periodical monitoring of project boundaries;
(2) Project stratification;
(3) Development and implementation of the sampling scheme;
(4) Development of SOP for field measurement;
(5) Preliminary analysis of field measurement;
(6) Assistance to the expert group in the analysis of measured data;
(7) Assistance to expert group in the preparation of monitoring report;.

2. Flow chart for monitoring of project implementation



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


Measurement team training, equipment and document preparation
Monitoring Group: Stratifying, developing sampling scheme and SOP
Locating, setting up and measuring of sample plots in the field
Re-measuring 10% of sampling plot randomly selected by different measurement team from each other, and comparing with original measured data
Satisfied?
Yes
No
Data entry
Correct
Expert Group verification
No
Yes
Calculation and analysis
Expert Group verification
No
Yes
Monitor report

4. QA/AC procedures

Quality assurance and quality control (QA/QC) procedures are implemented to ensure the net anthropogenic GHG removals by sinks are measured and monitored precisely, credibly, and transparently.

a) Quality checks on field measurements

To ensure the reliable field measurements,

- Standard Operating Procedures (SOPs) followed for each step of the field measurements, including all phases of the field measurements enable collection of data for preparing monitoring report and supporting documentation for verification purposes.
- Training courses on the field data collection data entry, analysis and archival were held for persons involving in the field measurement work. The training courses were conducted to ensure that each field-team member is fully aware of all procedures and the importance of collecting data as accurately as possible.
- A document showing implementation of the QA/QC steps has been presented as part of the project documents. The document lists the names of the team leader and personnel involved in field level monitoring;

b) Quality checks of field data collected

To verify that the plots have been installed and the measurements taken correctly, the following measures have been undertaken:

- Re-measurement of at least one (randomly selected) plot per every 10 plots by another team, and comparison of the measurements to check for errors; any errors found are recorded, resolved and corrected.
- Key re-measurement elements include the location of plots, DBH and tree height of all trees present. The procedures implemented as part of the re-measurement are checking of the field record of both original measurement and re-measurement. If any calculation error is found, it is checked and corrected.

c) Quality checks of data entry and analysis

To minimize the possible errors in the process of data entry, the entry of field data was reviewed by expert group. Communication among personnel involved in measuring and analyzing data was used to resolve any anomalies in the monitoring data.

d) Data maintenance and archival

Data were archived in both electronic and paper forms, and copies of all data shared with each project participant. All electronic data and reports were copied on durable media such as CDs and copies of the CDs and stored in multiple locations. The archives include:

- Copies of all original field measurement data, laboratory data, data analysis spreadsheet;
- Estimates of the carbon stock changes in all pools and non-CO_2 GHG emissions covered by the project and corresponding calculation spreadsheets;
- GIS products;
- Copies of the measuring and monitoring reports.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

(Copy this table for each piece of data and parameter.)

Data / Parameter	$BEF_{2,j}$
Unit	Dimensionless
Description	Biomass expansion factor for conversion of stem biomass to above-ground biomass for tree species j
Source of data	GHG inventory in LULUCF sector for national communication on GHG inventory
Value(s) applied	*Tree species* — $BEF_{2,j}$ *Pinus massoniana* 1.54 *Cunninghamia lanceolata* and *Taiwania flous* 1.74 *Eucalyptus sp.* 1.43 *Betula luminifera* 1.37 *Choerospondias axillaris* 1.59
Purpose of data	Carbon stock in living biomass of trees under the project scenario
Additional comment	

Data / Parameter:	D_j
Unit	t d.m. m^{-3}
Description	Basic wood density for tree species *j*
Source of data	GHG inventory in LULUCF sector for national communication on GHG inventory
Value(s) applied	Tree species — D_j *Pinus massoniana* 0.380 *Cunninghamia lanceolata* and *Taiwania flous* 0.307 *Eucalyptus* sp. 0.578 *Betula luminifera* 0.541 *Choerospondias axillaris* 0.443
Purpose of data	Carbon stock in living biomass of trees under the project scenario
Additional comment	

Data / Parameter:	R_j
Unit	Dimensionless
Description	Root-shoot ratio for tree species *j*
Source of data	GHG inventory in LULUCF sector for national communication on GHG inventory
Value(s) applied	Tree species — R_j *Pinus massoniana* 0.200 *Cunninghamia lanceolata* and *Taiwania flous* 0.219 *Eucalyptus* sp. 0.218 *Betula luminifera* 0.231 *Choerospondias axillaris* 0.289
Purpose of data	Carbon stock in living biomass of trees under the project scenario
Additional comment	

Data / Parameter:	$V_{TREE,j,p,i,t}$	
Unit	m^3/tree	
Description	Stem volume of trees of species *j* in sample plot *p* of stratum *i* at a point of time in year *t*, estimated by using the tree dimension(s) as entry data into a volume table or volume equation	
Source of data	Guangxi forest inventory manual or yield table, which are appropriate based on A/R Methodological Tool "Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities" (Version 01.0.0)	
Value(s) applied	Tree species	$V_{TREE,j,p,i,t}$
	P. massoniana	$V = 0.0000714265437 \cdot DBH^{1.867010} \cdot H^{0.9014632}$
	C.lanceolata and *T. flous*	$V = 0.000065671 \cdot DBH^{1.769412} \cdot H^{1.069769}$
	Eucalyptus sp.	$V = 0.000109154145 \cdot DBH^{(C_1 - C_2 \cdot (DBH+H))} \cdot H^{(C_3 + C_4 \cdot (DBH+H))}$ C_1=1.8789237; C_2=0.00569185503 C_3=0.65259805; C_4=0.00784753507
	Other broadleaf species	$V = 0.0000667054 \cdot DBH^{1.8479545} \cdot H^{0.96657509}$
Purpose of data	Carbon stock in living biomass of trees under the project scenario.	
Additional comment	It represents the parameter $V_{l,j,i,sp,t}$ in PDD	

Data / Parameter:	CF_j
Unit	dimensionless
Description	carbon fraction of species j
Source of data	PDD and IPCC default
Value(s) applied	0.5
Purpose of data	Carbon stock in living biomass of trees under the project scenario
Additional comment	

Data / Parameter:	$A_{p,i}$
Unit	**ha**
Description	Area of sample *p* in stratum *i*
Source of data	PDD
Value(s) applied	0.04 ha
Purpose of data	Carbon stock in living biomass of trees under the project scenario
Additional comment	based on EB 63 annex 26 and 27, the updated methodology used the tools for tree and shrub, and this data is one of data in the tool

D.2. Data and parameters monitored

(Copy this table for each piece of data and parameter.)

Data / Parameter:	*DBH*
Unit	**cm**
Description	the diameter at breast height of the tree (1.3 m)

Measured /Calculated /Default	measured
Source of data	Field measurement
Value(s) of monitored parameter	
Monitoring equipment	Vinyl tape, wooden stake
Measuring/ Reading/ Recording frequency	Every five years since the year of the initial verification
Calculation method (if applicable):	
QA/QC procedures applied	Manual/guidelines for national and local forest inventory and Manual for Monitoring of CDM Afforestation and Reforestation Projects: Part I - Standard Operational Procedures by World Bank (also section C.4 above)
Purpose of data	Carbon stock in living biomass of trees under the project scenario
Additional comment	

Data / Parameter:	*H*
Unit	**m**
Description	Height of tree
Measured /Calculated /Default	measured
Source of data	Field measurement
Value(s) of monitored parameter	
Monitoring equipment	Hypsometer, metric tape
Measuring/ Reading/ Recording frequency	Every five years since the year of the initial verification
Calculation method (if applicable):	
QA/QC procedures applied	Manual/guidelines for national and local forest inventory and Manual for Monitoring of CDM Afforestation and Reforestation Projects: Part I - Standard Operational Procedures by World Bank (also section C.4 above)
Purpose of data	Carbon stock in living biomass of trees under the project scenario
Additional comment	

D.3. Implementation of sampling plan
>>

1. Monitoring of the baseline net GHG removals by sinks

The baseline net GHG removals by sinks do not need to be monitored as per the revised approved methodology AR-ACM0001/version 03.

2. Monitoring of the boundary of the implemented A/R CDM project activity

Monitoring of the project boundary is done using the below procedures.

- Field survey of the discrete areas of the project on which tree planting is undertaken.

- Confirmation of the geographical boundary of the sites using GPS. In case that the boundary of land parcel overlaps with existing land management unit (compartment and/or sub-compartment), latitude and longitude of major corner of the land parcels were confirmed using GPS.
- Checking to ensure that the actual boundary is consistent with the description in the PDD section A.
- If the actual boundary falls outside of the boundary referred in section A of the PDD, the part of lands that are outside the designed boundary would not be accounted as a part of the implemented A/R CDM project activity.
- Input the measured geographical positions into GIS system and calculate the eligible area of each stratum.
- The project boundary will be monitored periodically through the crediting period. If the boundary is changed during the crediting period, the boundary will be modified and reported to DOE for subsequent verifications. The area will then be excluded from the project monitoring. Similarly, if the planting on certain lands within the project boundary fails, and other land uses take the place, these areas will be documented and excluded from the project.

3. Monitoring of the project implementation

To ensure the project implementation and the practices described in section A of the PDD are well-implemented, the monitoring covered following activities:

- Confirmation that the site preparation practices as per those outlined in the PDD, and no slash and burn and overall tillage are used in the site and soil preparation.
- Confirmation that site preparation does not cause significant longer term net emissions from soil carbon. This is done by checking and confirming that site preparation techniques are as described in Section A.4.8 of the PDD. As the area disturbed through site preparation accounts for only 2-5% of the total area of the discrete areas, it is inferred that there are no significant long-term net emissions from site preparation activities.
- Survival checking
  - The initial survival rate of planted trees was checked 1-3 months after the planting, and re-planting was conducted if the survival rate was lower than 90%.
  - Final survival checking was conducted for each plantation site after three years of planting.

.

- Confirmation that the weeding and fertilizer application practice are implemented as planned.
- Checking the area of planted species and planting year for each stratum.

The project implementation was monitored through sub-compartment monitoring card (Annex II).

4. Stratification

The ex ante stratification was done based on the information on the site conditions (soil type, soil organic matter and nitrogen content, etc) and planting years available prior to the start of the project. However, Observation and pre-assessment found that growth rate of same species is less relevant to soil conditions applied, and trees planted in consecutive years showed a small variation due to poor site conditions. The ex ante stratification adopted at the time of project design stage resulted in larger within-stratum variation than between-stratum variation. Furthermore, the area of each species/models has changed due to reduction of project area and planting schedule was delayed. Therefore, a revision to the ex ante stratification have been conducted taking into account the changes in the area, species/stand models included in the project, the schedule of planting adopted during project implementation, and growth rates of species relevant to site conditions and disturbance of natural disaster (snowstorm/drought). Some of plantations planted in two

consecutive were merged into one stratum considering the small variation in the growth rates of tree species planted in the consecutive years. The stratification map was created on a GIS platform. The project area was stratified into 18 strata (see table D.1 for the detailed ex post stratification). The boundary of strata was determined using PDA and GPS by going along the demarcation line of two connected strata.

Table D.1 ex post stratification

Species/models	Planting year	Stratum ID	Area (ha)	comments
Masson pine	2008-2009 (Tianlin, well growth）	S-1	300.6	
	2008（Longlin and Linyun, poor growth）	S-2	170.0	
	2008-2010 (planted in 2008 and replanted after damage by drought)	S-3	356.9	Tree growth not measurable
	2008-2012 (planted in 2008 and 2009, replanted after drought damage, and suffered damage again）	S-4	2438.4	Tree growth not measurable
Chinese fir	2008-2009 (slightly impacted by snow storm and drought）	S-5	213.8	
	2008 (well growth)	S-6	154.1	
	2008-2009 (severe impacted by snowstorm and drought)	S-7	442.1	Tree growth not measurable
	2008-2012 (planted in 2008 and 2009, replanted after drought damage, and suffered damage again）	S-8	1264.0	Tree growth not measurable
Eucalyptus	2008-2010	S-9	131.6	
	2011-2012	S-10	227.8	Tree growth not measurable
Shiny-bark birch	2008 (well growth)	S-11	111.6	
	2008-2009 (medium growth)	S-12	229.6	
	2008-2009 (poor growth)	S-13	156.3	
	2008-2009 (impacted by drought)	S-14	110.6	Tree growth not measurable
	2008-2012 (planted in 2008 and 2009, replanted after drought damage, and suffered damage again）	S-15	269.7	Tree growth not measurable
Choerospondias axillaris	2008	S-16	44.0	
	2012	S-17	71.3	Tree growth not measurable
Flous	2009	S-18	156.7	Tree growth not measurable
合计			**6849.1**	

Note: Tree growth not measured on strata with sample plots with trees that have tree diameters below minimum measurable threshold either due to delayed planting or due to poor growth rates on low productive sites.

5. Sampling scheme

Permanent sampling plots were used for sampling over time to measure and monitor changes in carbon stocks of the relevant carbon pools. The plots were located with GPS and are invisible so as to be treated in the same way as other lands within the project boundary, e.g., during fertilization, tending, thinning, harvesting, etc.

- **Determining sample size**

A/R Methodological Tool “Calculation of the number of sample plots for measurements within A/R CDM project activities” (Version 02.1.0) was applied to re-calculate the number of sample plots for each stratum

outlined in the PDD.

$$n = \frac{N \cdot t_{VAL}^2 \cdot (\sum_i w_i \cdot s_i)^2}{N \cdot E^2 + t_{VAL}^2 \cdot \sum_i w_i \cdot s_i^2} \quad \text{(D.1)}$$

$$n_i = n \cdot \frac{w_i \cdot s_i}{\sum_i w_i \cdot s_i} \quad \text{(D.2)}$$

Where

n	Number of sample plots required for estimation of biomass stocks within the project boundary, dimensionless
n_i	Number of sample plots allocated to stratum i for estimation of biomass stocks within the project boundary, dimensionless
t_{VAL}	Two-sided Student's t-value, at infinite degrees of freedom, for the required confidence level; dimensionless
N	Total number of possible sample plots within the project boundary (i.e. the sampling space or the population); dimensionless
w_i	Relative weight of the area of stratum i (i.e. the area of the stratum i divided by the project area); dimensionless
s_i	Estimated standard deviation of biomass stock in stratum i; t d.m. ha^{-1}
E	Acceptable margin of error (i.e. one-half the confidence interval) in estimation of biomass stock within the project boundary; t d.m. ha^{-1}

The standard deviation of biomass stock for each stratum (s_i) was determined as 30% based on preliminary measurement in early 2012. The t_{VAL} was determined based on the 90% confidence level. A default value equal to 10% of the mean biomass stock was used as the acceptable margin of error. The mean biomass stock is the expected biomass at the time of monitoring, which was estimated based on preliminary measurement.

For the purposes of statistics, if calculated n_i<3, then n_i=3. Furthermore, to ensure that 10% of the precision level can be achieved, the minimum area represented by each sample plots was set as 50 ha. The sample plots were allocated to each stratum based on size of each stratum relative to the total project area. The number of sampling plots used for monitoring and measurement are listed in table D.2 below.

Table D.2 number of sampling plots

Stratum ID	Area (ha)	Number of sampling plots
S-1	300.6	8
S-2	170.0	3
S-3	356.9	7
S-4	2438.4	49
S-5	213.8	5
S-6	154.1	4
S-7	442.1	10
S-8	1264.0	26
S-9	131.6	8

S-10	227.8	5
S-11	111.6	5
S-12	229.6	5
S-13	156.3	4
S-14	110.6	3
S-15	269.7	6
S-16	44.0	3
S-17	71.3	3
S-18	156.7	4
total	**6849.1**	158

- **Locating sampling plots**

To avoid subjective choice of plot locations (plot centres, plot reference points, movement of plot centres to more "convenient" positions) and to ensure that the sampling plots evenly spread in each stratum as much as possible, the permanent sample plots were laid out systematically with a random start. This was achieved by procedures below:

Step 1: 100 m × 100 m grids was created on ArcGIS platform and overlapped on the project area. The number of cross points (potential plot center) was counted for each stratum. A series number starting at 1 was assigned to each cross point in a stratum.

Step 2: A random number was produced using function "ROUND (RAND()*(N),0) in excel spread, where N is the total number of cross points in the stratum. The cross point in series number that corresponds to the random number was assigned as the center of the first sampling plot in a stratum.

Step 3: Starting at the first plot and moving along the cross points following a fixed direction of west-east-south-north, one sample plot was assigned for a fixed interval of cross points. The interval is dependent on the total number of cross points and the number of sample plots in a stratum. Lay out of the sample plots are shown in the figure below with the example of sample plot lay out in stratum S-7 located in Linyun County .

The size of sample plots is 400 m^2 (20m × 20m). However, if the shortest distance between sampling plot boundary and project boundary is less than 10 m, or if the plot is across the project or stratum boundary, the sample plot shall be moved toward the center of the parcel of land. The geographical coordinates of all sample plots were listed in table D.3 below.

As per the monitoring procedures, if after the field measurement, the precision level is over 10%, the number of sample plots would need to be recalculated using above mentioned method, based on measured standard deviation of biomass stock to layout the additional sampling plots.

Distribution of sampling plots for stratum 7 in Lingyun County

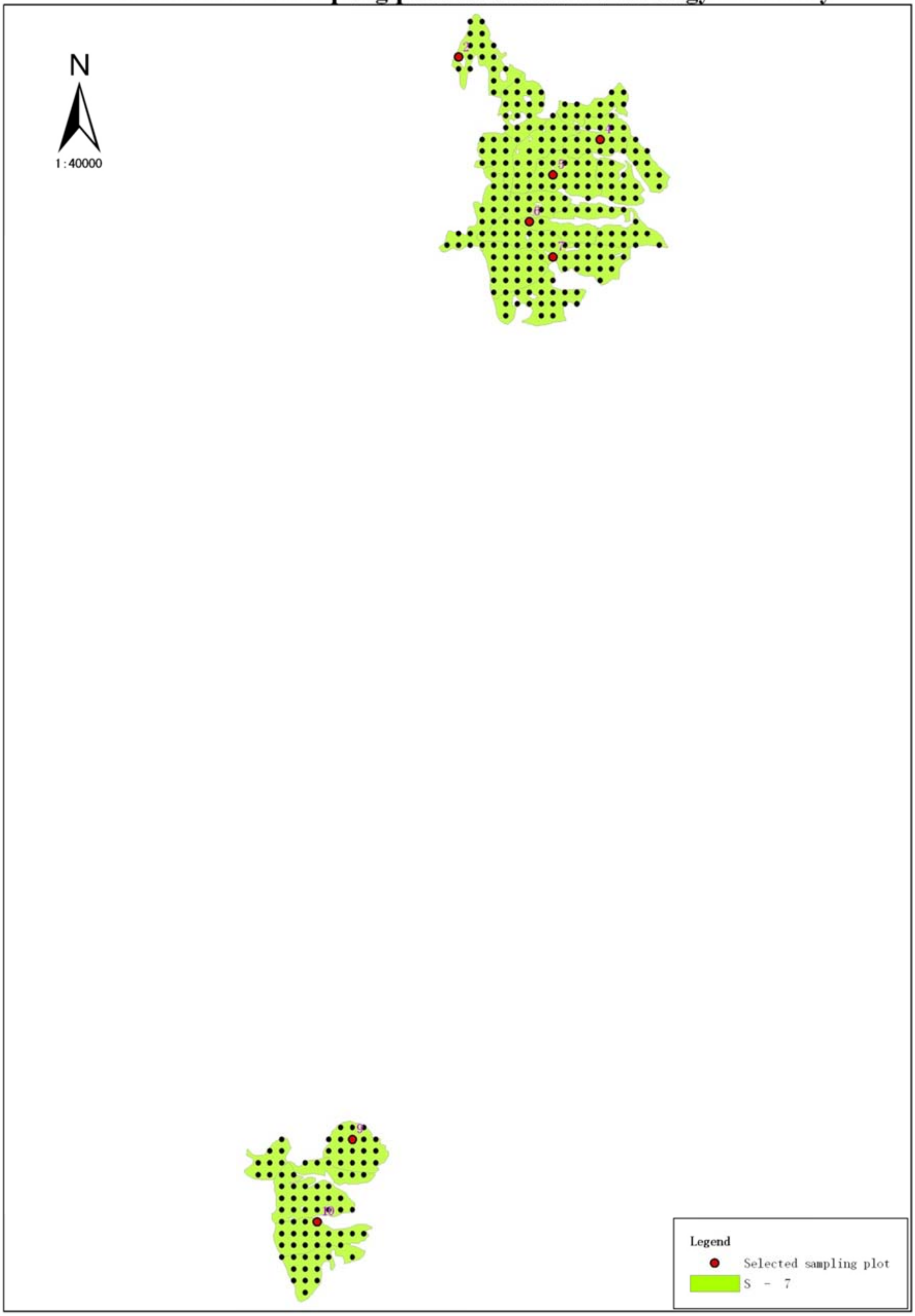


Table D.3 GPS coordinates of sampling plots

Strata ID	Plot ID	Coordinates		Strata ID	Plot ID	Coordinates	
		Longitude	Latitude			Longitude	Latitude
S-1	TL41	105. 64679	24. 22401	S-7	LY10*	106.46043	24.27254
S-1	TL40	105. 62814	24. 23402	S-7	LY9*	106.46346	24.27883
S-1	TL38	105. 62914	24. 23853	S-7	LY7*	106.48098	24.34635
S-1	TL28	106. 23368	24. 44696	S-7	LY6*	106.47904	24.34908
S-1	TL27	106. 2407	24. 45954	S-7	LY5*	106.48105	24.35267
S-1	TL22	105. 94862	24. 56817	S-7	LY4*	106.48503	24.35534
S-1	TL39	105. 62816	24. 23763	S-7	LY2*	106.47328	24.36177
S-1	TL23	105. 94862	24. 56727	S-8	LL99*	105.53828	24.40409
S-2	LL8	105.12363	24.80493	S-8	LL98*	105.54026	24.40679
S-2	LL5	105.44125	24.84675	S-8	LL97*	105.53929	24.4095
S-2	LY3	106.6361	24.36099	S-8	LL96*	105.53635	24.41493
S-3	LL33*	104.88338	24.71285	S-8	LL85*	105.55057	24.50967
S-3	LL31*	104.88239	24.71917	S-8	LL83*	105.40071	24.54445
S-3	LL13*	105.088	24.77967	S-8	LL82*	105.3948	24.54898
S-3	LL10*	105.08703	24.79683	S-8	LL80*	105.39284	24.55349
S-3	LL7*	105.12462	24.80763	S-8	LL74*	105.42544	24.56153
S-3	TL48*	106. 12855	24. 04427	S-8	LL72*	105.35636	24.56713
S-3	LY1*	106.74249	24.5632	S-8	LL65*	105.25865	24.57726
S-4	LL69*	105.25469	24.57275	S-8	LL63*	105.30999	24.58077
S-4	LL61*	105.25767	24.58087	S-8	LL59*	105.32086	24.58255
S-4	LL56*	105.23301	24.59174	S-8	LL58*	105.30014	24.58621
S-4	LL55*	105.04839	24.61087	S-8	LL54*	105.04641	24.6181
S-4	LL30*	104.87349	24.71916	S-8	LL45*	105.3251	24.69358
S-4	LL27*	104.8725	24.72548	S-8	LL44*	105.31423	24.69541
S-4	LL25*	104.87645	24.72819	S-8	LL43*	105.32411	24.69629
S-4	LL24*	104.87348	24.72999	S-8	LL42*	105.29349	24.69816
S-4	LL23*	104.87348	24.7318	S-8	LL41*	105.30633	24.69904
S-4	LL22*	105.11367	24.73271	S-8	LL40*	105.32116	24.69991
S-4	LL21*	104.89423	24.73452	S-8	LL38*	105.31227	24.70174
S-4	LL20*	104.87249	24.73722	S-8	LL36*	105.3024	24.70627
S-4	LL19*	104.89324	24.73904	S-8	LL26*	105.13244	24.72638
S-4	LL18*	105.10577	24.74084	S-8	TL37*	106. 41061	24. 30821
S-4	LL17*	105.11665	24.74445	S-8	TL36*	106. 41167	24. 31542
S-4	LL16*	105.1127	24.74716	S-9	TL49	106. 1256	24. 04339
S-4	LL15*	105.10776	24.74987	S-9	TL46	105. 71679	24. 06661
S-4	LL14*	105.11962	24.75437	S-9	TL44	105. 71484	24. 06933
S-4	LL9*	105.57063	24.79847	S-9	TL43	105. 71782	24. 07383
S-4	LL6*	105.11671	24.81035	S-9	TL33	105. 71734	24. 33925
S-4	LL4*	105.37221	24.92006	S-9	TL19	105. 85096	24. 57598

S-4	LL3*	105.38213	24.92455	S-9	TL18	105. 85097	24. 57869
S-4	LL2*	105.3861	24.92996	S-9	TL16	105. 85592	24. 58046
S-4	LL1*	105.39206	24.93446	S-10	TL45*	105. 70107	24. 06759
S-4	TL42*	106. 03189	24. 1262	S-10	TL47*	106. 15313	24. 04499
S-4	TL35*	106. 40188	24. 32093	S-10	TL26*	105. 74694	24. 51424
S-4	TL34*	106. 40783	24. 32449	S-10	TL25*	105. 74403	24. 52238
S-4	TL32*	106. 40993	24. 3362	S-10	TL1*	105. 69186	24. 72484
S-4	TL31*	105. 67403	24. 34848	S-11	LL49	104.96048	24.67768
S-4	TL30*	105. 67306	24. 35209	S-11	LL48	104.96245	24.68129
S-4	TL29*	105. 64457	24. 36937	S-11	LL47	104.96542	24.68671
S-4	TL24*	105. 95846	24. 5636	S-11	LL12	105.28974	24.78845
S-4	TL21*	105. 94962	24. 56907	S-11	LL11	105.28085	24.79117
S-4	TL20*	105. 94964	24. 57268	S-12	LL81	105.40961	24.55164
S-4	TL17*	105. 94969	24. 579	S-12	LL79	105.40863	24.55435
S-4	TL15*	106. 21552	24. 60958	S-12	LL78	105.40864	24.55706
S-4	TL14*	106. 23331	24. 61124	S-12	LL76	105.4274	24.55972
S-4	TL13*	106. 11805	24. 64013	S-12	LL60	105.15993	24.581
S-4	TL12*	106. 11512	24. 64466	S-13	LL71	105.30306	24.57085
S-4	TL11*	105. 93739	24. 65039	S-13	LL68	105.3011	24.57537
S-4	TL10*	105. 94433	24. 65396	S-13	LL34	105.16702	24.7128
S-4	TL9*	105. 92362	24. 6586	S-13	LL29	105.14331	24.72095
S-4	TL8*	105. 92266	24. 66221	S-14	LL66*	105.28728	24.5772
S-4	TL7*	106. 15706	24. 69399	S-14	LL62*	105.28235	24.58082
S-4	TL6*	105. 89239	24. 71114	S-14	LL46*	105.52072	24.68852
S-4	TL5*	105. 69279	24. 71491	S-15	LL86*	105.56438	24.50871
S-4	TL4*	105. 85289	24. 71589	S-15	LL75*	105.37608	24.56076
S-4	TL3*	105. 85589	24. 72038	S-15	LL70*	105.31491	24.57264
S-4	TL2*	105. 86579	24. 72394	S-15	LL67*	105.30604	24.57717
S-5	LL94	105.45656	24.43415	S-15	LL64*	105.29913	24.57989
S-5	LL93	105.46348	24.43864	S-15	LL57*	105.16291	24.59093
S-5	LL90	105.46453	24.45669	S-16	LL84	105.24082	24.54298
S-5	LL73	105.40273	24.56159	S-16	LL77	105.37311	24.55896
S-5	LY8	106.56902	24.28004	S-16	LL53	105.49287	24.64167
S-6	LL95	105.46148	24.43052	S-17	LL52*	105.49485	24.64257
S-6	LL92	105.47339	24.45035	S-17	LL51*	105.47218	24.65528
S-6	LL91	105.46748	24.45307	S-17	LL50*	105.47516	24.65888
S-6	LL89	105.47442	24.46208	S-18	LL39*	105.26879	24.70092
S-7	LL88*	105.47738	24.46297	S-18	LL37*	105.29251	24.70448
S-7	LL87*	105.47838	24.46748	S-18	LL32*	105.15714	24.71823
S-7	LL35*	105.27868	24.70722	S-18	LL28*	105.1532	24.72546

Notes: "*" indicates that the sample plot was not measurable and its carbon stock is assumed to be zero at the time of the monitor event. The coordinates are based on Beijing 1954 3 degree zone and Gauss-kruger

projection.

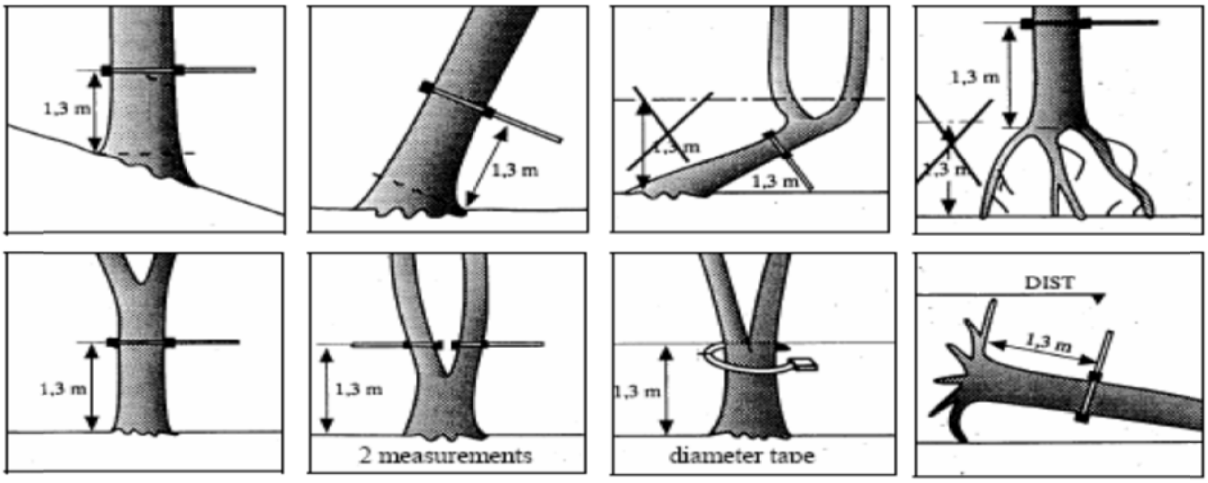
- **Field measurements**

The field measurements are accomplished using the GPS to identify the geographical position (GPS coordinates) of sample plots and their location and stratum information are recorded and archived.

After the four corners of sample plots were located, a permanent marker (a PVC pipe with 5cm in diameter and 30cm in length) was put at the center and four corners of the sample plot (placed vertically up to 20 cm deep in soil and 10 cm above soil surface), to enable the location of the sample plot at the future monitoring events.

The minimum diameter at breast height (DBH) measured is 2.0 cm. The DBH of many young trees especially those planted with delay have not reached the threshold. If over 2/3 of trees in a sampling plot have DBH less than 2.0 cm, then the plot was not measured and its carbon stock in living biomass was assumed to be zero.

DBH and height of each tree with DBH equal or over 2.0cm in all sample plots were measured. DBH was measured at 1.3 m above the ground in the manner as shown in figure below. After measuring the DBH of trees, their respective height measurements were conducted . The measured DBH and height were recorded on the field form (Annex III).



6. Pre-project tree and shrub biomass

6.1 project shrub biomass

Destructive method has been used to measure the pre-project shrub biomass in 2008 (Section 5.2 in PDD Annex 3) and relevant carbon stocks per hectare were presented in PDD table Annex 3-6. The measured shrub biomass was used to calculate the biomass loss of pre-project shrub due to the project activity (table D.4).

Table D.4 carbon stock in pre-project shrub biomass

Baseline strata ID	Area (ha)	Carbon stock (tC/ha)[2]			Carbon stock (tC)		
		AGB	BGB	Total	AGB	BGB	Total
BLS -1	586.8	0.273	0.128	0.401	160.2	75.1	235.3
BLS -2	1,166.9	0.134	0.056	0.190	156.4	65.3	221.7
BLS -3	1,688.4	1.538	0.482	2.019	2,596.8	813.8	3,410.6

2 Data from PDD table Annex 3-6

BLS -4	3,407.0	0.746	0.278	1.024	2,541.6	947.1	3,488.8
Total	6,849.1						**7,356.4**

6.2 Pre-project tree biomass

Sampling of pre-project trees was conducted in 2008 (Section 5.2 in PDD Annex 3) and relevant carbon stocks per hectare were presented in PDD table Annex 3-7. The measured tree biomass was used to calculate the biomass loss of pre-project tree due to the project activity (table D.5).

Table D.5 carbon stock in pre-project tree biomass

Baseline strata ID	Area (ha)	Carbon stock (tC/ha)[3]			carbon stock (tC)		
		AGB	BGB	Total	AGB	BGB	Total
BLS -1	586.8	0.0512	0.0143	0.0656	30.0	8.4	38.4
BLS -2	1,166.9	0.0867	0.0183	0.1050	101.2	21.4	122.5
BLS -3	1,688.4	0.0137	0.0036	0.0173	23.1	6.1	29.2
BLS -4	3,407.0	0.0180	0.0044	0.0224	61.3	15.0	76.3
Total	6,849.1						**266.5**

SECTION E. Calculation of emission reductions or GHG removals by sinks
E.1. Calculation of baseline emissions or baseline net GHG removals by sinks
>>

The baseline net removals by sinks were fixed as the ex ante estimation. The total of the baseline net removals by sinks during the monitoring period (from the project start to June 30 2012) were 2,116 tCO_2 (Table E-1).

Table E-1 Baseline net GHG removals by sinks[4]

Year No.	Years	Baseline net GHG removals by sinks ($t\ CO_2$)	Cumulative Baseline net GHG removals by sinks ($t\ CO_2$)
1	2008	374	374
2	2009	430	804
3	2010	484	1,288
4	2011	536	1,824
5	Jan 1^{st} – June 30^{th} 2012	292	2,116
Total of the monitoring period		2,116	

[3] Data calculated from PDD table Annex 3-7.
[4] Data drawn and calculated from PDD table Annex 3-8

E.2. Calculation of project emissions or actual net GHG removals by sinks
>>

The actual net GHG removals by sinks were estimated using the BEF method contained in the approved methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (Version 02.1.0), as described below.

1. ***Estimation of biomass stock in trees***

(1) Volume equations (listed in Section D.1) were used to convert measured DBH and height to stem volume of trees for each tree with sampling plot.

(2) Stem volume of each tree in sample plot was converted to above-ground tree biomass using basic wood density and biomass expansion factors, and the above-ground tree biomass was expanded to total tree biomass using root-shoot ratios. Thus, biomass of trees of species *j* in sample plot *p* is estimated as:

$$B_{TREE,j,p,i,t} = V_{TREE,j,p,i,t} * D_j * BEF_{2,j} * (1 + R_j) \quad \textbf{(E.1)}$$

where:

$B_{TREE,j,p,i,t}$	Biomass of trees of species *j* in sample plot *p* of stratum *i* at a point of time in year *t*; t d.m.
$V_{TREE,j,p,i,t}$	Stem volume of trees of species *j* in sample plot *p* of stratum *i* at a point of time in year *t*, estimated by using the measured DBH and height as entry data into a volume equation; m^3
D_j	Basic wood density of tree species *j* (listed in Section D.1); t d.m. m^{-3}
$BEF_{2,j}$	Biomass expansion factor for conversion of stem biomass to above-ground tree biomass, for tree species *j* (listed in Section D.1); dimensionless
R_j	Root-shoot ratio for tree species *j* (listed in Section D.1); dimensionless
j	*1, 2, 3, …* tree species in plot *p*
p	*1, 2, 3, …* sample plots in stratum *i*
i	*1, 2, 3, …* tree biomass estimation strata within the project boundary
t	*1, 2, 3, …* years counted from the start of the A/R CDM project activity

(3) Tree biomass in sample plot *p* of stratum *i* was estimated as follows:

$$B_{TREE,p,i,t} = \sum_j B_{TREE,j,p,i,t} \quad \textbf{(E.2)}$$

where:

$B_{TREE,p,i,t}$	Tree biomass in sample plot *p* in stratum *i* at a given point of time in year *t*; t d.m.
$B_{TREE,j,p,i,t}$	Biomass of trees of species *j* in sample plot *p* of stratum *i* at a given point of time in year *t*; t d.m.
j	*1, 2, 3, …* species in plot *p*
p	*1, 2, 3, …* sample plots in stratum *i*
i	*1, 2, 3, …* strata used for tree biomass estimation within the project boundary

t — *1, 2, 3, …* years counted from the start of the A/R CDM project activity

(4) Tree biomass per hectare in plot p in stratum i was estimated as follows:

$$b_{TREE,p,i,t} = \frac{B_{TREE,p,i,t}}{A_{p,i}} \qquad \textbf{(E.3)}$$

where:

$b_{TREE,p,i,t}$	Tree biomass per hectare in sample plot p in stratum i at a given point of time in year t; t d.m. ha^{-1}
$B_{TREE,p,i,t}$	Tree biomass in sample plot p in stratum i at a given point of time in year t; t d.m.
$A_{p,i}$	Area of sample plot p in stratum i; ha
p	*1, 2, 3, …* sample plots in stratum i
i	*1, 2, 3, …* tree biomass estimation strata within the project boundary
t	*1, 2, 3, …* years counted from the start of the A/R CDM project activity

(5) Mean tree biomass per hectare in stratum i and the variance of tree biomass per hectare in the stratum were estimated as follows:

$$b_{TREE,i,t} = \frac{\sum_{p=1}^{n_i} b_{TREE,p,i,t}}{n_i} \qquad \textbf{(E.4)}$$

$$s_i^2 = \frac{n_i * \sum_{p=1}^{n_i} b_{TREE,p,i,t}^2 - \left(\sum_{p=1}^{n_i} b_{TREE,p,i,t} \right)^2}{n_i * (n_i - 1)} \qquad \textbf{(E.5)}$$

where:

$b_{TREE,i,t}$	Mean tree biomass per hectare in stratum i at a given point of time in year t; t d.m. ha^{-1}
$b_{TREE,p,i,t}$	Tree biomass per hectare in sample plot p in stratum i at a given point of time in year t; t d.m. ha^{-1}
n_i	Number of sample plots in stratum i
s_i^2	Variance of tree biomass per hectare in stratum i at a given point of time in year t; (t d.m. ha^{-1})^2

(6) Mean tree biomass per hectare within the project boundary and its variance were estimated as follows:

$$b_{TREE,t} = \sum_{i=1}^{M} w_i * b_{TREE,i,t} \qquad \textbf{(E.6)}$$

$$s_{b_{TREE}}^2 = \sum_{i=1}^{M} w_i^2 * \frac{s_i^2}{n_i} \qquad \textbf{(E.7)}$$

where:

$b_{TREE,t}$	Mean tree biomass per hectare within the project boundary at a given point of time in year t; t d.m. ha^{-1}
w_i	Ratio of the area of stratum i to the sum of areas of biomass estimation strata; dimensionless
$b_{TREE,i,t}$	Mean tree biomass per hectare in stratum i at a given point of time in year t; t d.m. ha^{-1}
$s^2_{b_{TREE}}$	Variance of mean tree biomass per hectare within the project boundary at a given point of time in year t; (t d.m. $ha^{-1})^2$
s^2_i	Variance of tree biomass per hectare in stratum i at a given point of time in year t; (t d.m. $ha^{-1})^2$
n_i	Number of sample plots in stratum i
M	Number of tree biomass estimation strata within the project boundary

(7) Margin of error of the mean tree biomass per hectare within the project boundary was estimated as:

$$e_{b_{TREE}} = t_{VAL} * s_{b_{TREE}} \qquad \textbf{(E.8)}$$

where:

$e_{b_{TREE}}$	Margin of error of the mean tree biomass per hectare within the project boundary; t d.m. ha^{-1}
t_{VAL}	Two-sided Student's t-value for: (i) Degrees of freedom equal to $n – M$, where n is total number of sample plots within the project boundary, and M is the total number of tree biomass estimation strata; and (ii) The confidence level required by the methodology applying this tool (e.g. 90% or 95%); dimensionless. E.g. Two-sided Student's t-value for a probability value of 10% (which implies a 90% confidence level) and 140 degrees of freedom can be obtained in Excel spreadsheet as "=TINV(0.10,140)" which returns a value of 1.6558
$s_{b_{TREE}}$	Square root of the variance of mean tree biomass per hectare within project boundary at a given point of time in year t (i.e. the standard error of the mean); t d.m. ha^{-1}

(8) Total tree biomass within the project boundary at a given point of time in year t was estimated as follows:

$$B_{TREE,t} = A * b_{TREE,t} \qquad \textbf{(E.9)}$$

where:

$B_{TREE,t}$	Total tree biomass within the project boundary at a given point of time in year t; t d.m.
A	Sum of areas of the biomass estimation strata within the project boundary; ha
$b_{TREE,t}$	Mean tree biomass per hectare within the project boundary at a given point of time in year t; t d.m. ha^{-1}

(9) Carbon stock in tree biomass within the project boundary at a given point of time in year t was estimated as follows:

$$C_{TREE,t} = \frac{44}{12} * B_{TREE,t} * CF_{TREE} \quad \textbf{(E.10)}$$

where:

$C_{TREE,t}$ Carbon stock in tree biomass within the project boundary at a given point of time in year *t*; t CO_2-e

$B_{TREE,t}$ Total tree biomass within the project boundary at a given point of time in year *t*; t d.m.

CF_{TREE} Carbon fraction of tree biomass; t C t d.m.$^{-1}$

A default value of 0.50 is used unless transparent and verifiable information can be provided to justify a different value

Table E-2 carbon stock in project trees

Strata	mean tree biomass $b_{TREE,i,t}$ (t d.m./ha)	Strata area (ha)	Variance of tree biomass (t d.m. ha^{-1})^2	Carbon stock in tree biomass and the margin of error
S－1	25.48	300.6	26.88	$b_{TREE,t}$ =3. 12007 t d.m. ha^{-1} $B_{TREE,t}$ =21,369.7 t d.m. $C_{TREE,t}$ =39,177.8 tCO_2-e $s_{b_{TREE}}$ = 0.1736 t d.m. ha^{-1} $e_{b_{TREE}}$ = 0.2874 t d.m. ha^{-1} $e_{b_{TREE}} / b_{TREE,t} \times 100\% = 9.21\%$
S－2	5.41	170	31.25	
S－3	0.00	356.9	0.00	
S－4	0.00	2438.4	0.00	
S－5	6.61	213.8	13.41	
S－6	6.66	154.1	2.59	
S－7	0.00	442.1	0.00	
S－8	0.00	1264	0.00	
S－9	33.53	131.6	74.29	
S－10	0.00	227.8	0.00	
S－11	18.53	111.6	36.29	
S－12	5.88	229.6	8.16	
S－13	11.24	156.3	36.32	
S－14	0.00	110.6	0.00	
S－15	0.00	269.7	0.00	
S－16	17.38	44	173.38	
	0.00	71.3	0.00	
	0.00	156.7	0.00	
TOTAL		**6849.1**		

2. ***Carbon stock changes in living tree biomass of the project***

The rate of change of tree biomass over a period of time was calculated assuming a linear growth. Therefore, the rate of change in carbon stock in tree biomass over a period of time was calculated as follows:

$$dC_{TREE,(t_1,t_2)} = \frac{C_{TREE,t_2} - C_{TREE,t_1}}{T} \quad \textbf{(E.11)}$$

where:

$dC_{TREE,(t_1,t_2)}$	Rate of change in carbon stock in tree biomass within the project boundary during the period between a point of time in year t_1 and a point of time in year t_2; t CO_2-e yr^{-1}
C_{TREE,t_2}	Carbon stock in tree biomass within the project boundary at a point of time in year t_2; t CO_2-e
C_{TREE,t_1}	Carbon stock in tree biomass within the project boundary at a point of time in year t_1; t CO_2-e
T	Time elapsed between two successive estimations ($T=t_2 - t_1$); yr

For the first verification, the variable C_{TREE,t_1} in Equation (E.11) was assigned the value of carbon stock in the tree biomass at the start of the A/R CDM project activity, which is estimated as 977.1 tCO_2 (Table D.5).

Change in carbon stock in tree biomass within the project boundary in year t ($t_1 \le t \le t_2$) is calculated as follows:

$$\Delta C_{TREE,t} = dC_{TREE,(t_1,t_2)} * 1year \quad \text{for } t_1 \le t \le t_2 \qquad \textbf{(E.12)}$$

=(39,177.8-977.1)/4.5 = 8, 489. 0 **t** CO_2-e

where:

$\Delta C_{TREE,t}$	Change in carbon stock in tree biomass within the project boundary in year t; t CO_2-e
$dC_{TREE,(t_1,t_2)}$	Rate of change in carbon stock in tree biomass within the project boundary during the period between a point of time in year t_1 and a point of time in year t_2; t CO_2-e yr^{-1}

3. ***Carbon stock changes in shrub biomass***

The rate of change of shrub biomass over a period of time is estimated as follows:

$$dC_{SHRUB,(t_1,t_2)} = \frac{C_{SHRUB,t_2} - C_{SHRUB,t_1}}{T} \qquad \textbf{(E.13)}$$

where:

$dC_{SHRUB,(t_1,t_2)}$	Rate of change in carbon stock in shrub biomass within the project boundary during the period between a point of time in year t_1 and a point of time in year t_2; t CO_2-e yr^{-1}
C_{SHRUB,t_2}	Carbon stock in shrub biomass within the project boundary at a point of time in year t_2; t CO_2-e
C_{SHRUB,t_1}	Carbon stock in shrub biomass within the project boundary at a point of time in year t_1; t CO_2-e
T	Time elapsed between two successive estimations ($T=t_2 - t_1$); yr

For the first verification, the variable C_{SHRUB,t_1} in Equation (E.13) was assigned the value of carbon stock in the shrub biomass at the start of the A/R CDM project activity (Table D.4 above), that is: $C_{SHRUB,t_1} = C_{SHRUB\_BSL}$ for the for the first verification, where $t_1 = 1$ and t_2 = year of first verification. It was conservatively assumed that all pre-project shrub biomass was died out and emitted at the time of planting, that is: $C_{SHRUB,t_2} = 0$.

Change in carbon stock in shrub biomass within the project boundary in year t ($t_1 \le t \le t_2$) was calculated as follows:

$$\Delta C_{SHRUB,t} = dC_{SHRUB,(t_1,t_2)} * 1 year \text{ for } t_1 \le t \le t_2 \quad \textbf{(E.14)}$$

= (0 – 26,973.3)/4.5 = –5,994.1 t CO_2e

where:

$\Delta C_{SHRUB,t}$	Change in carbon stock in shrub biomass within the project boundary in year t; t CO_2-e
$dC_{SHRUB,(t_1,t_2)}$	Rate of change in carbon stock in shrub biomass within the project boundary during the period between a point of time in year t_1 and a point of time in year t_2; t CO_2-e yr^{-1}

4. ***Carbon stock changes in soil organic matter***

Carbon stock changes in soil organic matter is estimated using the "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities". The project activities comply with applicability conditions set in the tool and in the approved methodology applied as follows:

(a) The areas of land to which this tool applied are barren lands and belong to mineral soils that:
   (i) Do not fall into wetland category as defined in Annex A: Glossary of IPCC, Good Practice Guidance for Land Use, Land-use Change and Forestry (IPCC, GPG-LULUCF);
   (ii) Do not contain organic soils as defined in Annex A: glossary of the IPCC GPG LULUCF 2003;
   (iii) Are not subject to any of the land management practices and application of inputs as listed in the Tables 1 and 2 of the tool;

(b) In the implementation of the A/R CDM project activity:
   (i) Litter was not collected and remained on site;
   (ii) Soil disturbance attributable to the A/R CDM project activity, if any, is in accordance with appropriate soil conservation practices, e.g.
      - The holes dug during site preparation will be made following land contour;
      - Limited to soil disturbance for site preparation before planting and such disturbance is not repeated in less than twenty years.

Using the spreadsheet calculation tool developed by the Executive Board following the "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities", the estimated carbon stock changes in soil organic matter is presented in Table E.3 below.

Table E.3 Carbon stock changes in soil organic matter

Year	Carbon stock changes ($tCO_2.yr^{-1}$)	Cumulative carbon stock changes (tCO_2)
2008		0
2009	5,277.8	5,277.8
2010	7,985.1	13,262.9
2011	8,829.3	22,092.2
Jan 1st – June 30th 2012	5,297.3	27,389.5
Total	27,389.5	

Change in carbon stock in soil organic carbon within the project boundary in year t ($t_1 \le t \le t_2$) was calculated as follows:

$$\Delta SOC_t = dSOC_{(t_1,t_2)} * 1 year \text{ for } t_1 \le t \le t_2 \quad \textbf{(E.15)}$$

= 27,389.5/4.5 =6,086.6 t CO_2e

where:

ΔSOC_t	Change in carbon stock in soil organic matter within the project boundary in year *t*; t CO_2-e
$dSOC_{(t_1,t_2)}$	Rate of change in carbon stock in soil organic matter within the project boundary during the period between a point of time in year t_1 and a point of time in year t_2; t CO_2-e yr^{-1}

5. ***Project emissions***

There has been no biomass burning during site preparation and no forest fire during the verification period. Therefore the project GHG emissions were set as zero.

6. ***Actual net GHG removals by sinks***

1. The actual net GHG removals by sinks were calculated as:

$$\Delta C_{ACTUAL} = \Delta C_P - GHG_E \quad \textbf{(E.16)}$$

where:

ΔC_{ACTUAL}	Actual net GHG removals by sinks; t CO_2-e
ΔC_P	Sum of the changes the carbon stock in the selected carbon pools within the project boundary; t CO_2-e
GHG_E	Increase in non-CO_2 GHG emissions within the project boundary as a result of the implementation of the A/R CDM project activity; t CO_2-e

2. The verifiable changes in the carbon stock in the selected carbon pools within the project boundary are estimated using the following equation:

$$\Delta C_P = \sum_{t=1}^{t*} \Delta C_t \quad \textbf{(E.17)}$$

where:

ΔC_P	Sum of the changes in carbon stock in all selected carbon pools, since the start of the project; t CO_2-e
ΔC_t	Change in carbon stock in all selected carbon pools, in year *t*; t CO_2-e
t	*1, 2, 3, … t** years elapsed since the start of the A/R project activity; yr

Change in carbon stock in all selected carbon pools, in year *t*, is calculated as:

$$\Delta C_t = \Delta C_{TREE,t} + \Delta C_{SHRUB,t} + \Delta SOC_t \quad \textbf{(E.17)}$$

= 8,489.0 – 5,994.1+6,086.6 = 8,581.5 t CO_2e

$$\Delta C_P = 8{,}581.5 * 4.5 = 38{,}616.9 \text{ t } CO_2\text{e}$$

3. where:

ΔC_t	Change in carbon stock in all selected carbon pools in the project scenario, in year *t*; t CO_2-e
$\Delta C_{TREE,t}$	Change in carbon stock in tree biomass in project, in year *t*; t CO_2-e

$\Delta C_{SHRUB,t}$ Change in carbon stock in shrub biomass in project, in year ; t CO_2-e

ΔSOC_t Change in carbon stock in soil organic matter in project, in year *t*; t CO_2-e

t *1, 2, 3, … t** years elapsed since the start of the A/R CDM project activity

E.3. Calculation of leakage

>>

The potential leakage due to the implementation of the registered A/R CDM project activity is GHG emissions due to displacement of pre-project grazing activity. However based on PDD section D-2 the leakage from the displacement of grazing is nil, hence it was set as zero.

E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks

The net anthropogenic GHG removals by sinks is the actual net GHG removals by sinks minus the baseline net GHG removals by sinks minus leakage, therefore, the following general formula was used to calculate the net anthropogenic GHG removals by sinks of an A/R CDM project activity (C_{AR-CDM}), in t CO_2-e.

$$C_{AR-CDM} = \Delta C_{ACTUAL} - \Delta C_{BSL} - LK \quad \textbf{(E.18)}$$

where:

C_{AR-CDM} Net anthropogenic GHG removals by sinks; t CO_2-e

ΔC_{ACTUAL} Actual net GHG removals by sinks; t CO_2-e

ΔC_{BSL} Baseline net GHG removals by sinks; t CO_2-e

LK Total GHG emissions due to leakage; t CO_2-e

Time Period	Baseline emissions or baseline net GHG removals by sinks (tCO_2e)	Project emissions or actual net GHG removals by sinks (tCO_{2e})	Leakage (tCO_2e)	Emission reductions or net anthropogenic GHG removals by sinks (tCO_2e)
Total	2116	38,616.9	0	36,500.9

E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (tCO_2e)	232,941	36,500

E.6. Remarks on difference from estimated value in registered PDD

>>

The actual value of the net anthropogenic GHG removals by sinks is smaller than ex ante estimate in the registered CDM-PDD because of the reduction of actually planted area, delayed planting schedule and slow growth of species planted, as outlined below

1. *Reduction of planted area*

The actual planted or to be planted area is 6,849.1 ha compared to the project area in the registered CDM-PDD (8,671.3 ha), amounted to 79% of planned area. Main causes for the reduction are (also summarized in table E.2 below):

a) *Poor site conditions that prevented planting on 367.7 ha*: The high altitude, steep slopes, strong winds and rocky soils lacking adequate soil depth made site conditions of 367.7 ha unsuitable for reforestation. Even repeated replanting was not able to result in desired survival of planted seedlings. Considering the geography of the region, the poor site conditions could not be fully assessed at the project design stage. As a result of detailed assessment of site conditions during project implementation, the sites with poor site conditions were excluded from the project area.

b) *Land tenure conflicts on 1,052.8 ha of lands*: From legal point of view, the land ownership is clear. *However*, as project lands are barren without revenue generation, the farmer households did not care about the tenure of the lands at the time of tenure settlement. During project preparation stage, farmers didn't foresee the legal disputes with regard to land tenure. With the implementation of the project, some farmers in the vicinity of the project lands claimed land tenure right on lands legally owned by other farmers. As a result of the disputes pertaining to land tenure, farmers that legally own the lands and the forestry companies that are implementing the project did not want to take the risk of planting trees on disputable lands.

c) *Exclusion of area from project:* Strips of lands within 5-10 m from crop lands and the washed gully covering 284.9 ha was not planted for the purpose of protecting crop lands.

d) *Land use changes:* 116.8 ha of land was used for other non-forestry purposes.

Table E.2 Summary table on area excluded from the designed project lands

No	Reason for exclusion	Area (ha)
a)	Poor site condition	367.7
b)	Land tenure disputes	1,052.8
c)	Leave for cropland protection	284.9
d)	Land use changes	116.8
	Total	**1822.2**

2. *Delayed planting schedule*

The actual planting progress was much slower than planned schedule (see table B.1 above for detail) due mainly to slow process for addressing land tenure conflict, unavailability of sufficient seedlings, poor site condition, and extreme climate event (snow storm in early 2008 and drought in 2009-2011). Many lands have been repeated planted due to low survival rate resulted from poor site conditions and extreme drought, and due to damage by snow storm and drought.

3. *Lower growth rate*

The growth rate of eucalyptus and part of Masson pine, Chinese fir and birch is comparable to what has estimated in PDD. However, part of Masson pine, Chinese fir and flous grew much slower than expected

Annex I Planting schedule of the project lands

Towns/ township	Village	Land ID	Compart-ment	Sub-compart-ment	Area (ha)	Year planted	Species	Project Strata ID	Plot No	Baseline Strata ID
Lingyun										
chaoli	lantai	22	11	1	16.6	2008	Chinese fir	S-7	LY2	BLS-3
		22	11	2	14.4	2008	Chinese fir	S-7		BLS-3
		22	11	3	10.8	2008	Chinese fir	S-7		BLS-3
		22	11	4	14.3	2008	Chinese fir	S-7		BLS-3
		29	31	2	17	2008	Chinese fir	S-7	LY9	BLS-3
		29	37	1	7.4	2008	Chinese fir	S-7		BLS-3
		29	37	2	20.8	2008	Chinese fir	S-7		BLS-3
		29	37	3	17	2008	Chinese fir	S-7	LY10	BLS-3
		29	37	4	14.3	2008	Chinese fir	S-7		BLS-3
		29	31	1	8.01	2008	Chinese fir	S-7		BLS-3
	yangnang	27	8	1	10.3	2008	Chinese fir	S-5		BLS-4
		27	8	2	18.4	2008	Chinese fir	S-5		BLS-4
		27	8	3	17.7	2008	Chinese fir	S-5		BLS-4
jiayou	dongha	2	4	1	6.1	2008	Masson pine	S-2		BLS-4
		1	4	2	3.8	2008	Masson pine	S-3		BLS-4
	moxian	7	3	2	1.8	2008	Masson pine	S-2		BLS-4
		9	3	3	7.7	2008	Masson pine	S-2		BLS-4
		2	6	1	1.7	2008	Masson pine	S-2		BLS-4
		3	6	2	0.3	2008	Masson pine	S-3		BLS-4
		4	6	3	1.6	2008	Masson pine	S-2		BLS-4
		8	6	4	11.2	2008	Masson pine	S-3		BLS-4
		12	6	6	3.3	2008	Masson pine	S-3		BLS-4
		14	9	1	2.9	2008	Masson pine	S-3		BLS-4
		12	10	1	5.7	2008	Masson pine	S-2		BLS-4
		13	10	2	2	2008	Masson pine	S-2		BLS-4
		15	10	3	17.9	2008	Masson pine	S-3		BLS-4
		16	10	4	1.8	2008	Masson pine	S-3		BLS-4
		21	10	5	0.5	2008	Masson pine	S-2		BLS-4
		20	10	6	1	2008	Masson pine	S-2		BLS-4
		19	10	7	0.7	2008	Masson pine	S-2		BLS-4
		17	12	1	9.1	2008	Masson pine	S-2		BLS-2
		18	12	2	2.4	2008	Masson pine	S-3		BLS-2
		5	3	1	4.27	2008	Masson pine	S-2		BLS-4
		6	3	4	6.69	2008	Masson pine	S-2		BLS-4
		10	6	5	0.14	2008	Masson pine	S-3		BLS-4
		11	6	7	1.04	2008	Masson pine	S-3	LY1	BLS-4
sicheng	longzhao	26	7	1	16.3	2008	Masson pine	S-2		BLS-3
		24	8	1.3	5.14	2008	Masson pine	S-2		BLS-3
		23	8	1.1	2.5	2008	Masson pine	S-2		BLS-3
		25	8	1.2	7.2	2008	Masson pine	S-2	LY3	BLS-3
	shangmeng	28	5	1	14	2008	Chinese fir	S-5	LY8	BLS-4
	yaoma	22	2	1	10.3	2008	Chinese fir	S-7		BLS-3
		22	2	2	15.4	2008	Chinese fir	S-7		BLS-3
		22	2	3	14.7	2008	Chinese fir	S-7	LY4	BLS-3

		22	2	4	8	2008	Chinese fir	S-7		BLS-3
		22	2	5	18.2	2008	Chinese fir	S-7	LY5	BLS-3
		22	2	6	11.3	2008	Chinese fir	S-7		BLS-3
		22	3	1	10.6	2008	Chinese fir	S-7		BLS-1
		22	3	2	6.9	2008	Chinese fir	S-7		BLS-1
		22	3	3	8.3	2008	Chinese fir	S-7	LY6	BLS-1
		22	3	4	9.6	2008	Chinese fir	S-7		BLS-1
		22	4	1	12.9	2008	Chinese fir	S-7	LY7	BLS-3
		22	4	2	15	2008	Chinese fir	S-7		BLS-3
		22	4	3	17.6	2008	Chinese fir	S-7		BLS-3
		22	4	4	17.7	2008	Chinese fir	S-7		BLS-3
Tianlin										
baile	baile	9	4	3.4	2.9	2009	Eucalyptus	S-9		BLS-2
		9	4	4.1	3.6	2009	Eucalyptus	S-9		BLS-2
		8	4	1.2	10.7	2012	Masson pine	S-4		BLS-2
		9	4	2.3	11	2012	Masson pine	S-4	TL7	BLS-2
		9	4	3.1	12.3	2012	Masson pine	S-4		BLS-2
		10	4	4.3	10.9	2012	Masson pine	S-4		BLS-2
		8	4	1.1	4.6	2009	Masson pine	S-3		BLS-2
		9	4	2.1	1.5	2009	Masson pine	S-3		BLS-2
		9	4	2.2	0.8	2009	Masson pine	S-3		BLS-2
		9	4	3.5	1	2009	Masson pine	S-3		BLS-2
		9	4	3.2	0.9	2009	Masson pine	S-3		BLS-2
		9	4	3.3	0.5	2009	Masson pine	S-3		BLS-2
	genbiao	19	8	2	14.7	2012	Masson pine	S-4		BLS-4
		18	8	1.2	2.2	2012	Masson pine	S-4		BLS-4
		19	8	1.3	3.2	2012	Masson pine	S-4		BLS-4
		12	7	1.2	4.9	2012	Masson pine	S-4		BLS-4
		11	7	2.2	0.3	2012	Masson pine	S-4		BLS-4
		13	7	3.2	2.2	2012	Masson pine	S-4		BLS-4
		17	7	4.2	7.1	2012	Masson pine	S-4		BLS-4
		17	7	5.2	6	2012	Masson pine	S-4		BLS-4
		17	7	5.1	8.1	2012	Masson pine	S-4		BLS-4
		20	9	1	24.2	2012	Masson pine	S-4		BLS-4
		20	13	6	15	2012	Masson pine	S-4		BLS-4
		20	13	4	16.1	2012	Masson pine	S-4		BLS-4
		20	13	3	13.9	2012	Masson pine	S-4	TL12	BLS-4
		20	13	5	12.8	2012	Masson pine	S-4	TL13	BLS-4
		20	13	1	12.8	2012	Masson pine	S-4		BLS-4
		20	13	2.1	4	2012	Masson pine	S-4		BLS-4
		20	13	2.2	5.8	2011	Masson pine	S-4		BLS-4
		20	13	2.3	3.7	2012	Masson pine	S-4		BLS-4
		12	7	1.1	1.4	2008	Masson pine	S-3		BLS-4
		11	7	2.1	4.3	2008	Masson pine	S-3		BLS-4
		13	7	3.1	2.5	2008	Masson pine	S-3		BLS-4
		17	7	4.1	4.7	2008	Masson pine	S-3		BLS-4
ding'an	changjing	34	2	1.2	7.4	2012	Masson pine	S-4		BLS-4
		34	2	2.4	2	2012	Masson pine	S-4		BLS-4
		34	2	2.3	5.3	2012	Masson pine	S-4		BLS-4

		34	2	1.1	0.2	2009	Chinese fir	S-7		BLS-4
		34	2	1.3	7.1	2009	Chinese fir	S-7		BLS-4
		34	2	2.2	6.2	2008	Chinese fir	S-7		BLS-4
	ding'an	48	6	6	2.9	2009	Eucalyptus	S-9		BLS-4
		41	6	5	3.6	2009	Eucalyptus	S-9		BLS-4
		40	6	4	2.1	2009	Eucalyptus	S-9	TL33	BLS-4
		38	6	2	6.1	2009	Eucalyptus	S-9		BLS-4
		39	6	3.1	0.8	2009	Eucalyptus	S-9		BLS-4
		39	6	3.2	1.5	2009	Masson pine	S-3		BLS-4
	namen	37	8	1	11.1	2012	Masson pine	S-4		BLS-1
		37	8	2.1	9.8	2012	Masson pine	S-4		BLS-1
		37	8	2.2	6.5	2011	Masson pine	S-4		BLS-1
		37	8	3.2	5.7	2012	Masson pine	S-4		BLS-1
		37	8	3.1	7.8	2011	Masson pine	S-4	TL30	BLS-1
		37	8	3.3	3.5	2012	Masson pine	S-4		BLS-1
		37	8	4.1	11.9	2011	Masson pine	S-4		BLS-1
		37	8	4.2	4.5	2012	Masson pine	S-4	TL31	BLS-1
	yangrong	35	13	1	5.5	2012	Eucalyptus	S-10		BLS-1
		35	15	1	13.6	2012	Masson pine	S-4	TL29	BLS-1
		36	16	1.2	11.4	2012	Masson pine	S-4		BLS-1
		36	16	2.1	7.6	2012	Masson pine	S-4		BLS-1
		36	16	1.1	1.2	2009	Masson pine	S-3		BLS-1
gaolong	zheche	53	3	1	12.3	2008	Masson pine	S-1		BLS-1
		51	1	4	19.8	2008	Masson pine	S-1		BLS-1
		54	2	4	12.5	2008	Masson pine	S-1		BLS-1
		54	2	3	15	2008	Masson pine	S-1	TL41	BLS-1
		49	1	1.1	15.4	2008	Masson pine	S-1		BLS-1
		51	1	2.1	12.8	2008	Masson pine	S-1		BLS-1
		51	1	3.1	15.7	2008	Masson pine	S-1	TL38, TL38, TL40	BLS-1
		52	1	5.1	13.9	2008	Masson pine	S-1		BLS-1
		54	2	2.1	12.9	2008	Masson pine	S-1		BLS-1
		54	2	1.1	15.3	2008	Masson pine	S-1		BLS-1
jiuzhou	guanglong	14	3	1.1	10.3	2012	Eucalyptus	S-10		BLS-4
		16	4	3	12.6	2012	Masson pine	S-4	TL9	BLS-4
		16	4	2	13.5	2012	Masson pine	S-4	TL8	BLS-4
		16	5	1	15.8	2012	Masson pine	S-4	TL10	BLS-4
		16	5	2	13.9	2012	Masson pine	S-4		BLS-4
		16	5	4	18.5	2012	Masson pine	S-4	TL11	BLS-4
		16	5	3	15.4	2012	Masson pine	S-4		BLS-4
		16	4	5	13.9	2012	Masson pine	S-4		BLS-4
		15	4	1.1	1.3	2012	Masson pine	S-4		BLS-4
		14	4	1.3	1.7	2012	Masson pine	S-4		BLS-4
		16	4	1.4	2.5	2012	Masson pine	S-4		BLS-4
		16	4	4.2	17.2	2012	Masson pine	S-4		BLS-4
		16	4	6.1	8.3	2012	Masson pine	S-4		BLS-4
	pinglin	7	10	4	17.8	2009	Masson pine	S-4		BLS-3
		7	9	1	16	2009	Masson pine	S-4		BLS-3
		6	10	2	14.3	2009	Masson pine	S-4		BLS-3

		6	10	3	16.3	2009	Masson pine	S-4	TL6	BLS-3
		6	10	1	16.6	2009	Masson pine	S-4		BLS-3
		3	12	7	12.1	2012	Masson pine	S-4		BLS-3
		3	12	6	10.4	2012	Masson pine	S-4		BLS-3
		3	12	5	13	2012	Masson pine	S-4	TL3	BLS-3
		2	12	3	20.5	2012	Masson pine	S-4		BLS-3
		2	12	2	22.1	2012	Masson pine	S-4	TL2	BLS-3
		3	12	4	12.5	2012	Masson pine	S-4		BLS-3
		5	12	9	16.4	2012	Masson pine	S-4		BLS-3
		5	12	10	18.4	2012	Masson pine	S-4	TL4	BLS-3
		2	12	1.1	15.1	2012	Masson pine	S-4		BLS-3
		3	12	8	19.1	2012	Masson pine	S-4		BLS-3
	yangbai	25	13	1	4.5	2010	Masson pine	S-3		BLS-2
		26	13	3	17	2010	Masson pine	S-3		BLS-2
		26	13	2	15.9	2010	Masson pine	S-3		BLS-2
	zhenian	1	21	2	11.7	2012	Eucalyptus	S-10	TL1	BLS-2
		1	21	1	14.2	2012	Eucalyptus	S-10		BLS-2
		1	21	3.1	5.1	2012	Eucalyptus	S-10		BLS-2
		1	21	3.2	9.7	2012	Eucalyptus	S-10		BLS-2
		1	21	3.3	2	2012	Eucalyptus	S-10		BLS-2
		4	24	1	16.9	2012	Masson pine	S-4	TL5	BLS-2
langping	hongxing	21	18	4	20.8	2012	Masson pine	S-4		BLS-4
		22	18	7.1	16	2012	Masson pine	S-4		BLS-2
		22	19	2.1	2	2012	Masson pine	S-4		BLS-2
		22	19	4.1	7.9	2012	Masson pine	S-4		BLS-2
		22	19	2.4	16.7	2012	Masson pine	S-4		BLS-2
		22	18	6.1	16.2	2012	Masson pine	S-4		BLS-2
		21	18	5.1	12.7	2012	Masson pine	S-4	TL15	BLS-2
		21	18	3.1	16.8	2012	Masson pine	S-4		BLS-2
		21	18	1.2	2.3	2012	Masson pine	S-4		BLS-2
		21	18	2.2	11.2	2012	Masson pine	S-4		BLS-2
		22	19	1.1	18.9	2012	Masson pine	S-4	TL14	BLS-2
		22	19	3.2	15.6	2012	Masson pine	S-4		BLS-2
	xiangwei	30	2	1	15.2	2008	Masson pine	S-1		BLS-4
		30	2	3	14	2008	Masson pine	S-1		BLS-4
		32	3	7	12.3	2008	Masson pine	S-1		BLS-4
		32	3	6	15.9	2008	Masson pine	S-1	TL28	BLS-4
		32	3	5	20.2	2008	Masson pine	S-1		BLS-4
		30	2	2	11.2	2008	Masson pine	S-1	TL27	BLS-4
		33	3	8	8	2008	Masson pine	S-1		BLS-4
		31	3	1.1	10.4	2008	Masson pine	S-1		BLS-4
		31	3	2.3	3.9	2008	Masson pine	S-1		BLS-4
		31	3	2.1	8.6	2008	Masson pine	S-1		BLS-4
		31	3	2.2	1.4	2010	Chinese fir	S-8		BLS-4
lizhou	fanchang	43	16	4	15.2	2012	Masson pine	S-4		BLS-4
		42	16	2.1	11.7	2012	Masson pine	S-4		BLS-4
		42	16	1.1	9.4	2012	Masson pine	S-4		BLS-4
		46	16	9.2	3.7	2012	Chinese fir	S-8		BLS-4
		44	16	6.2	15.1	2012	Masson pine	S-4		BLS-4

		44	16	10.1	5	2012	Masson pine	S-4		BLS-4
		47	16	10.3	6.5	2012	Masson pine	S-4		BLS-4
		45	16	8.3	2.2	2012	Chinese fir	S-8		BLS-4
		46	16	8.2	9.6	2012	Masson pine	S-4	TL32	BLS-4
		44	16	7	15.1	2012	Masson pine	S-4		BLS-4
	nanglao	44	4	10	15.9	2012	Masson pine	S-4		BLS-4
		44	4	5	12.9	2012	Masson pine	S-4	TL34	BLS-4
		44	4	8.1	20.6	2012	Masson pine	S-4	TL35	BLS-4
		50	5	4	17.3	2012	Chinese fir	S-8	TL37	BLS-4
		44	4	9	16	2012	Masson pine	S-4		BLS-4
		50	5	1	11	2012	Chinese fir	S-8	TL36	BLS-4
		50	5	2	7.9	2012	Chinese fir	S-8		BLS-4
		50	5	3	12.3	2012	Chinese fir	S-8		BLS-4
		44	4	2.1	7.8	2012	Masson pine	S-4		BLS-4
		44	4	2.3	4.1	2012	Masson pine	S-4		BLS-4
		44	4	4.1	2.6	2012	Masson pine	S-4		BLS-4
		44	4	4.2	7.5	2012	Chinese fir	S-8		BLS-4
		44	4	7.2	12.8	2012	Masson pine	S-4		BLS-4
		44	4	6.2	13.9	2012	Masson pine	S-4		BLS-4
		44	4	3.2	7.3	2012	Chinese fir	S-8		BLS-4
		44	4	3.1	4.7	2012	Masson pine	S-4		BLS-4
		44	4	7.3	0.1	2008	Chinese fir	S-7		BLS-4
liulong	lietun	59	16	1.3	7.3	2008	Masson pine	S-1		BLS-3
		59	16	2.2	0.3	2008	Masson pine	S-1		BLS-3
		58	17	3.3	7.4	2009	Eucalyptus	S-9	TL49	BLS-3
		59	16	1.2	2.5	2012	Eucalyptus	S-10		BLS-3
		59	16	1.5	2.4	2012	Eucalyptus	S-10		BLS-3
		59	16	2.3	7.5	2012	Eucalyptus	S-10	TL47	BLS-3
		58	17	1.2	4.7	2012	Masson pine	S-4		BLS-3
		58	17	3.4	1.2	2011	Masson pine	S-4		BLS-3
		59	16	1.1	3.2	2012	Masson pine	S-4		BLS-3
		58	17	2.5	2.9	2009	Masson pine	S-3		BLS-3
		58	17	3	3.4	2009	Masson pine	S-3	TL48	BLS-3
		58	17	2.4	3.5	2012	Chinese fir	S-8		BLS-3
	zhouma	55	11	1.2	0.9	2012	Masson pine	S-4		BLS-4
		55	11	1.3	11.6	2012	Masson pine	S-4	TL42	BLS-4
		55	11	2.2	1.9	2012	Masson pine	S-4		BLS-4
		55	11	2.3	6.3	2012	Masson pine	S-4		BLS-4
lucheng	nama	24	9	1.1	9.9	2008	Eucalyptus	S-9	TL18	BLS-4
		24	9	2.1	11.4	2008	Eucalyptus	S-9	TL16	BLS-4
		24	9	3.1	9.8	2008	Eucalyptus	S-9		BLS-4
		24	9	5.2	18.3	2012	Eucalyptus	S-10		BLS-4
		24	9	6.2	15.6	2012	Masson pine	S-4		BLS-4
		24	9	5.1	1	2008	Eucalyptus	S-9		BLS-4
		24	9	6.1	1.2	2008	Eucalyptus	S-9		BLS-4
		24	9	3.1	3.9	2012	Masson pine	S-4		BLS-4
		24	9	4.1	7.4	2008	Eucalyptus	S-9	TL19	BLS-4
	yingpan	28	5	1.3	0.3	2008	Eucalyptus	S-9		BLS-4
		28	5	1.2	3.3	2012	Masson pine	S-4		BLS-4

		28	5	1.7	1.9	2012	Masson pine	S-4		BLS-4
		28	5	1.6	2.1	2010	Masson pine	S-4		BLS-4
		29	5	2.1	9.6	2010	Masson pine	S-4		BLS-4
		28	5	1.5	1.9	2012	Masson pine	S-4		BLS-4
nabi	nala	57	34	1.2	9.8	2011	Eucalyptus	S-10		BLS-4
		56	48	1.2	13.5	2010	Eucalyptus	S-9		BLS-4
		56	48	2.2	8.6	2010	Eucalyptus	S-9	TL43	BLS-4
		56	48	3.2	11.1	2010	Eucalyptus	S-9		BLS-4
		57	34	3	14.8	2011	Eucalyptus	S-10	TL45	BLS-4
		57	34	2.2	12.6	2011	Eucalyptus	S-10		BLS-4
		56	48	5	14.6	2010	Eucalyptus	S-9	TL46	BLS-4
		56	48	4.2	12.4	2010	Eucalyptus	S-9	TL44	BLS-4
yangyamuchang	banyang	23	3	5.1	2.6	2008	Masson pine	S-1		BLS-1
		23	3	6.4	0.7	2008	Masson pine	S-1		BLS-1
		23	3	13.5	0.4	2012	Masson pine	S-4		BLS-1
		23	3	13.1	2.8	2012	Masson pine	S-4		BLS-1
		23	3	10.1	2.8	2008	Masson pine	S-4		BLS-1
		23	3	4.3	0.3	2009	Eucalyptus	S-9		BLS-1
		23	3	5.2	0.2	2009	Eucalyptus	S-9		BLS-1
		23	3	11.2	0.5	2009	Eucalyptus	S-9		BLS-1
		23	3	4.2	0.8	2011	Eucalyptus	S-10		BLS-1
		23	3	5.3	0.9	2010	Eucalyptus	S-10		BLS-1
		23	3	10.5	2	2012	Eucalyptus	S-10		BLS-1
		23	3	12.3	0.5	2012	Eucalyptus	S-10		BLS-1
		23	3	3	17.8	2012	Masson pine	S-4		BLS-1
		23	3	1.1	7	2011	Masson pine	S-4	TL17	BLS-1
		23	3	1.4	2.5	2012	Masson pine	S-4		BLS-1
		23	3	1.2	6.8	2011	Masson pine	S-4		BLS-1
		23	3	2.3	4.6	2012	Masson pine	S-4		BLS-1
		23	3	2.1	8.1	2012	Masson pine	S-4		BLS-1
		23	3	4.5	7.6	2012	Masson pine	S-4		BLS-1
		23	3	4.4	1.2	2012	Masson pine	S-4		BLS-1
		23	3	4.1	12.2	2010	Masson pine	S-4		BLS-1
		23	3	5.4	10.7	2012	Masson pine	S-4		BLS-1
		23	3	10.6	4.2	2011	Masson pine	S-4		BLS-1
		23	3	10.4	1.3	2011	Masson pine	S-4		BLS-1
		23	3	10.9	0.6	2012	Masson pine	S-4		BLS-1
		23	3	10.8	1	2012	Masson pine	S-4		BLS-1
		23	3	11.1	13.3	2012	Masson pine	S-4	TL24	BLS-1
		23	3	13.8	4.5	2012	Masson pine	S-4		BLS-1
		23	3	1.3	1.2	2011	Chinese fir	S-8		BLS-1
		23	3	13.6	3.5	2012	Chinese fir	S-8		BLS-1
		23	3	13.2	1.4	2012	Chinese fir	S-8		BLS-1
		23	3	6.3	2	2008	Shiny-bark birch	S-12		BLS-1
		23	3	10.2	1.7	2011	Masson pine	S-4		BLS-1
		23	3	12.4	5.4	2012	Masson pine	S-4		BLS-1
		23	3	6.2	7.6	2008	Masson pine	S-1		BLS-1
		23	3	8.1	1.3	2008	Masson pine	S-1		BLS-1

		23	3	12.1	2.5	2008	Masson pine	S-1		BLS-1
		23	3	8.4	3.4	2008	Masson pine	S-1	TL22, TL23	BLS-1
		23	3	9.1	1.1	2008	Masson pine	S-1		BLS-1
		23	3	7.2	1.1	2008	Masson pine	S-1		BLS-1
		23	3	9	11.4	2008	Masson pine	S-4	TL20	BLS-1
		23	3	7.1	11.4	2008	Masson pine	S-4	TL21	BLS-1
		23	3	8.3	4	2008	Masson pine	S-1		BLS-1
		23	3	12.2	1.9	2008	Masson pine	S-4		BLS-1
		23	3	8.5	1.2	2008	Masson pine	S-4		BLS-1
		23	3	6.1	3.8	2008	Masson pine	S-4		BLS-1
		23	3	8.3	3.3	2008	Masson pine	S-4		BLS-1
		23	3	9	3.4	2008	Masson pine	S-1		BLS-1
zhemiao	bailong	27	10	2	13.3	2011	Eucalyptus	S-10		BLS-4
		27	10	3	17.8	2011	Eucalyptus	S-10	TL26	BLS-4
		27	10	1.1	16.2	2011	Eucalyptus	S-10	TL25	BLS-4
		27	10	4.3	3.9	2011	Eucalyptus	S-10		BLS-4
		27	10	4.1	10.5	2011	Eucalyptus	S-10		BLS-4
		27	10	5.1	5.2	2011	Eucalyptus	S-10		BLS-4
		27	10	5.3	7.3	2011	Eucalyptus	S-10		BLS-4
		27	10	6	23	2011	Eucalyptus	S-10		BLS-4

longlin

zhuchang	nayan	75	2	1	10	2012	Masson pine	S-4		BLS-1
		75	2	2	12.8	2012	Masson pine	S-4		BLS-1
		75	2	3	12.8	2012	Masson pine	S-4		BLS-1
		75	2	9	11.7	2012	Masson pine	S-4	LL55	BLS-1
		75	2	11	9.8	2012	Masson pine	S-4		BLS-1
		75	2	4.1	6.1	2012	Masson pine	S-4		BLS-1
		75	2	5	3.5	2012	Masson pine	S-4		BLS-1
		75	2	6	3.4	2012	Masson pine	S-4		BLS-1
		75	2	7	4.9	2012	Masson pine	S-4		BLS-1
		75	2	8	7.8	2012	Masson pine	S-4		BLS-1
		75	2	10	6.9	2012	Masson pine	S-4		BLS-1
		55	8	6.8	0.2	2010	Masson pine	S-4		BLS-3
		55	8	5.5	3	2010	Masson pine	S-4		BLS-4
		75	2	4	1.5	2011.1	Chinese fir	S-8		BLS-1
		75	2	5.1	9.3	2011.1	Chinese fir	S-8	LL54	BLS-1
		75	2	6.1	5.3	2011.1	Chinese fir	S-8		BLS-1
		75	2	7.1	1.6	2011.1	Chinese fir	S-8		BLS-1
		75	2	8.2	3.2	2011.1	Chinese fir	S-8		BLS-1
		75	2	8.1	3.1	2011.1	Chinese fir	S-8		BLS-1
		75	2	10.1	1.5	2011.1	Chinese fir	S-8		BLS-1
	yangjie	46	2	1.1	2.2	2009	Chinese fir	S-7		BLS-3
		46	2	1.3	0.3	2009	Chinese fir	S-7		BLS-3
		46	2	1.5	0.3	2009	Chinese fir	S-7		BLS-3
		46	2	2.3	1.6	2009	Chinese fir	S-7		BLS-3
		46	2	2.2	2.2	2009	Chinese fir	S-7		BLS-3
		46	2	3.2	0.4	2009	Chinese fir	S-7		BLS-3
		46	1	1.2	0.7	2009	Chinese fir	S-7		BLS-4
		50	6	2.1	1.4	2009	Chinese fir	S-7		BLS-3

		46	2	1.2	0.5	2009	Chinese fir	S-7		BLS-3
		50	6	1.2	0.6	2009	Chinese fir	S-7		BLS-3
		46	2	2.4	0.3	2012	Masson pine	S-4		BLS-3
		46	2	3.3	0.7	2012	Masson pine	S-4		BLS-3
		46	1	1.1	9.4	2012	Masson pine	S-4		BLS-4
		50	6	2.1	13.3	2012	Masson pine	S-4		BLS-3
		55	8	4.4	1.6	2010	Masson pine	S-4		BLS-4
		55	8	6.7	0.5	2010	Masson pine	S-4		BLS-3
		55	8	5.6	0.5	2010	Masson pine	S-4		BLS-4
		55	8	6.6	0.2	2010	Masson pine	S-4		BLS-3
		46	2	2.1	10.8	2012	Masson pine	S-4		BLS-3
		46	2	3.1	5.9	2012	Masson pine	S-4	LL18	BLS-3
		46	2	1.6	8.6	2012	Masson pine	S-4		BLS-3
		50	6	1.1	6.6	2012	Masson pine	S-4	LL22	BLS-3
		55	8	7	12.7	2009	Flous	S-18		BLS-3
		55	8	4.1	3.6	2009	Flous	S-18		BLS-4
		51	8	3.1	1.1	2009	Flous	S-18		BLS-4
		51	8	2.1	0.4	2009	Flous	S-18		BLS-4
		51	8	2.2	0.4	2009	Flous	S-18		BLS-4
		55	8	6.2	4.1	2009	Flous	S-18		BLS-3
		54	8	8.2	10.4	2009	Shiny-bark birch	S-13	LL29	BLS-4
		54	8	9.2	10.5	2009	Shiny-bark birch	S-13		BLS-3
		53	8	10.1	6.3	2009	Shiny-bark birch	S-13		BLS-3
		52	7	3.1	1.4	2010	Chinese fir	S-8		BLS-4
		52	7	4.2	0.1	2010	Chinese fir	S-8		BLS-4
		52	7	4.1	7.9	2010	Chinese fir	S-8	LL26	BLS-4
		52	7	4.3	0.3	2010	Chinese fir	S-8		BLS-4
		52	7	4.4	0.3	2010	Chinese fir	S-8		BLS-4
		54	8	8.3	0.4	2010	Chinese fir	S-8		BLS-4
		55	8	5.2	0.3	2010	Chinese fir	S-8		BLS-4
		55	8	4.2	6.3	2010	Chinese fir	S-8		BLS-4
		51	8	2.3	3	2010	Chinese fir	S-8		BLS-4
		55	8	5.1	10.3	2010	Chinese fir	S-8		BLS-4
		55	8	6.1	10	2010	Chinese fir	S-8		BLS-3
		46	2	2.5	0.6	2011	Chinese fir	S-8		BLS-3
		46	2	3.3	0.4	2011	Chinese fir	S-8		BLS-3
		46	2	1.4	1.4	2011	Chinese fir	S-8		BLS-3
zhelang	zheyan	37	4	1	10.1	2008	Shiny-bark birch	S-11		BLS-2
		39	4	2	10.4	2008	Shiny-bark birch	S-11		BLS-2
		39	4	3	11.1	2008	Shiny-bark birch	S-11	LL12	BLS-2
		38	4	5	16.4	2008	Shiny-bark birch	S-11	LL11	BLS-2
		38	4	4	4.2	2008	Shiny-bark birch	S-15		BLS-2
zhebao	banzhihua	1	3	1.1	16.4	2012	Masson pine	S-4		BLS-4
		2	2	2.1	16.9	2012	Masson pine	S-4		BLS-4
		3	4	3.1	2.8	201201	Masson pine	S-4		BLS-4
		4	4	4.4	0.3	201201	Masson pine	S-4		BLS-4
		3	4	2.1	7.1	201201	Masson pine	S-4		BLS-4
		11	4	2.3	0.9	201201	Masson pine	S-4		BLS-4
		10	4	1.1	0.8	201201	Masson pine	S-4	LL2	BLS-4

		10	3	3.1	2.8	201201	Masson pine	S-4		BLS-4
		9	3	3.4	0.4	201201	Masson pine	S-4		BLS-4
		8	3	5.2	13.1	2012	Masson pine	S-4		BLS-4
		8	3	5.1	5.3	201201	Masson pine	S-4		BLS-4
		8	3	3.5	5.4	201201	Masson pine	S-4		BLS-4
		8	3	3.6	1.4	201201	Masson pine	S-4		BLS-4
		8	3	2.1	11.1	2012	Masson pine	S-4		BLS-4
		8	3	2.2	3.5	201201	Masson pine	S-4		BLS-4
		8	3	6.3	0.3	201201	Masson pine	S-4		BLS-4
		12	3	7.4	0.2	201201	Masson pine	S-4		BLS-4
		8	3	8.1	3.8	2008	Masson pine	S-4		BLS-4
		8	3	6.1	3.9	2008	Masson pine	S-4		BLS-4
		8	3	7.1	10.9	2008	Masson pine	S-4	LL3	BLS-4
		3	4	4.1	20.6	201201	Masson pine	S-4	LL1	BLS-4
		8	3	4.2	1.5	2008	Masson pine	S-4		BLS-4
		8	5	2.2	9.1	2008	Masson pine	S-4		BLS-4
		8	3	4.1	2.8	2008	Masson pine	S-4		BLS-4
		8	5	1.4	6	2008	Masson pine	S-4		BLS-4
		8	5	2.1	8.1	2008	Masson pine	S-4		BLS-4
		8	3	8.4	1.8	2008	Masson pine	S-4		BLS-4
		8	3	4.3	5.7	2008	Masson pine	S-4		BLS-4
		8	3	8.5	0.5	2008	Masson pine	S-4		BLS-4
		6	7	3.2	1.6	2008	Masson pine	S-3		BLS-4
		6	7	1.2	0.4	2008	Masson pine	S-3		BLS-4
		5	7	2.1	1.2	2011.3	Masson pine	S-3		BLS-4
		6	7	3.1	4.5	2008	Masson pine	S-3		BLS-4
		6	7	3.3	10.9	2008	Masson pine	S-3		BLS-4
		6	7	1.3	7.8	2008	Masson pine	S-3		BLS-4
		6	7	1.5	1.2	2008	Masson pine	S-3		BLS-4
		8	3	7.3	0.3	2008	Masson pine	S-3		BLS-4
		8	3	8.2	3.8	2008	Masson pine	S-2		BLS-4
		8	3	4.5	1.5	2008	Masson pine	S-4		BLS-4
		8	5	1.1	3.3	2008	Masson pine	S-4		BLS-4
	nanguang	19	6	1.2	13.3	2008	Masson pine	S-2		BLS-4
		18	6	2.1	3.1	2008	Masson pine	S-2		BLS-4
		18	6	2.2	1.5	2008	Masson pine	S-2		BLS-4
		18	6	2.3	1.4	2008	Masson pine	S-2		BLS-4
	tongliu	14	2	2.1	5.3	2008	Masson pine	S-2		BLS-4
		16	3	2.1	5.8	2008	Masson pine	S-2	LL5	BLS-4
		13	2	1.1	4.8	2008	Masson pine	S-2		BLS-4
		13	6	1.1	1.5	2008	Masson pine	S-2		BLS-4
		17	3	1.1	1.3	2008	Masson pine	S-2		BLS-4
		17	3	1.2	3.7	2008	Masson pine	S-2		BLS-4
		17	3	1.3	1	2008	Masson pine	S-2		BLS-4
		15	2	3.1	2.8	2008	Masson pine	S-2		BLS-4
	zuohuan	7	5	1.2	14.9	2012	Masson pine	S-4	LL4	BLS-4
yancha	lengdu	120	9	4.1	6.4	2008	Chinese fir	S-7		BLS-4
		122	10	4.1	1.7	2008	Chinese fir	S-7		BLS-4
		122	9	1.1	12.1	2008	Chinese fir	S-7	LL87	BLS-4

		122	9	2.1	16.9	2008	Chinese fir	S-7	LL88	BLS-4
		122	9	3.1	12.5	2008	Chinese fir	S-7		BLS-4
		120	10	1.1	9.8	2008	Chinese fir	S-7		BLS-4
		120	10	2.1	1.5	2008	Chinese fir	S-7		BLS-4
		128	11	3.1	14.9	2008	Chinese fir	S-8		BLS-4
		121	10	3.1	5.1	2008	Chinese fir	S-6		BLS-4
		125	11	5.2	7.9	2008	Chinese fir	S-6		BLS-4
		122	10	6.1	3.3	2008	Chinese fir	S-6	LL89	BLS-4
		122	10	5.1	2.7	2008	Chinese fir	S-6		BLS-4
		122	10	5.2	0.8	2008	Chinese fir	S-6		BLS-4
		125	11	6.3	0.3	2008	Chinese fir	S-6		BLS-4
		125	11	6.2	0.7	2008	Chinese fir	S-6		BLS-4
		125	11	6.4	2	2008	Chinese fir	S-6		BLS-4
		125	11	6.5	0.7	2008	Chinese fir	S-6		BLS-4
		126	11	1.1	7.9	2008	Chinese fir	S-6		BLS-4
		126	11	2.1	12.8	2008	Chinese fir	S-6	LL91	BLS-4
		126	13	1.1	13.3	2008	Chinese fir	S-6		BLS-4
		126	13	2.1	13.8	2008	Chinese fir	S-6		BLS-4
		126	13	3.1	13.9	2008	Chinese fir	S-6	LL92	BLS-4
		126	11	4.1	3	2008	Chinese fir	S-5		BLS-4
		125	11	6.1	12.9	2008	Chinese fir	S-5		BLS-4
		125	11	5.1	5.6	2008	Chinese fir	S-5	LL90	BLS-4
		122	10	6.2	3.3	2008	Chinese fir	S-5		BLS-4
	pingban	105	9	1.2	9.9	2009	Shiny-bark birch	S-12		BLS-4
		105	9	1.1	2	2009	Shiny-bark birch	S-12		BLS-4
xinzhou	nongsang	59	8	4.1	3.8	2009	Chinese fir	S-7		BLS-2
		59	8	1.1	8.7	2009	Chinese fir	S-7		BLS-2
		59	8	3.1	12.9	2009	Chinese fir	S-7	LL35	BLS-2
		59	8	2.1	11.7	2009	Chinese fir	S-8		BLS-2
weile	weilong	28	2	1	17.2	2012	Masson pine	S-4		BLS-3
		28	2	2	7.6	2012	Masson pine	S-4		BLS-3
shechang	lexiang	86	2	7	16	2009	Shiny-bark birch	S-15		BLS-4
		86	2	8	17.3	2009	Shiny-bark birch	S-15		BLS-4
		86	2	9.1	17.8	2009	Shiny-bark birch	S-15	LL70	BLS-4
		86	2	5.1	4.5	2009	Shiny-bark birch	S-15		BLS-4
		84	1	3.2	5.1	2008	Shiny-bark birch	S-15		BLS-4
		84	1	4.2	6.9	2008	Shiny-bark birch	S-15	LL64	BLS-4
		84	1	5.2	7.1	2008	Shiny-bark birch	S-15		BLS-4
		84	1	6.2	9.1	2008	Shiny-bark birch	S-15		BLS-4
		84	1	7.2	7	2008	Shiny-bark birch	S-15		BLS-4
		84	1	8.2	5	2008	Shiny-bark birch	S-15	LL67	BLS-4
		86	2	6	17.7	2009	Shiny-bark birch	S-15		BLS-4
		96	1	1.2	0.2	2009	Shiny-bark birch	S-14		BLS-4
		84	1	2	12.3	2008	Shiny-bark birch	S-13		BLS-4
		84	1	9	4.9	2008	Shiny-bark birch	S-13		BLS-4
		84	1	11.1	11.5	2008	Shiny-bark birch	S-13		BLS-4
		84	1	10.1	12.5	2008	Shiny-bark birch	S-13	LL71	BLS-4
		84	1	3.1	9.6	2008	Shiny-bark birch	S-13		BLS-4
		84	1	4.1	3.6	2008	Shiny-bark birch	S-13		BLS-4

		84	1	5.1	2.9	2008	Shiny-bark birch	S-13		BLS-4
		84	1	6.1	1.5	2008	Shiny-bark birch	S-13		BLS-4
		84	1	7.1	13.5	2008	Shiny-bark birch	S-13	LL68	BLS-4
		84	1	8.1	6.5	2008	Shiny-bark birch	S-13		BLS-4
		93	5	1.1	8.3	2010	Chinese fir	S-8		BLS-4
		93	5	1.2	4.4	201103	Chinese fir	S-8		BLS-4
		97	2	2.2	10.8	2012	Chinese fir	S-8		BLS-4
		93	5	1.3	2	2010	Chinese fir	S-8		BLS-4
		83	3	3	16.5	2012	Masson pine	S-4		BLS-4
		83	3	2.4	3.5	2012	Masson pine	S-4		BLS-4
		83	3	2.2	1.8	2012	Masson pine	S-4		BLS-4
		83	4	3.2	8.6	2012	Masson pine	S-4	LL69	BLS-3
		83	4	3.1	1.6	2011	Masson pine	S-4		BLS-3
		83	4	2.2	6.1	2012	Masson pine	S-4	LL61	BLS-3
		83	4	5.2	9.7	2012	Masson pine	S-4		BLS-3
		83	4	1.4	1.8	2011.1	Masson pine	S-4		BLS-3
		83	4	1.2	8.9	2011.1	Masson pine	S-4		BLS-3
	machang	113	8	6	8.3	2008	Choerospondias axillaris	S-16	LL84	BLS-4
		113	8	8	2.5	2008	Choerospondias axillaris	S-16		BLS-4
		84	4	4	12.1	2011.1	Chinese fir	S-8		BLS-4
		81	3	1.1	1.7	201106	Chinese fir	S-8		BLS-4
		83	3	2.3	4.3	201103	Chinese fir	S-8		BLS-4
		83	4	5.1	8.2	2011.1	Chinese fir	S-8		BLS-3
		83	4	2.1	11.3	2011.1	Chinese fir	S-8	LL65	BLS-3
		83	3	2.1	2	201103	Chinese fir	S-8		BLS-4
		83	4	1.3	1.3	2011.1	Chinese fir	S-8		BLS-3
		83	3	1.3	5.5	2011	Chinese fir	S-8		BLS-4
		98	5	2.2	3.5	2012	Choerospondias axillaris	S-17		BLS-3
		98	5	1.1	1.6	2012	Choerospondias axillaris	S-17		BLS-3
		98	4	3.1	2.9	2008	Choerospondias axillaris	S-16		BLS-4
		98	4	2.1	1.6	2008	Choerospondias axillaris	S-16		BLS-4
		98	5	5.1	2.5	2008	Choerospondias axillaris	S-16		BLS-3
		98	5	6.1	4	2008	Choerospondias axillaris	S-16		BLS-3
	xinli	98	5	3.1	0.3	2008	Choerospondias axillaris	S-16		BLS-3
		98	5	2.1	3.3	2008	Choerospondias axillaris	S-16		BLS-3
		98	5	1.2	3.3	2008	Choerospondias axillaris	S-16		BLS-3
		98	5	1.3	1.6	2008	Choerospondias axillaris	S-16		BLS-3
		98	5	4.1	1.5	2008	Choerospondias axillaris	S-16		BLS-3
		98	5	4.2	4.8	2008	Choerospondias axillaris	S-16	LL77	BLS-3
		95	4	1.1	11.4	201103	Shiny-bark birch	S-15		BLS-4
		105	6	1.8	1	2009	Shiny-bark birch	S-12		BLS-3

		94	1	4	14.6	2012	Chinese fir	S-8	LL72	BLS-4
		94	2	1	13.2	2012	Chinese fir	S-8		BLS-4
		105	6	2	31.3	2010	Chinese fir	S-8	LL80	BLS-3
		105	6	3.1	18.2	2010	Chinese fir	S-8	LL82	BLS-3
		105	6	3.2	0.8	2010	Chinese fir	S-8		BLS-3
		105	6	1.6	0.8	2010	Chinese fir	S-8		BLS-3
		105	7	2.1	3.3	2010	Chinese fir	S-8		BLS-4
		105	6	3.3	3.5	2010	Chinese fir	S-8		BLS-3
		105	6	1.4	5	2010	Chinese fir	S-8		BLS-3
		105	6	3.4	0.9	2012	Chinese fir	S-8		BLS-3
		105	6	3.8	0.3	2011.1	Chinese fir	S-8		BLS-3
		94	1	3.2	13	2012	Chinese fir	S-8		BLS-4
		94	1	3.1	2.9	2011	Chinese fir	S-8		BLS-4
		105	6	3.6	0.7	2010	Chinese fir	S-8		BLS-3
		105	7	3.2	0.6	2010	Chinese fir	S-8		BLS-4
		105	7	3.3	0.5	2010	Chinese fir	S-8		BLS-4
		105	7	2.5	0.5	2011.1	Chinese fir	S-8		BLS-4
		105	7	2.8	0.6	2011.1	Chinese fir	S-8		BLS-4
		105	7	3.4	4.5	2011.1	Chinese fir	S-8	LL83	BLS-4
		105	7	2.6	1.3	2012	Chinese fir	S-8		BLS-4
		105	6	3.5	2.7	2010	Chinese fir	S-8		BLS-3
		105	7	4.1	6.8	2010	Chinese fir	S-8		BLS-4
		105	7	3.5	2	2012	Chinese fir	S-8		BLS-4
		105	6	3.9	0.2	2011	Chinese fir	S-8		BLS-3
		105	7	2.2	14.1	2011.1	Chinese fir	S-8		BLS-4
		105	7	4.2	5.3	2012	Chinese fir	S-8		BLS-4
		105	7	3.1	6.3	2010	Chinese fir	S-8		BLS-4
		92	1	5	11.1	2011	Chinese fir	S-8		BLS-4
		105	7	1.1	4.2	2010	Chinese fir	S-6		BLS-4
		105	6	1.7	1.8	2009	Chinese fir	S-5		BLS-3
		105	6	1.2	2.7	2009	Chinese fir	S-5		BLS-3
		105	6	1.5	1.6	2010	Chinese fir	S-5		BLS-3
	xinmin	84	1	3.4	1.1	2012	Masson pine	S-4		BLS-4
		84	1	2.2	1	2012	Masson pine	S-4		BLS-4
		84	1	2.5	3.9	2012	Masson pine	S-4		BLS-4
		84	1	1.2	0.4	2012	Masson pine	S-4		BLS-4
		84	1	1.3	6.4	2012	Masson pine	S-4		BLS-4
		96	1	11.1	3.9	2009	Shiny-bark birch	S-14		BLS-4
		96	1	10.3	0.4	2009	Shiny-bark birch	S-14		BLS-4
		84	1	1.1	3.9	2009	Shiny-bark birch	S-14		BLS-4
		84	1	7.1	8.9	2009	Shiny-bark birch	S-14		BLS-4
		84	1	1.3	0.3	2009	Shiny-bark birch	S-14		BLS-4
		84	1	4.1	6.8	2009	Shiny-bark birch	S-14	LL66	BLS-4
		84	1	2.1	6.2	2009	Shiny-bark birch	S-14		BLS-4
		84	1	5.1	11.5	2009	Shiny-bark birch	S-14		BLS-4
		84	1	8.4	0.1	2009	Shiny-bark birch	S-14		BLS-4
		84	1	9.1	4.8	2009	Shiny-bark birch	S-14		BLS-4
		84	1	10.1	2.9	2009	Shiny-bark birch	S-14		BLS-4
		84	2	2	5.1	2009	Shiny-bark birch	S-14		BLS-4

		84	1	3.1	6.3	2009	Shiny-bark birch	S-14	LL62	BLS-4
		84	1	3.6	3.3	2009	Shiny-bark birch	S-14		BLS-4
		84	1	8.1	8.4	2009	Shiny-bark birch	S-14		BLS-4
		84	1	8.7	3	2009	Shiny-bark birch	S-14		BLS-4
		84	1	6.1	9.1	2009	Shiny-bark birch	S-14		BLS-4
shali	weirao	29	1	1.1	9.9	2012	Masson pine	S-4		BLS-3
		29	1	2.1	4.1	2012	Masson pine	S-4		BLS-3
		28	3	5	5.3	2012	Masson pine	S-4		BLS-3
		28	3	1	7.5	2012	Masson pine	S-4	LL9	BLS-3
		28	3	3	5	2012	Masson pine	S-4		BLS-3
		28	3	4	16.8	2012	Masson pine	S-4		BLS-3
		28	3	2	11.6	2012	Masson pine	S-4		BLS-3
		31	7	3.2	4.7	2009	Masson pine	S-2		BLS-4
		33	7	2.2	0.3	2009	Masson pine	S-2		BLS-4
		30	7	5.2	0.7	2009	Masson pine	S-2		BLS-4
		30	7	6.2	7	2009	Masson pine	S-2		BLS-4
		30	7	7.2	0.7	2009	Masson pine	S-2		BLS-4
		32	7	4.1	2.2	2009	Masson pine	S-2		BLS-4
longhuo	weiling	74	2	3.1	5.5	2012	Choerospondias axillaris	S-17		BLS-4
		74	2	4.1	2.9	2012	Choerospondias axillaris	S-17		BLS-4
		74	3	1.1	2	2012	Choerospondias axillaris	S-17		BLS-3
		74	2	1.2	3.3	2012	Choerospondias axillaris	S-17		BLS-4
		74	2	1.1	4.3	2012	Choerospondias axillaris	S-17	LL52	BLS-4
		74	2	2.3	1.4	2012	Choerospondias axillaris	S-17		BLS-4
		74	2	2.2	1.6	2008	Choerospondias axillaris	S-16		BLS-4
		74	2	1.3	1.4	2008	Choerospondias axillaris	S-16		BLS-4
		74	2	1.4	3.7	2008	Choerospondias axillaris	S-16		BLS-4
		74	2	2.1	0.7	2008	Choerospondias axillaris	S-16	LL53	BLS-4
	yutang	67	4	5.2	0.6	2008	Shiny-bark birch	S-14		BLS-4
		66	1	6.1	3.7	2008	Shiny-bark birch	S-14	LL46	BLS-4
		66	1	2.1	1.2	2008	Shiny-bark birch	S-14		BLS-4
		66	1	1.2	4.2	2008	Shiny-bark birch	S-14		BLS-4
		66	1	3.2	0.1	2008	Shiny-bark birch	S-14		BLS-4
		65	1	5.2	5.1	2008	Shiny-bark birch	S-14		BLS-4
		65	4	3.2	3	2008	Shiny-bark birch	S-14		BLS-4
		66	4	4.3	2.7	2008	Shiny-bark birch	S-14		BLS-4
		66	4	4.4	0.4	2008	Shiny-bark birch	S-14		BLS-4
		66	4	2.1	1	2008	Shiny-bark birch	S-14		BLS-4
		67	4	2.3	0.3	2008	Shiny-bark birch	S-14		BLS-4
		65	4	1.1	1.8	2008	Shiny-bark birch	S-14		BLS-4
		65	4	1.1	0.6	2008	Shiny-bark birch	S-14		BLS-4
		66	1	3.2	0	2008	Shiny-bark birch	S-14		BLS-4
		65	1	4.2	0.8	2008	Shiny-bark birch	S-14		BLS-4
longtan	longtai	124	11	1.7	1.5	2008	Chinese fir	S-6		BLS-4

		127	18	2.1	0.7	2008	Chinese fir	S-5		BLS-4
		127	16	1.2	6	2008	Chinese fir	S-5		BLS-4
		123	11	1.5	11.8	2008	Chinese fir	S-5		BLS-4
		124	11	1.6	1.9	2008	Chinese fir	S-5		BLS-4
	pingtai	131	4	13.1	2.1	2008	Chinese fir	S-7		BLS-4
		128	4	1.1	0.9	2008	Chinese fir	S-8		BLS-4
		128	4	2.1	0.5	2008	Chinese fir	S-8		BLS-4
		137	4	10.1	2.8	2008	Chinese fir	S-6		BLS-4
		133	5	1.1	1	2008	Chinese fir	S-6		BLS-4
		137	9	1.1	2.3	2008	Chinese fir	S-6		BLS-4
		138	9	2.1	0.7	2008	Chinese fir	S-6		BLS-4
		138	9	3.1	1.4	2008	Chinese fir	S-6		BLS-4
		130	4	6.2	1	2008	Chinese fir	S-6		BLS-4
		135	4	11.2	0.5	2008	Chinese fir	S-6		BLS-4
		137	4	9.2	7.9	2008	Chinese fir	S-6	LL95	BLS-4
		138	5	3.1	5.6	2008	Chinese fir	S-6		BLS-4
		138	5	5.2	12.3	2008	Chinese fir	S-6		BLS-4
		138	5	6.4	7.2	2008	Chinese fir	S-6		BLS-4
		137	5	2.3	0.4	2008	Chinese fir	S-6		BLS-4
		137	5	2.2	0.2	2008	Chinese fir	S-6		BLS-4
		129	4	5.1	10.3	2008	Chinese fir	S-6		BLS-4
		130	4	5.4	0.9	2008	Chinese fir	S-6		BLS-4
		129	4	3.2	0.6	2008	Chinese fir	S-6		BLS-4
		129	5	4.2	6	2008	Chinese fir	S-6		BLS-4
		129	4	3.1	14.6	2008	Chinese fir	S-5	LL93	BLS-4
		129	5	4.1	9.5	2008	Chinese fir	S-5		BLS-4
		129	4	7.1	6.7	2008	Chinese fir	S-5		BLS-4
		132	4	12.1	5.7	2008	Chinese fir	S-5	LL94	BLS-4
		134	4	12.3	0.3	2008	Chinese fir	S-5		BLS-4
		129	4	4.1	10.2	2008	Chinese fir	S-5		BLS-4
		138	5	6.3	6.2	2008	Chinese fir	S-5		BLS-4
		138	5	5.1	5.5	2008	Chinese fir	S-5		BLS-4
kechang	haichang	102	10	5.1	1.3	2009	Chinese fir	S-7		BLS-4
		100	11	1.1	1	2008	Shiny-bark birch	S-15		BLS-4
		101	11	3.1	1.2	2008	Shiny-bark birch	S-15		BLS-4
		104	11	4.1	6.1	2008	Shiny-bark birch	S-15		BLS-4
		98	12	4.1	3.8	2008	Shiny-bark birch	S-15		BLS-3
		103	12	5.1	0.4	2008	Shiny-bark birch	S-15		BLS-4
		98	12	6.1	0.7	2008	Shiny-bark birch	S-15		BLS-3
		98	12	7.1	0.2	2008	Shiny-bark birch	S-15		BLS-3
		98	12	1.1	7	2008	Shiny-bark birch	S-15		BLS-3
		100	11	2.2	0.6	2008	Shiny-bark birch	S-15		BLS-4
		98	12	3.1	9	2008	Shiny-bark birch	S-15	LL75	BLS-3
		105	10	2	4.3	2009	Shiny-bark birch	S-12		BLS-4
		99	12	2.1	0.3	2008	Shiny-bark birch	S-12		BLS-4
		98	12	1.2	4.4	2008	Shiny-bark birch	S-12		BLS-3
		100	11	2.1	3.3	2008	Shiny-bark birch	S-12		BLS-4
		105	10	6.3	1.6	2009	Chinese fir	S-8		BLS-4
		102	10	5.3	0.9	2009	Chinese fir	S-8		BLS-4

		102	10	6.2	2.3	2009	Chinese fir	S-8		BLS-4
		105	10	6.4	8.6	2009	Chinese fir	S-8		BLS-4
		102	10	5.2	5	2009	Chinese fir	S-5	LL73	BLS-4
	heping	105	5	2.4	0.6	2009	Chinese fir	S-7		BLS-4
		108	4	3.1	2.8	2009	Chinese fir	S-7		BLS-3
		110	4	9.2	4	2009	Chinese fir	S-8		BLS-3
		105	1	4	13.7	2009	Shiny-bark birch	S-12	LL78	BLS-3
		105	1	5	12	2009	Shiny-bark birch	S-12		BLS-3
		105	5	7	12.7	2009	Shiny-bark birch	S-12		BLS-4
		105	5	11.1	10.3	2009	Shiny-bark birch	S-12		BLS-4
		105	5	6.1	15.1	2009	Shiny-bark birch	S-12	LL79, LL81	BLS-4
		105	5	6.2	1.9	2009	Shiny-bark birch	S-12		BLS-4
		105	5	3.2	6.1	2009	Shiny-bark birch	S-12		BLS-4
		105	4	12.1	1.2	2009	Shiny-bark birch	S-12		BLS-3
		107	4	2.2	0.3	2009	Shiny-bark birch	S-12		BLS-3
		106	4	2.3	0.3	2009	Shiny-bark birch	S-12		BLS-3
		108	4	2.1	1.6	2009	Shiny-bark birch	S-12		BLS-3
		105	5	10.1	11.3	2009	Shiny-bark birch	S-12		BLS-4
		108	4	4	10.9	2009	Shiny-bark birch	S-12		BLS-3
		108	4	6.1	0.4	2009	Shiny-bark birch	S-12		BLS-3
		105	4	1.3	0.1	2009	Shiny-bark birch	S-12		BLS-3
		105	4	1.1	10.7	2009	Shiny-bark birch	S-12		BLS-3
		108	4	5.2	10.8	2009	Shiny-bark birch	S-12		BLS-3
		105	5	9.1	4	2009	Shiny-bark birch	S-12		BLS-4
		105	5	11.3	0.3	2009	Shiny-bark birch	S-12		BLS-4
		105	5	4.3	1	2009	Shiny-bark birch	S-12		BLS-4
		105	1	2.2	1	2009	Shiny-bark birch	S-12		BLS-3
		108	4	3.2	13.5	2009	Shiny-bark birch	S-12		BLS-3
		105	5	5.4	9.8	2009	Shiny-bark birch	S-12		BLS-4
		108	4	7.2	3.4	2009	Shiny-bark birch	S-12		BLS-3
		108	4	7.3	0.5	2009	Shiny-bark birch	S-12		BLS-3
		108	4	7.5	1.6	2009	Shiny-bark birch	S-12	LL76	BLS-3
		108	4	8.5	1.9	2009	Shiny-bark birch	S-12		BLS-3
		105	4	13.1	8.1	2009	Shiny-bark birch	S-12		BLS-3
		105	4	13.4	7.7	2009	Shiny-bark birch	S-12		BLS-3
		105	5	2.3	3.7	2009	Shiny-bark birch	S-12		BLS-4
		105	5	2.5	1.3	2009	Shiny-bark birch	S-12		BLS-4
		105	5	3.1	2.6	2009	Shiny-bark birch	S-12		BLS-4
		105	5	5.5	0	2009	Shiny-bark birch	S-12		BLS-4
		105	1	3.1	6.9	2009	Shiny-bark birch	S-12		BLS-3
		109	4	10.2	0.3	2009	Chinese fir	S-8		BLS-3
		109	4	8.2	0.3	2009	Chinese fir	S-8		BLS-3
		109	4	6.3	1.4	2009	Chinese fir	S-8		BLS-3
		108	4	8.6	0.9	2009	Chinese fir	S-8		BLS-3
		108	2	2.3	5.7	2009	Chinese fir	S-8		BLS-3
		108	2	1.3	4.2	2009	Chinese fir	S-8		BLS-3
		105	5	5.1	4	2009	Chinese fir	S-8		BLS-4
		108	4	3.3	0.7	2009	Chinese fir	S-8		BLS-3
		105	5	2.1	2.6	2009	Chinese fir	S-8		BLS-4

		110	4	8.3	1.7	2011.1	Chinese fir	S-8		BLS-3
		108	4	6.2	4.8	2011.1	Chinese fir	S-8		BLS-3
		108	4	7.1	8.9	2011.1	Chinese fir	S-8		BLS-3
		108	4	8.1	0.5	2011.1	Chinese fir	S-8	LL74	BLS-3
		108	4	5.3	4.5	2011.1	Chinese fir	S-8		BLS-3
		110	4	9.1	1.9	2011.1	Chinese fir	S-8		BLS-3
		110	4	9.3	1	2011.1	Chinese fir	S-8		BLS-3
		110	4	10.3	1.9	2011.1	Chinese fir	S-8		BLS-3
		110	4	10.4	0.3	2011.1	Chinese fir	S-8		BLS-3
		105	4	1.4	2	2009	Chinese fir	S-8		BLS-3
		105	5	5.9	0	2009	Chinese fir	S-8		BLS-4
		108	2	1.2	1.3	2009	Chinese fir	S-8		BLS-3
		108	2	2.2	0.8	2009	Chinese fir	S-8		BLS-3
		108	1	1.1	0.1	2009	Chinese fir	S-8		BLS-3
		105	1	2.5	1.7	2009	Chinese fir	S-8		BLS-3
		105	1	2.4	0.8	2009	Chinese fir	S-8		BLS-3
		105	5	4.2	3.7	2009	Chinese fir	S-8		BLS-4
		105	1	2.1	2.1	2010	Chinese fir	S-6		BLS-3
		105	1	3.2	5.2	2009	Chinese fir	S-5		BLS-3
		105	5	5.3	1.1	2009	Chinese fir	S-5		BLS-4
		105	5	5.8	0.4	2009	Chinese fir	S-5		BLS-4
		105	1	2.4	2.1	2009	Chinese fir	S-5		BLS-3
		105	5	5.2	0.6	2009	Chinese fir	S-5		BLS-4
		105	5	9.2	0.6	2009	Chinese fir	S-5		BLS-4
		105	5	9.3	2.5	2009	Chinese fir	S-5		BLS-4
		112	5	9.5	1.2	2009	Chinese fir	S-5		BLS-4
		108	4	2.5	1.1	2009	Chinese fir	S-5		BLS-3
		105	5	10.4	1.1	2009	Chinese fir	S-5		BLS-4
		111	5	2.2	1.1	2009	Chinese fir	S-5		BLS-4
		105	5	4.1	5.8	2009	Chinese fir	S-5		BLS-4
		108	1	1.3	3.4	2009	Chinese fir	S-5		BLS-3
		105	1	1.4	4.1	2009	Chinese fir	S-5		BLS-3
		105	1	2.3	2.4	2009	Chinese fir	S-5		BLS-3
		108	2	1.4	2.8	2010	Chinese fir	S-5		BLS-3
		108	2	2.4	2.9	2009	Chinese fir	S-5		BLS-3
		112	5	8	6.7	2010	Shiny-bark birch	S-15		BLS-4
	keniang	72	4	1.1	8.9	2012	Choerospondias axillaris	S-17	LL51	BLS-4
		72	4	2.1	11.9	2012	Choerospondias axillaris	S-17		BLS-4
		73	4	3.1	0.7	2012	Choerospondias axillaris	S-17		BLS-4
		72	2	1.1	13.1	2012	Choerospondias axillaris	S-17	LL50	BLS-4
		72	2	2.1	6.7	2012	Choerospondias axillaris	S-17		BLS-4
		72	7	2.2	1.9	2012	Choerospondias axillaris	S-17		BLS-2
		71	7	1.1	3.6	2012	Choerospondias axillaris	S-17		BLS-2
		72	7	2.1	10.5	2008	Shiny-bark birch	S-15		BLS-2
jinzhongshan	malan	68	15	1.1	1.3	2008	Shiny-bark birch	S-11		BLS-4

		70	20	1	20.5	2008	Shiny-bark birch	S-11	LL48, LL49	BLS-4
		70	20	2	7	2008	Shiny-bark birch	S-11		BLS-4
		70	20	3	12.7	2008	Shiny-bark birch	S-11		BLS-4
		70	16	3	1	2008	Shiny-bark birch	S-11		BLS-4
		68	16	2.2	2.7	2008	Shiny-bark birch	S-11	LL47	BLS-4
		68	16	1	0.5	2008	Shiny-bark birch	S-4		BLS-4
		68	16	2.1	4.5	2008	Shiny-bark birch	S-4		BLS-4
		68	15	1.2	0.4	2008	Shiny-bark birch	S-4		BLS-4
		68	16	2.3	1.1	2008	Shiny-bark birch	S-4		BLS-4
		69	16	4	8.3	2008	Chinese fir	S-8		BLS-4
		69	17	1	1.4	2008	Chinese fir	S-8		BLS-4
	wuchong	49	1	1	9.1	2012	Masson pine	S-4		BLS-2
		49	1	3	12.4	2012	Masson pine	S-4		BLS-2
		49	1	4	14.7	2012	Masson pine	S-4		BLS-2
		49	1	5	19.8	2012	Masson pine	S-4		BLS-2
		49	1	6	10.5	2012	Masson pine	S-4		BLS-2
		49	1	7	15.9	2012	Masson pine	S-4	LL23	BLS-2
		49	1	9	8.2	2012	Masson pine	S-4		BLS-2
		49	1	10	14.3	2012	Masson pine	S-4	LL27	BLS-2
		49	1	12	13.4	2012	Masson pine	S-4		BLS-2
		49	1	13	14.6	2012	Masson pine	S-4	LL30	BLS-2
		49	1	20	16.3	2012	Masson pine	S-4		BLS-2
		49	2	5	17	2011	Masson pine	S-4		BLS-2
		49	2	6	12.5	2011	Masson pine	S-4		BLS-2
		49	2	7	19.6	2011	Masson pine	S-4		BLS-2
		49	3	4	17.7	2011	Masson pine	S-4	LL19	BLS-2
		49	3	5	18.1	2011	Masson pine	S-4	LL21	BLS-2
		49	1	2	31.5	2012	Masson pine	S-4	LL20	BLS-2
		49	1	8	14.3	2012	Masson pine	S-4	LL24, LL25	BLS-2
		49	1	11	14.9	2012	Masson pine	S-4		BLS-2
		49	3	2	18	2011	Masson pine	S-4		BLS-2
		49	3	3	14.5	2011	Masson pine	S-4		BLS-2
		49	2	8	8.9	2012	Masson pine	S-4		BLS-2
		49	2	9	4.1	2012	Masson pine	S-4		BLS-2
		49	2	4	3.1	2011	Masson pine	S-4		BLS-2
		49	2	18	11.5	2012	Masson pine	S-4		BLS-2
		49	2	17	19.8	2012	Masson pine	S-4		BLS-2
		49	2	19	17.3	2012	Masson pine	S-4		BLS-2
		49	2	10	1.9	2012	Masson pine	S-4		BLS-2
		49	2	3	15.3	2011	Masson pine	S-4		BLS-2
		49	3	1	4.9	2011	Masson pine	S-4		BLS-2
		49	2	14	20.1	2009	Masson pine	S-3	LL31	BLS-2
		49	2	15	20.3	2009	Masson pine	S-3		BLS-2
		49	2	16	17.3	2009	Masson pine	S-3		BLS-2
		49	2	13	8.9	2009	Masson pine	S-3	LL33	BLS-2
		49	2	12	10.4	2009	Masson pine	S-3		BLS-2
		49	2	11	16.5	2009	Masson pine	S-3		BLS-2
		49	2	10	3.5	2009	Masson pine	S-3		BLS-2

		49	2	2	6.4	2011	Masson pine	S-4		BLS-2
		48	2	1	0.4	2011	Masson pine	S-4		BLS-2
jieting	nada	139	15	4	9	2012	Chinese fir	S-8	LL96	BLS-4
		139	15	5	9.1	2012	Chinese fir	S-8		BLS-4
		139	16	1	17.9	2012	Chinese fir	S-8	LL97, LL98	BLS-4
		139	16	2	13	2012	Chinese fir	S-8	LL99	BLS-4
		139	16	3	12.3	2012	Chinese fir	S-8		BLS-4
		139	15	2	12.5	2012	Chinese fir	S-8		BLS-4
		139	15	3	14.3	2012	Chinese fir	S-8		BLS-4
		139	15	6	12.7	2012	Chinese fir	S-8		
	nasang	119	11	1.2	0.6	2008	Shiny-bark birch	S-15		BLS-3
		119	11	3.1	2.7	2008	Shiny-bark birch	S-15		BLS-3
		119	18	1.2	1.4	2008	Shiny-bark birch	S-15		BLS-3
		119	18	1.5	2.6	2008	Shiny-bark birch	S-15		BLS-3
		119	18	1.4	0.7	2008	Shiny-bark birch	S-15		BLS-3
		119	11	2.2	2.9	2008	Shiny-bark birch	S-15		BLS-3
		119	11	2.3	0.2	2008	Shiny-bark birch	S-15		BLS-3
		119	18	3.2	6.6	2008	Shiny-bark birch	S-15	LL86	BLS-3
		119	18	2.1	12.1	2008	Shiny-bark birch	S-15		BLS-3
		119	18	1.7	9.4	2008	Shiny-bark birch	S-15		BLS-3
		119	18	1.1	1.2	2008	Shiny-bark birch	S-15		BLS-3
		117	16	3	2.4	2008	Chinese fir	S-8		BLS-3
		117	16	1.1	2.1	2008	Chinese fir	S-8		BLS-3
		118	16	5.2	2.9	2008	Chinese fir	S-8	LL85	BLS-3
		117	16	4.2	9.9	2008	Chinese fir	S-8		BLS-3
		114	12	1.2	4.9	2008	Chinese fir	S-8		BLS-3
		116	12	2.1	3.2	2008	Chinese fir	S-8		BLS-3
		117	16	2.1	7.9	2008	Chinese fir	S-8		BLS-3
	naxi	139	9	4	16.3	2012	Chinese fir	S-8		BLS-4
		139	9	6	9.2	2012	Chinese fir	S-8		BLS-4
		139	9	3	17.8	2012	Chinese fir	S-8		BLS-4
		139	9	5	13.2	2012	Chinese fir	S-8		BLS-4
		139	9	2	4.8	2012	Chinese fir	S-8		BLS-4
		139	9	1	20.9	2012	Chinese fir	S-8		BLS-4
gebu	hongyan	46	9	2.2	0.3	2009	Chinese fir	S-7		BLS-2
		46	8	14.2	0.2	2009	Chinese fir	S-7		BLS-2
		46	8	13.1	0.2	2009	Chinese fir	S-7		BLS-2
		46	8	11.2	0.4	2009	Chinese fir	S-7		BLS-2
		46	8	7.3	1.3	2009	Chinese fir	S-7		BLS-2
		46	8	8.3	0.5	2009	Chinese fir	S-7		BLS-2
		46	8	8.4	0.8	2009	Chinese fir	S-7		BLS-2
		46	8	7.1	0.2	2009	Chinese fir	S-7		BLS-2
		46	8	7.2	1.2	2009	Chinese fir	S-7		BLS-2
		46	8	8.2	0.2	2009	Chinese fir	S-7		BLS-2
		46	9	1.1	1.5	2009	Chinese fir	S-7		BLS-2
		46	9	1.2	1.3	2009	Chinese fir	S-7		BLS-2
		46	8	5.1	8.2	2012	Masson pine	S-4		BLS-2
		46	8	6.1	8.8	2012	Masson pine	S-4		BLS-2
		46	8	13.1	17.9	2012	Masson pine	S-4	LL17	BLS-2

		46	8	11.3	0.2	2012	Masson pine	S-4		BLS-2
		46	8	12.1	0.2	2012	Masson pine	S-4		BLS-2
		46	8	11.2	0.4	2012	Masson pine	S-4		BLS-2
		46	8	12.1	1.3	2012	Masson pine	S-4		BLS-2
		46	9	1.3	9.3	2012	Masson pine	S-4	LL14	BLS-2
		46	8	10.3	3.6	2012	Masson pine	S-4		BLS-2
		46	8	14.1	9.4	2012	Masson pine	S-4		BLS-2
		46	8	11.1	15.3	2012	Masson pine	S-4	LL16	BLS-2
		46	8	12.4	17.1	2012	Masson pine	S-4		BLS-2
		46	9	2.1	19.3	2012	Masson pine	S-4		BLS-2
		46	8	7.1	15.6	2012	Masson pine	S-4	LL15	BLS-2
		46	8	8.1	8.1	2012	Masson pine	S-4		BLS-2
		46	8	9.1	18.6	2012	Masson pine	S-4		BLS-2
		36	1	2.1	3.6	2009	Masson pine	S-3		BLS-4
		36	3	1.1	7.9	2009	Masson pine	S-3		BLS-4
		35	1	1.1	6.3	2009	Masson pine	S-3		BLS-4
		35	3	2.1	0.4	2009	Masson pine	S-3		BLS-4
		46	8	10.2	4.6	2011.1	Chinese fir	S-8		BLS-2
		46	8	8.5	0.8	2011.1	Chinese fir	S-8		BLS-2
		46	8	8.6	0.5	2011.1	Chinese fir	S-8		BLS-2
		46	8	9.1	1.7	2011.1	Chinese fir	S-8		BLS-2
		46	8	12.2	0.3	2011	Chinese fir	S-8		BLS-2
		46	8	12.1	0.2	2011	Chinese fir	S-8		BLS-2
		46	8	14.1	1.1	2011	Chinese fir	S-8		BLS-2
		46	8	11.3	0.3	2011	Chinese fir	S-8		BLS-2
		46	8	12.3	0.1	2011	Chinese fir	S-8		BLS-2
	zhejiang	20	6	3.2	4.7	2011	Masson pine	S-4		BLS-4
		20	6	2.1	13.5	2010	Masson pine	S-4		BLS-4
		20	6	1.2	1.7	2010	Masson pine	S-4		BLS-4
		20	6	3.1	11.5	2010	Masson pine	S-4		BLS-4
		20	6	1.1	7.2	2008	Masson pine	S-2		BLS-4
	zheyan	21	8	8.1	8.2	2009	Masson pine	S-4		BLS-2
		21	8	19.1	9.1	2009	Masson pine	S-4	LL6	BLS-2
		25	8	20.1	0.8	2009	Masson pine	S-3		BLS-2
		26	8	21.1	0.2	2009	Masson pine	S-3		BLS-2
		23	8	5.1	12.2	2009	Masson pine	S-3	LL7	BLS-2
		24	8	6.1	14.2	2009	Masson pine	S-3		BLS-2
		24	8	22.2	1.6	2009	Masson pine	S-3		BLS-2
		24	8	22.3	2.3	2009	Masson pine	S-3		BLS-2
		22	8	23.1	0.7	2009	Masson pine	S-3		BLS-2
		27	8	16.1	6.3	2009	Masson pine	S-2		BLS-2
		27	8	15.1	6.5	2009	Masson pine	S-2	LL8	BLS-2
		24	8	22.1	5.1	2009	Masson pine	S-2		BLS-2
	zuoteng	34	4	1.1	0.7	2008	Masson pine	S-3		BLS-4
		34	4	3.1	1.6	2008	Masson pine	S-3		BLS-4
		34	4	2.1	0.6	2008	Masson pine	S-3		BLS-4
		34	2	1.1	3.7	2008	Masson pine	S-3		BLS-4
		34	2	2.1	2.5	2008	Masson pine	S-3		BLS-4
		34	2	3.1	11.5	2008	Masson pine	S-3		BLS-4

		34	2	4.1	5.6	2008	Masson pine	S-3	LL10	BLS-4
		34	2	5.1	14.2	2008	Masson pine	S-3		BLS-4
		34	2	6.1	8.4	2008	Masson pine	S-3		BLS-4
		42	6	3.1	8.3	2008	Masson pine	S-3		BLS-4
		40	6	2.1	2.8	2008	Masson pine	S-3		BLS-4
		41	6	1.1	8.5	2008	Masson pine	S-3	LL13	BLS-4
de'e	bake	80	12	4.4	4.2	2008	Masson pine	S-4		BLS-4
		80	12	4.8	0.8	2008	Masson pine	S-4		BLS-4
		80	12	4.2	0.4	2008	Masson pine	S-4		BLS-4
		80	12	4.5	0.3	2008	Masson pine	S-4	LL56	BLS-4
		80	12	3.1	1.2	2008	Masson pine	S-4		BLS-4
		78	12	1.1	4.3	2008	Masson pine	S-4		BLS-4
		77	12	1.6	0.1	2008	Masson pine	S-4		BLS-4
		78	12	1.2	1.1	2008	Masson pine	S-4		BLS-4
		80	12	5.1	8.8	2008	Masson pine	S-4		BLS-4
		80	12	3.2	2.1	2008	Masson pine	S-4		BLS-4
		80	12	3.3	0.3	2008	Masson pine	S-4		BLS-4
		80	12	4.1	6	2008	Masson pine	S-4		BLS-4
		80	12	4.9	0	2008	Masson pine	S-4		BLS-4
		80	12	4.6	0	2008	Masson pine	S-4		BLS-4
	jinping	78	2	2.1	4.3	2008	Masson pine	S-4		BLS-4
		76	2	1	4.6	2008	Shiny-bark birch	S-15		BLS-4
		90	4	2	0.1	2008	Shiny-bark birch	S-15		BLS-4
		91	4	6	4.6	2008	Shiny-bark birch	S-15		BLS-4
		91	4	8	0.2	2008	Shiny-bark birch	S-15		BLS-4
		91	4	7.2	0.4	2008	Shiny-bark birch	S-15		BLS-4
		91	4	5.2	6.6	2008	Shiny-bark birch	S-15		BLS-4
		91	4	5.1	0.5	2008	Shiny-bark birch	S-15		BLS-4
		91	4	4.1	6.3	2008	Shiny-bark birch	S-15		BLS-4
		76	2	2.2	2.1	2008	Shiny-bark birch	S-15	LL57	BLS-4
		91	4	7.1	3.5	2008	Shiny-bark birch	S-15		BLS-4
		91	4	7.3	3	2008	Shiny-bark birch	S-15		BLS-4
		91	4	5.5	2.3	2008	Shiny-bark birch	S-15		BLS-4
		91	4	5.3	2.7	2008	Shiny-bark birch	S-15		BLS-4
		91	4	3.4	4	2008	Shiny-bark birch	S-15		BLS-4
		89	4	1	0.7	2008	Shiny-bark birch	S-15		BLS-4
		91	4	7.4	0.5	2008	Shiny-bark birch	S-12		BLS-4
		91	4	4.2	2.5	2008	Shiny-bark birch	S-12		BLS-4
		76	2	2.1	5.6	2008	Shiny-bark birch	S-12		BLS-4
		91	4	3.3	2	2008	Shiny-bark birch	S-12		BLS-4
		91	4	3.1	1.7	2008	Shiny-bark birch	S-12	LL60	BLS-4
		91	4	5.4	3.4	2008	Shiny-bark birch	S-12		BLS-4
	yantou	79	2	1.1	5.5	2008	Masson pine	S-4		BLS-4
		77	1	3.2	0.6	2008	Masson pine	S-4		BLS-4
		77	1	3.1	0	2008	Masson pine	S-4		BLS-4
		88	6	1	1.3	2008	Shiny-bark birch	S-15		BLS-4
changme	longying	55	7	15.3	2.6	2010	Masson pine	S-4		BLS-3
		60	1	2.1	7.1	2009	Flous	S-18		BLS-3
		60	1	1.2	11.1	2009	Flous	S-18		BLS-3

		61	1	5.2	12.2	2009	Flous	S-18	LL39	BLS-3
		61	1	4.2	2.4	2009	Flous	S-18		BLS-3
		63	2	7.1	10.4	2009	Flous	S-18	LL37	BLS-3
		63	2	8.1	5.4	2009	Flous	S-18		BLS-3
		63	2	6.1	14.1	2009	Flous	S-18		BLS-3
		64	2	9.2	0.5	2009	Chinese fir	S-8	LL42	BLS-3
	shuijing	55	7	9.2	4.5	2009	Flous	S-18		BLS-3
		55	7	17.2	2.9	2009	Flous	S-18		BLS-3
		55	7	6.2	4.3	2009	Flous	S-18	LL32	BLS-3
		55	7	4.2	7.4	2009	Flous	S-18		BLS-3
		55	7	1.1	3	2009	Flous	S-18		BLS-3
		55	7	15.1	2	2009	Flous	S-18		BLS-3
		55	7	12.1	8.6	2009	Flous	S-18		BLS-3
		55	7	14.2	4.6	2009	Flous	S-18		BLS-3
		55	7	2.1	12.4	2009	Flous	S-18	LL28	BLS-3
		56	7	2.5	1.4	2009	Flous	S-18		BLS-3
		55	7	13.2	8.1	2009	Flous	S-18		BLS-3
		55	7	13.8	1.5	2009	Flous	S-18		BLS-3
		55	7	13.7	0.2	2009	Flous	S-18		BLS-3
		55	7	18.1	2.5	2009	Flous	S-18		BLS-3
		55	7	13.5	0	2009	Flous	S-18		BLS-3
		58	6	5.2	2.4	2009	Shiny-bark birch	S-13		BLS-3
		58	6	4.1	9	2008	Shiny-bark birch	S-13	LL34	BLS-3
		58	6	3.2	9	2008	Shiny-bark birch	S-13		BLS-3
		58	6	2.5	0.2	2008	Shiny-bark birch	S-13		BLS-3
		58	6	2.1	16.1	2008	Shiny-bark birch	S-13		BLS-3
		58	6	2.4	0.1	2008	Shiny-bark birch	S-13		BLS-3
		57	6	1.1	13.5	2008	Shiny-bark birch	S-13		BLS-3
		55	7	1.2	5	2010	Chinese fir	S-8		BLS-3
		55	7	15.2	13.2	2010	Chinese fir	S-8		BLS-3
changfa	daqing	64	1	1	10.6	2012	Chinese fir	S-8		BLS-3
		64	1	4	15.7	2012	Chinese fir	S-8		BLS-3
		64	1	6	17.4	2012	Chinese fir	S-8		BLS-3
		64	1	7	6.4	2012	Chinese fir	S-8		BLS-3
		64	1	8	18.2	2012	Chinese fir	S-8		BLS-3
		64	1	9	12.6	2012	Chinese fir	S-8		BLS-3
		64	2	2	16.1	2012	Chinese fir	S-8	LL41	BLS-3
		64	2	3	8.6	2012	Chinese fir	S-8		BLS-3
		64	2	5	18.6	2012	Chinese fir	S-8		BLS-3
		64	2	6	9.8	2012	Chinese fir	S-8		BLS-3
		64	2	11	18	2012	Chinese fir	S-8		BLS-3
		64	3	1	21.3	2012	Chinese fir	S-8	LL40	BLS-4
		64	3	2	15	2012	Chinese fir	S-8		BLS-4
		64	3	3	17.9	2012	Chinese fir	S-8		BLS-4
		64	3	8	16.6	2012	Chinese fir	S-8	LL43, LL45	BLS-4
		64	3	9	14	2012	Chinese fir	S-8		BLS-4
		64	3	4.1	6.6	2012	Chinese fir	S-8		BLS-4
		64	3	4.2	7.4	2009	Chinese fir	S-8		BLS-4
		64	3	5.1	1.5	2009	Chinese fir	S-8		BLS-4

		64	1	10.1	12.6	2012	Chinese fir	S-8		BLS-3
		64	1	10.2	1	2009	Chinese fir	S-8		BLS-3
		64	3	5.3	5.1	2011.1	Chinese fir	S-8		BLS-4
		64	2	7.2	0.7	2010	Chinese fir	S-8		BLS-3
		64	2	8.1	15.9	2012	Chinese fir	S-8	LL38	BLS-3
		64	2	8.2	0.1	2010	Chinese fir	S-8		BLS-3
		64	3	7.2	2.4	2011.1	Chinese fir	S-8		BLS-4
		64	3	6	6.3	2011.1	Chinese fir	S-8		BLS-4
		64	1	5	9.6	2012	Chinese fir	S-8	LL36	BLS-3
		64	1	3	18	2012	Chinese fir	S-8		BLS-3
		64	1	2	8.8	2012	Chinese fir	S-8		BLS-3
		64	2	9	15.7	2012	Chinese fir	S-8	LL44	BLS-3
		64	3	7.1	10.9	2012	Chinese fir	S-8		BLS-4
	houchang	64	3	10.1	0.2	2009	Chinese fir	S-8		BLS-3
		64	3	10.3	3.5	2011.1	Chinese fir	S-8		BLS-3
		64	3	1	9.3	2011.1	Chinese fir	S-8		BLS-3
		64	3	2	14.6	2011.1	Chinese fir	S-8		BLS-3
	xinhe	82	9	1	10	2012	Chinese fir	S-8		BLS-4
		84	10	3	10.1	2011.1	Chinese fir	S-8		BLS-4
		84	10	2	13.4	2011.1	Chinese fir	S-8		BLS-4
		84	10	4.1	9.4	2011.1	Chinese fir	S-8		BLS-4
		84	10	1.3	1.6	2011.1	Chinese fir	S-8		BLS-4
		84	10	1.2	6.8	2011.1	Chinese fir	S-8		BLS-4
	xinhua	84	10	1.1	12.4	2011.3	Chinese fir	S-8		BLS-4
		84	10	2.1	14.9	2011.3	Chinese fir	S-8		BLS-4
		84	10	3.1	6	2011.3	Chinese fir	S-8		BLS-4
		84	10	4.1	7.7	2011.3	Chinese fir	S-8		BLS-4
		87	12	1.1	1.4	2011	Chinese fir	S-8	LL59	BLS-4
		87	12	2.2	3	2011	Chinese fir	S-8		BLS-4
		86	11	6.1	1.6	2011	Chinese fir	S-8		BLS-4
		85	11	3.1	3.4	2011	Chinese fir	S-8		BLS-4
		86	11	4.1	11.5	2011	Chinese fir	S-8	LL63	BLS-4
		84	10	6.1	3.2	2011	Chinese fir	S-8		BLS-4
		84	10	5.1	11.4	2011	Chinese fir	S-8	LL58	BLS-4
		85	11	5.2	1.3	2011	Chinese fir	S-8		BLS-4
		86	11	7.1	1	2011	Chinese fir	S-8		BLS-4
		84	9	1.1	5.9	2011	Chinese fir	S-8		BLS-4
bianya	bianya	47	8	1.1	5.2	2008	Shiny-bark birch	S-15		BLS-4
	gonghechang	45	1	4.1	1.6	2008	Shiny-bark birch	S-11		BLS-4
		43	1	1.1	10.3	2008	Shiny-bark birch	S-11		BLS-4
		44	1	1.3	0.6	2008	Shiny-bark birch	S-11		BLS-4
		43	1	2.1	5	2008	Shiny-bark birch	S-11		BLS-4
		45	1	3.3	0.9	2008	Shiny-bark birch	S-11		BLS-4
		43	1	3.2	3.1	2009	Flous	S-18		BLS-4
		43	1	2.3	5.2	2009	Flous	S-18		BLS-4
		47	1	6.1	2.9	2008	Shiny-bark birch	S-15		BLS-4
		43	1	3.1	2	2008	Shiny-bark birch	S-15		BLS-4

Annex II Sub compartment monitoring card

Item	Monitoring record			Comments
Location	County			
	Town/Township			
	Village			
	Compartment			
	Sub-compartment			
Production model	Entity			
	Production arrangements and management models			
Tree species	Species 1			
	Species 2			
	ratio			
Area	Sub-compartment area (ha)			
	Planted area (ha)			
Project boundary	Measurement date	Description of changes		
Site preparation	date			signed evidence shall be archived
	method			
	Size: diameter×depth (cm)			
Fertilization at planting	Type of fertilizer			signed evidence and receipt shall be archived
	Fertilizer name			
	Produced by			
	N、P、K content (%)			
	Date of application			
	Amount applied (kg/tree)			
	Type of vehicle for transport			
	Load （t/vehicle）			
	Number of vehicle			
	Oil consumption (l/100km)			
	Oil type			
	Transport distance (km)			
planting		initial	Re-planting	
	date			
	tree/ha			
Seedlings	Seed source	Initial planting	Re-planting	signed evidence and receipt shall be archived
	Seedling type			
	Seedling age			
	Location of seedlings			
	Date of purchasement			
	Amount			
	Type of vehicle for transport			
	Load （seedlings/vehicle）			
	Number of vehicle			

	Oil consumption (l/100km)			
	Oil type			
	Transport distance (km)			
Survival checking	date			
	Survival rate (%)			
Fertilization after planting	date			signed evidence and receipt shall be archived
	Type of fertilizer			
	Fertilizer name			
	Produced by			
	N、P、K content (%)			
	Date of application			
	Amount applied (kg/tree)			
	Type of vehicle for transport			
	Load （t/vehicle）			
	Number of vehicle			
	Oil consumption (l/100km)			
	Oil type			
	Transport distance (km)			
Tending or thinning	date			
	method			
	activities			
	intensity			
Final survival check	date			
	Survival rate (%)			
Forest pests	date			
	Type of pest			
	Area (ha)			
	Location (GPS boundary)			
	Injured intensity			
	countermeasures			
Forest fire	date			
	Fired area (ha)			
	Location (GPS boundary)			
	Injured intensity			
Harvest or resin collection	date			
	method			
	species			
	Timber output (m3/ha)			
	Resin output(t)			
	Transportation mode			
	Vehicle type			
	Load (M3/vehicle)			
	Load (t resin/vehicle)			
	Number of vehicles			
	Oil consumption (l/100km)			
	Oil type			
	Transport distance (km)			
regeneration	date			

	approach			
	Regeneration condition			

Annex III Field record form template for sampling plot

County ___Township/town ____Village ___ Compartment ID____Subcompartment ID ______,
location ____ stratum ID_____sample plot ID ___ planting time:
Geo-coordinate of sample plot: Longitude: Latitude
No. of landform map: _________Plantation species:

Serial No.	Species	Height (m)	DBH (cm)	Serial No.	Species	Height (m)	DBH (cm)	Serial No.	Species	Height (m)	DBH (cm)
1				51				101			
2				52				102			
3				53				103			
4				54				104			
5				55				105			
6				56				106			
7				57				107			
8				58				108			
9				59				109			
10				60				110			
11				61				111			
12				62				112			
13				63				113			
14				64				114			
15				65				115			
16				66				116			
17				67				117			
18				68				118			
19				69				119			
20				70				120			
21				71				121			
22				72				122			
23				73				123			
24				74				124			
25				75				125			
26				76				126			

27				77				127			
28				78				128			
29				79				129			
30				80				130			
31				81				131			
32				82				132			
33				83				133			
34				84				134			
35				85				135			
36				86				136			
37				87				137			
38				88				138			
39				89				139			
40				90				140			
41				91				141			
42				92				142			
43				93				143			
44				94				144			
45				95				145			
46				96				146			
47				97				147			
48				98				148			
49				99				149			
50				100				150			

Name of measurement: (signature)

Date of measurement: