

ANHUANG AFFORESTATION PROJECT



Document Prepared By Shanghai Libra Investment & Management Co., Ltd

Project Title	Anhuang Afforestation Project
Project ID	2310
Version	03
Report ID	/
Date of Issue	01-September-2022
Project Location	Guizhou Province, China.
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GHG Accounting/ Crediting Period	15-March-2016 ~ 14-March--2046; A total period of 30 years
Monitoring Period of this Report	01-January-2021 ~ 31-December-2021
History of CCB Status	Full Validation Date: 11-February-2021 (CCB Standard Third Edition) First issue of emission reduction: 23-September-2021
Gold Level Criteria	N/A

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1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
1) Improve local production conditions and ecological environment, enhance the quality of life, create a good investment and development environment and play a leading and model role.	During the monitoring period, because of the continuous and healthy growth of 39,000 hectares of trees, the air quality around the forest land has been improved, and due to the indirect impact and secondary effects of the project implementation, the soil quality of the agricultural land with poor soil environment beside the forest land has also been improved. Radix pseudostellariae, Capsicum annuum L and Dendrobium nobile Lindl were planted within the project zone. These economic crops have brought additional income and helped improve the living conditions of local villagers.	5.2	Forests have improved the local soil environment and climatic conditions; increased rainfall and improved soil brought more types of crops and faster growth rate than ever. These endeavors are conducive to the improvement of the ecological environment and economic development of the entire village. At the same time, a stable and good living environment has been created for the villagers.
2) Improved biodiversity	During the monitoring period, 10 species of animals and plants have been discovered including 5 species of animals and 5 species of wild plants. The aforementioned result is the manifestation of achievements since the implementation of this project help boost biodiversity by providing animals and plants with the ideal habitat.	5.3	Through the development of the project, the biodiversity of the project area was improved, so that more and more kinds of animals and plants could be reproduced and inhabited.
3) Provide experience of forest planting and management in Karst region.	Due to the serious soil erosion in karst area and the lack of technology and management experience, it is difficult to plant trees. During the monitoring period, some experiences in afforestation and management in	5.2	Accumulated experience of forest planting and management in Karst areas.

	planting China fir, Masson pine and Cypress in the areas of Karst were accumulated.		
4) Improve the climate and prevent natural disasters.	During the monitoring period, the natural disasters such as mudslides and floods have been reduced.	4.1	The growth of trees builds a forest, which conserve water and soil, prevent flood and drought, sandstorm and dust to avoid a series of natural disasters.
5) Raise the status of women	During the implementation of the project, a total of 80 villagers were employed as the technicians. Among them, women accounted for 60%. Female workers were participating in the project planting and monitoring to gain the working experience and their social status were also raised.	2.3	Through the project, women were encouraged and invited to participate in both tree planting activities and monitoring activities. Employment opportunities and training courses were also provided, which raised the women's social status in local communities.

1.2 Standardized Benefit Metrics

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
GHG emission reductions & removals	Net estimated emission removals in the project area, measured against the without-project scenario	385,325 tCO ₂ e	3.2.4	1,028,716 tCO ₂ e ¹
	Net estimated emission reductions in the project area, measured against the without-project scenario	N/A	N/A	N/A
Forest ² cover	For REDD ³ projects: Number of hectares of reduced forest loss in the project area measured against the without-project scenario	N/A	N/A	N/A
	For ARR ⁴ projects: Number of hectares of forest cover increased in the project area measured against the without-project scenario	1 st MP: 39,000Ha 2 nd MP: 0Ha ⁵	2.1	39,000Ha
Improved land management	Number of hectares of existing production forest land in which IFM ⁶ practices have occurred as a result of the project's activities, measured against the without-project scenario	N/A	N/A	N/A

¹ Achievements during the Project Lifetime: The emission reduction is the first monitoring period (15-March-2016~ 31-December-2020) plus the emission reduction of second monitoring period (01-January-2021 ~ 31-December-2021). It is calculated as 1,028,716 tCO₂e=643,391 tCO₂e + 385,325 tCO₂e.

² Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (*VCS Program Definitions*)

³Reduced emissions from deforestation and forest degradation (REDD) - Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (*VCS Program Definitions*)

⁴Afforestation, reforestation and revegetation (ARR) - Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (*VCS Program Definitions*)

⁵ On the basis of the first monitoring period, no newly-added forest coverage is recorded during the second monitoring period.

⁶Improved forest management (IFM) - Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood and fuelwood (*VCS Program Definitions*)

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	Number of hectares of non-forest land in which improved land management has occurred as a result of the project's activities, measured against the without-project scenario	N/A	N/A	N/A
Training	Total number of community members who have improved skills and/or knowledge resulting from training provided as a part of project activities	80 long-term technicians	2.3	28,580 (include 28,500 temporary planting workers ⁷ and 80 long-term technicians ⁸)
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities of project activities	48 long-term technicians	2.3	17,148 (include 17,100 temporary planting workers and 48 long-term technicians)
Employment	Total number of people employed in of project activities, ⁹ expressed as number of full time employees ¹⁰	80 long-term technicians	2.3	28,580 (include 28,500 temporary planting workers and 80 long-term technicians)
	Number of women employed in project activities, expressed as number of full-time employees	48 long-term technicians	2.3	17,148 (include 17,100 temporary planting workers and 48 long-term technicians)

⁷ The temporary planting workers were employed from 15-March-2016 to 20-November-2017. Temporary planting period is not involved in this monitoring period. However, since the temporary planting workers are also categorized as the villagers who own forest land tenure of this project, they are also included during this monitoring period. According to the Carbon Sink Cooperation Agreement, 60% of carbon profits will be distributed to villagers who own forest land tenure of this project.

⁸ Due to the implementation of the project, the local forest area has increased, and the original number of technicians is not enough to meet the new forest management and protection work. Therefore, the Forestry Bureau has hired 80 technicians as forestry technical management and protection personnel. Their main job is to complete the task of forest management and maintenance designated by the local Forestry Bureau, with a salary of CNY 200 per month. On the other hand, because the project is a carbon sink project, it is necessary to carry out tree monitoring, field survey, daily communication with villagers and form a feedback mechanism with PP, so Guizhou Xinzhanxin hired the above 80 technicians as long-term and part-time project monitoring technicians, and paid an additional salary of CNY 200 per month.

⁹ Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.

¹⁰ Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Livelihoods	Total number of people with improved livelihoods ¹¹ or income generated as a result of project activities	80 long-term technicians	2.3	28,580 (include 28,500 temporary planting workers and 80 long-term technicians)
	Number of women with improved livelihoods or income generated as a result of project activities	48 long-term technicians	2.3	17,148(include 17,100 temporary planting workers and 48 long-term technicians)
Health	Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario	N/A	N/A	N/A
	Number of women for whom health services were improved as a result of project activities, measured against the without-project scenario	N/A	N/A	N/A
Education	Total number of people for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	N/A	N/A	N/A
	Number of women and girls for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	N/A	N/A	N/A
Water	Total number of people who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	N/A	N/A	N/A

¹¹Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. *The Sustainable Livelihood Approach to Poverty Reduction*. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	Number of women who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	N/A	N/A	N/A
Well-being	Total number of community members whose well-being ¹² was improved as a result of project activities	80 long-term technicians	2.3	28,580 (include 28,500 temporary planting workers and 80 long-term technicians)
	Number of women whose well-being was improved as a result of project activities	48 long-term technicians	2.3	17,148 (include 17,100 temporary planting workers and 48 long-term technicians)
Biodiversity conservation	Change in the number of hectares significantly better managed by the project for biodiversity conservation, ¹³ measured against the without-project scenario	39,000	5.2	39,000
	Number of globally Critically Endangered or Endangered species ¹⁴ benefiting from reduced threats as a result of project activities, ¹⁵ measured against the without-project scenario	3 ¹⁶	5.2	3

¹²Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Health, Education, Water, etc.), but could also include other benefits such as empowerment of community groups, strengthened legal rights to resources, conservation of access to areas of cultural significance, etc.

¹³ Biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation.

¹⁴Per IUCN's Red List of Threatened Species

¹⁵In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit.

¹⁶ The three endangered species, which inhabited in the project area, were not found during the monitoring period, but some specific measures have been adapted to reduce the threat of human and nature to the endangered species: 1. Increase publicity efforts in various communities to prevent illegal hunting activities 2. Give proper consideration to the establishment of breeding ranches for the endangered species; 3. Preach the protection of the endangered species to local villagers, and how to rescue them if they encounter endangered species; 4. Further strengthen the requirements for the work of technicians and pay attention when inspecting forests. Intensity of inspections of habitats for the endangered species

2 GENERAL

2.1 Project Description

2.1.1 Implementation Description

Until the end of this monitoring period (December 2021), the project has been implemented for five years and eight months. All the areas planted within the Project Area, for a total of 39,000 ha, and trees are growing and healthy.

The local species China fir ((*Cunninghamia lanceolata* (Lamb.) Hook.), Masson pine (*Pinus massoniana* Lamb.) and Cypress (*Cupressus funebris* Endl.) are selected for afforestation because of their prominent characters in rocky desertification areas. These species feature their fast growth rate, shallow rooting and strong adaptability to poor soil conditions. These species are especially suitable for Afforestation in limestone mountainous areas of subtropical monsoon climate zone. Since planting trees, during the last 5 years and 8 months there was no natural disaster. Because of good forestry practice, the percentage of forest coverage rate has increased in the project area, as well as mitigating the impacts of rocky desertification and climate change expanding habitat for flora and fauna in the project area. During this monitoring period, no events affecting emission reduction and monitoring occurred in the project area.

All risk factors have been monitored and managed (According to the registered project description, leakage is considered to be zero for this project. Thus, there is no need to manage the leakage.)

For non-permanence risk factors, in order to stop deforestation, all the technicians were doing regular forest inspections monthly, especially strictly checking strangers who attended to enter the forest; In the fire-prone season, they were doing forest inspections every day, preventing all sources of fire in the forest. If there are any emergencies, they will inform the superior leadership and project contact person of Guizhou Xinzhanxin Agricultural Technology Co., Ltd. (hereinafter referred to as Guizhou Xinzhanxin) at once and stay where the emergency happens until anyone come for help;

Strictly obeying the Forest Management Manual, technicians inspect the occurrence of diseases and insect pests in spring and autumn and use insecticides and pesticides according to the national standards.

-There have not been any regular pests that have damaged the forest.

-There have not been any fires that have damaged the forest.

-There have not been any climatic disasters (floods, droughts, tornadoes, frosts, etc.) that have damaged the forest.

-There have not been any earthquakes.

The detailed results of the monitoring and evaluation was summarized in the relevant non-permanence risk report.

The GHG emissions reduction generated are 385,325 tCO₂e from 01-January-2021 to 31-December-2021, with an annual average GHG emissions reduction of 177,365 t CO₂e since the project starts verification.

There are no changes in the Project Proponent, Landowner and other entities.

2.1.2 Project Category and Activity Type

The project is developed under VCS scope 14 'Agriculture, Forestry and Other Land Use (AFOLU)' with a project category of Afforestation, Reforestation and Revegetation (ARR). The project is not a grouped project.

2.1.3 Project Proponent (s)

Organization name	Guizhou Xinzhanxin Agricultural Technology Co., Ltd.
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2.1.4 Other Entities Involved in the Project

Organization name	Shanghai Libra Investment & Management Co., Ltd
Role in the project	Consultants
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2.1.5 Project Start Date (G1.9)

According to VCS standard v4.2, the project start date is the date on which activities that lead to the generation of GHG emission reductions or removals are implemented, for this project, the project start date is 15-March-2016 when the planting started.

2.1.6 Project Crediting Period (G1.9)

The project crediting period is 30 years from 15-March-2016 to 14-March-2046, and the project lifetime is 30 years from 15-March-2016 to 14-March-2046.

The second monitoring period is from 01-January-2021 to 31-December-2021.

2.1.7 Project Location

The project is located in Huangping County, Weng'an County, An'long County, Guizhou Province, China.

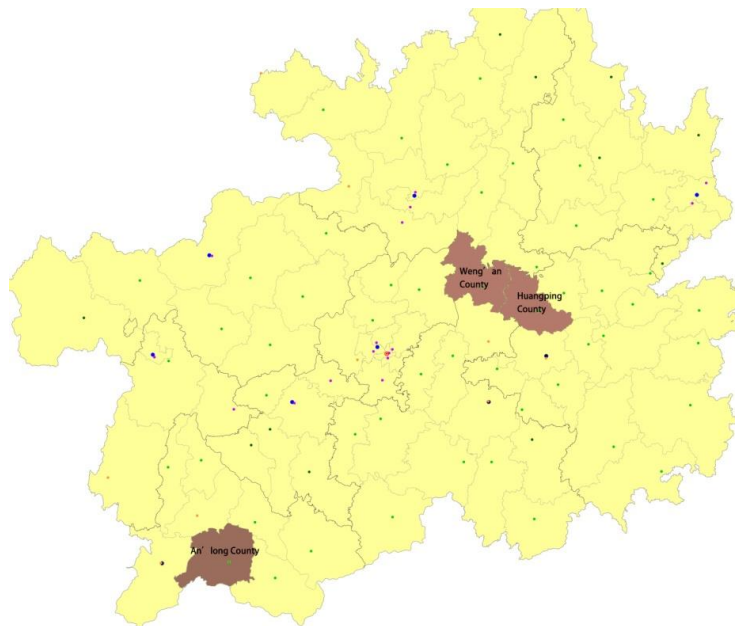
The location of the project zone in Guizhou Province is illustrated in map 01. Project zone Huangping County, Weng'an County, An'long County are illustrated in map 02, and the location of the Project Zone and Project Area illustrated in map 03. The geographical coordinates of the project zone are listed below.

Table 1 Geographical Coordinates of the Project Activity in Huangping County, Weng'an County, An'long County

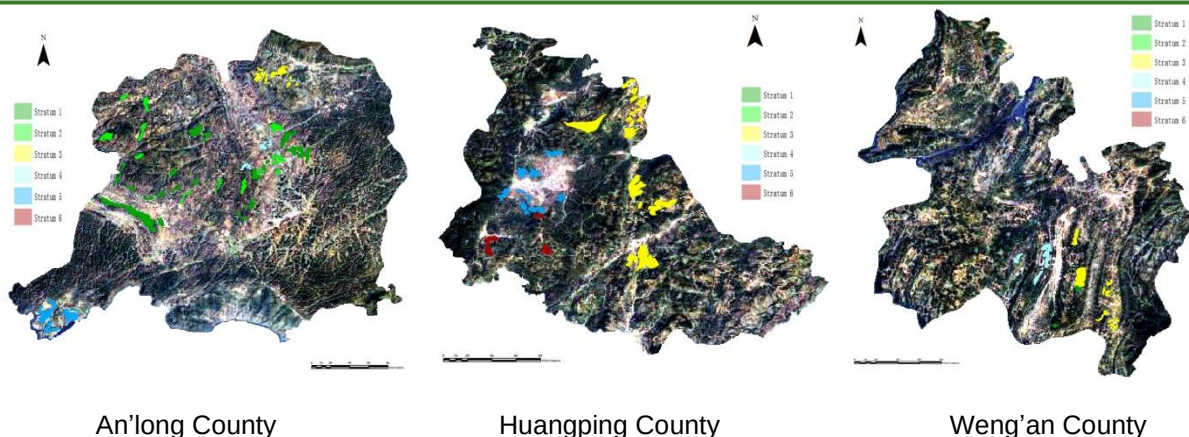
	East longitude	North latitude
Huangping County	107°35'-108°12'	26°43'-27°14'
Weng'an County	107°07'-107°42'	26°53'-27°29'
An'long County	104°59'-105°41'	24°55'-25°33'



Map 01: Map showing Guizhou Province, China



Map 02: Location of Project zone, Huangping County, Weng'an County, An'long County in Guizhou Province



Map 03: Project Zone and Project Area.

In Map 03, the color area represents the location of the communities.

The green areas within the boundaries of An'long county and Weng'an county represent the 33 villages involved in the project. In this area, China fir is the main species planted in 2016 that is indicated the stratification of Pro-1.

The jade-green areas within the boundaries of An'long county represent the 13 villages involved in the project. In this area, China fir is the main species planted in 2017 that is indicated the stratification of Pro-2.

The yellow areas within the boundaries of An'long county and Huangping county and Weng'an county represent the 44 villages involved in the project. In this area, Masson pine is the main species planted in 2016 that is indicated the stratification of Pro-3.

The wathet-blue areas within the boundaries of An'long county and Weng'an county represent the 10 villages involved in the project. In this area, Masson pine is the main species planted in 2017 that is indicated the stratification of Pro-4.

The blue areas within the boundaries of An'long county and Huangping county represent the 17 villages involved in the project. In this area, Cypress is the main species planted in 2016 that is indicated the stratification of Pro-5.

The red areas within the boundaries of Huangping county represent the 4 villages involved in the project. In this area, Cypress is the main species planted in 2017 that is indicated the stratification of Pro-6.

2.1.8 Title and Reference of Methodology

Consolidated afforestation and reforestation baseline and monitoring methodology AR-ACM0003/Version 2.0.0 'Afforestation and reforestation of lands except wetlands' is applied.

<http://cdm.unfccc.int/methodologies/DB/C9QS5G3CS8FW04MYXDFQDPXWM4OE>

The following methodological tools, to which the selected methodology refers, are used:

- Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (Version 01)
- Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities (Version 01.0)

- Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities (Version 04.2).
- Calculation of the number of sample plots for measurements within A/R CDM project activities' (Version 02.1.0)

2.1.9 Other Programs (G5.9)

The project was not involved in other emission trading programs or any other mechanism that includes GHG allowance trading. The project has not sought or received another form of GHG-related environmental credit. The project was not registered under any other GHG programs.

2.1.10 Sustainable Development

The Project provides many benefits that will help achieve China's Sustainable Development Goals, a set of 17 universal goals covering the thematic areas of environmental, economic and social development (Figure 1).



Figure 1: The 17 Sustainable Development Goals

One of the Sustainable Development Goals (SDGs) is to take urgent measures to combat climate change and provide sustainable security for life in the future.

Guizhou province, where the project is located, holds the 'ECO Forum Global Guiyang' every year. As one of the best Green-Cities in China, Guiyang (capital of Guizhou) is rich in natural resources.

Environmental protection drew more attention under the principle of sustainable development. By holding 'ECO Forum Global Guiyang', the Chinese government is exploring the development of its sustainable development concept – 'ECO Civilization'. It aims to integrate the concept and practice of sustainable development into the whole range of economic development. The climate, community and biodiversity benefits provided by the Project, all contribute to achieving the global and national sustainable development goals. These contributing benefits are monitored through the Project's CCB Monitoring Plans. The Project contributes to develop some of China's Sustainable Development Goals:

- Achieve gender equality and empower all women and girls (Goal 5); (See section 4.1.1 community impact on female rural workers)
- Decent work and economic growth (Goal 8); (See section 4.3.1 variable monitored on household income)
- Action to combat climate change and its impacts (Goal 13); (See section 3 for details)
- Sustainably manage forests and halt biodiversity loss (Goal 15); (See section 5 for details)

2.2 Project Implementation Status

2.2.1 Implementation Schedule (G1.9)

Date	Milestone(s) in the project's development and implementation
10-September-2015	Started the baseline survey.
03-January-2016	The Project Design of Huangping county for Afforestation Operation in 2016 was finished. The Project Design of An'long county for Afforestation Operation in 2016 was finished. The Project Design of Weng'an county for Afforestation Operation in 2016 was finished.
10-January-2016	Biodiversity survey report of the project was completed.
16-January-2016	The afforestation project design in 2016 of Weng'an county was approved by Qiannan Forest Bureau
18-January-2016	The afforestation project design in 2016 of An'long county was approved by Qianxinan Forest Bureau
21-January-2016	The afforestation project design in 2016 of Huangping county was approved by Qiandongnan Forest Bureau
20-February-2016	Participatory Rural Appraisal (PRA) report of the project was completed.
15-March-2016	Started planting trees in Huangping (start date of crediting period)
18-March-2016	Started planting trees in Weng'an
22-March-2016	Started planting trees in An'long
07-January-2017	The Project Design of Huangping county for Afforestation Operation in 2017 was finished. The Project Design of An'long county for Afforestation Operation in 2017 was finished.

	The Project Design of Weng'an county for Afforestation Operation in 2017 was finished.
20-January-2017	The afforestation project design in 2017 of Weng'an county was approved by Qiannan Forest Bureau
22-January-2017	The afforestation project design in 2017 of An'long county was approved by Qianxinan Forest Bureau
25-January-2017	The afforestation project design in 2017 of Huangping county was approved by Qiandongnan Forest Bureau
08-October-2017	Training technical worker yearly.
20-November-2017	Completed planting
10-October-2018	Training technical worker yearly.
15-October-2019	Training technical worker yearly.
13-October-2020	Training technical worker yearly.
28-October-2020	Stakeholders' meeting at the forestry bureau of Weng'an County, in order to prepare for the project verification and collect the views of stakeholders before the project verification.
11-February-2021	Completed registration as a VCS-CCB project
23-September-2021	Issue of first phase emission reduction
15-October-2021	Training technical worker yearly
22-October-2021	Stakeholders' meeting at the forestry bureau of Weng'an County, in order to prepare for the project verification and collect the views of stakeholders before the project verification.
October-2021 to November-2021	The project proponent conducted a stakeholder questionnaire survey in 31 villages involved in the project.
01-January-2022 to 12-January-2022	Field survey and results was finished, collect and record the 2021 tree measurement data provided by monitoring technicians.
16-January-2022	Draft MR of second monitoring period finished
09-March-2022 to 08-April-2022	MR GSC
06-April-2022 to 08-April-2022	On-site verification

2.2.2 Methodology Deviations

N/A.

2.2.3 Minor Changes to Project Description (*Rules 3.5.6*)

N/A.

2.2.4 Project Description Deviations (*Rules 3.5.7 – 3.5.10*)

N/A.

2.2.5 Grouped Projects

This is not a grouped project.

2.2.6 Risks to the Project (*G1.10*)

For the identification of probable natural risks and those induced by man, the tool approved by the VCS Standard was used: 'Tool for the Risk of Non-Permanence of the Agriculture, Forestry and Other Land Uses' sector.

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Fire	The planting area is mostly barren land suitable for afforestation, thus the risk of fire is quite low in the early phase of the project. After the trees grow to a certain age (about 30 years), the risk of fire may increase, and the project owner adopts the necessary measures for fire preventing. There is no fire outbreak happened during this monitoring period.	The forest fire prevention publicity and education work were strengthened during this monitoring period, which also raised the awareness of forest fire prevention of the whole society. We have actively carried out educational activities concerning forest law and regulations on forest fire prevention as the main contents to popularize basic knowledge of fire control.
Diseases and Insects	Diseases and insects can damage leaves, crowns and stems, which may further reduce tree growth. The community's environment may be affected by the declined tree quality once the number of dead woods and trees goes up. In addition, some harmful insects may extend their population and cause extensive damage to project forests, which means, to certain degree, the plantation diversity can be affected accordingly. No diseases or insects occurred during the monitoring period.	During this monitoring period, the supervision of serious insect pests has been strengthened. If any insect pests occur, chemical pesticides can only be used in accordance with the national pesticide policy in serious cases.

Pesticide	The drinking water of the community may be contaminated due to the use of pesticide. Additionally, the use of pesticides can reduce biodiversity in the ecosystem because it may destroy habitat of certain species and do damage to the food chain.	Monitoring pesticides in the interim is strictly managed by trained personnel. In particular, biological measures have been taken to control pests and diseases. The use of pesticides during the monitoring period was strictly prohibited. Only in case of insect pests occur, and as above, no diseases or insects occurred during the monitoring period, therefore, no pesticides were used.
Fertilizer	The applied fertilizer may run off into waterways or get broken down by soil, releasing the greenhouse gas into the atmosphere. In addition, chemical fertilizer may cause some diseases and do harm to people's health. In terms of biodiversity, excess nutrients may affect biodiversity and the normal functioning of the ecosystem.	During this monitoring period, there was no use of fertilizer on the project area because trees are growing well. But in order to avoid the negative impact of excessive use of fertilizer on the environment, the training courses of moderate use of fertilizer and soil management are frequently organized for the technicians and local farmers.
Human-induced risks	During the project, about 28,580 (include 28,500 temporary planting workers and 80 long-term technicians) were employed by the project, when the planting was over, the tree planting workers were no longer involved, leaving only 80 technicians to work on the project. The number of direct participants decreased, thus the community willingness to participate in the project whether may be decreased. In this monitoring period, the project proponent has communicated with the community on a regular basis to eliminate the risk In recent decades, climate change featuring global warming, is mainly caused by the emission of greenhouse gases generated by human. This has brought a profound impact and a huge threat on human survival and development. There may exist the risks related to the adaptability of climate change for humans, etc. Several measures will be taken to mitigate the risk.	Technicians communicate directly with stakeholders throughout the lifetime of the project. In addition, to provide job opportunities for the stakeholders of the project, the long-term benefits of the project will affect communities, for example, a healthy forest ecosystem can improve the environment, can contribute to the ongoing revitalization of the countryside, boost the local economy and improve the living standards of the local population. First of all, the implementation of the project will generate GHG emission removals through growing of the trees, which will improve local ecological environment and mitigate regional climate change in the project zone. Secondly, the project proponent will conduct training sessions for the community on the knowledge and skills of adaptability to climate change, such as continuously carrying out ecological environment construction to improve the regional climate. In addition, forest rangers are trained to conduct patrolling in good weather and avoid patrolling in severe weather.
Monoculture pattern	According to the afforestation design and experience of the forestry bureau of the project site, due to the characteristics of thin soil in karst area within project boundary, there are only few tree species suitable for planting. In some bad site conditions, such as drought, barren, saline-alkali and other conditions, only pure forest	Upon routine overseeing, the diseases will be treated immediately by biological control once occur. The chemical pesticides are allowed to be used only if there is a serious pest problem outbreak in the project area, and the pesticides will be used in accordance with the National Pesticides Policy. During this monitoring period, there is no occurrence

	can be planted. On the other hand, pure forest has the advantages of simple afforestation and tending technology, and low cost of afforestation. Therefore, this project uses monocultures afforestation pattern. The main risk of monoculture is that it is easy to be spread by diseases and insect pests and forest fire. Pure forest species are simple and intraspecific competition is obvious, which is easy to cause the spread of diseases and insect pests. In case of fire, it is not easy to control.	of pest outbreak, therefore, there is no involvement of pesticides. On the other hand, to strengthen the work of forest, fire prevention publicity and educational sessions are conducted to increase the awareness of forest fire prevention in the whole society. Besides, the technicians were trained to conduct frequent forest patrol to ensure there is no occurrence of destructive forest fire.
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2.2.7 Benefit Permanence (G1.11)

Project area is a relatively severe rocky desertification area. The implementation of the project will effectively control rocky desertification in this area and significantly improve the ecological environment. First of all, even after the end of the project's life cycle is over, the local government and forestry bureau will continue to supervise and manage according to the PRC Forest Law¹⁷ and the PRC Forest Law Implementing Regulations¹⁸. It is illegal to cut down trees planted by this project, so the trees will continue to be protected. At the same time, the local government and forestry bureau shall continuously supervise and protect the plants and animals in the project area according to the Law of the People's Republic of China on the Protection of Wild Animals¹⁹ and the Measures for the Protection of Terrestrial Wild Animals of Guizhou Province²⁰, so the local plant and animal population will continue to maintain or increase. Besides, during the 30 years of the project implementation process, the project proponent regular management measures, such as training, patrol, publicity, etc., will further enhance the ecological protection consciousness of residents. So, after the project, they can still protect the forest and animals.

Secondly, during the 30 years of the project life period, the project proponent will provide annual training for the technicians hired to ensure that they can acquire rich professional experience and the ecological protection consciousness. After the end of the project, a part of them will continue to implement the supervision and management work, the others will be paid by the relevant forestry bureau even beyond the project lifetime because they will train other staff by the knowledge and experience mastered.

Finally, the women involved in this project activity not only increase the family income but also learn extra skills during the project implementation period, which equipped them with well ecological environment protection consciousness and improved their social status. After the 30-years project lifetime, they still

¹⁷ http://www.gov.cn/xinwen/2019-12/28/content_5464831.htm

¹⁸ http://www.gov.cn/gongbao/content/2016/content_5139476.htm

¹⁹ http://www.gov.cn/xinwen/2016-07/03/content_5087722.htm

²⁰ <https://wenku.baidu.com/view/6bcfb353fe00bed5b9f3f90f76c66137ee064f0c.html>

have relevant professional ability to play a role in forestry, such as working for the forestry bureau, or choosing to work in forestry companies, seeding companies and other social organizations, so as to continue to reflect the value of women in society.

Above all, the project intends to maintain the climate, community, and biodiversity benefits beyond its lifetime through the following measures:

To enhance the improvement of ecological environment, the use of fertilizer and pesticides will be strictly monitored. There is no room for indiscriminate use of fertilizer and pesticides. Therefore, the training sessions on the moderate use and soil management for local people will be organised periodically.

As the fire control and prevention is crucial for forest areas, measures are needed accordingly. After the project life cycle, it is still important to obey local laws regarding fires. Besides, forest rangers will continue to play its role and be vigilant about flammable objects and will never leave a fire unattended. This good mechanism is actually the result of forest fire control management manual, which include the emergency plan.

To consolidate the biodiversity, the tree species selected for plantation needed to prove to be adaptable to the local conditions and can help support the local ecosystem. And the project also strictly prohibits the plantation and introduction of invasive species since this can bring harm to the local ecosystem. This practice is to be carried out beyond the project lifetime according to the national law. In terms of the protection of wild animals, the afforestation project itself can give wild animals shelter and a place to raise families. Besides, due to the implementation of the project, the local community is increasingly aware of the importance of animal protection thanks to the publicity and training sessions. This is actually one of the most effective ways to help wildlife preserve the environment in which the animals live and thrive.

To bring the local community sustainable and long-lasting benefits, trainings on forest management, soil management, fire control and other forestry-related topics will be conducted beyond the project lifetime. This is a way to help increase the employability in the future since it can help the local people sharpen their soft skills and a showcase of their skills and experiences. In addition, with the skills and knowledge gained, these good management practices can be continued, and this is also the embodiment of benefit permanence.

All in all, the community benefits will be maintained beyond the lifetime of the project. Moreover, all the skills and trainings will help these workers to continue working in the forestry-related sector and in the project region. GHG removals will continue beyond the lifetime of the project and probably sequestered carbon stocks will be higher thanks to the constantly improved planting techniques. Concerning biodiversity, with the continuous improvement of ecological improvement, the biodiversity can be richer after the project lifetime.

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

The registered project documentation had been published on VCS and CCB website for public comments, as well as the project summary in the Chinese version, and the local communities and other stakeholders can easily download from the website. The periodic project development had been published on the notice board in the village. The first monitoring period of the project had been issued and posted on the website. Furthermore, reports of English version and Chinese version for the second monitoring has been available on the website, along with the contact person's information. If there is any negative feedback, a meeting will be immediately held in the village. Since the beginning of the project, there is no feedback has been received.

Anhuang Afforestation Project

ID: 2310

Program: VCS + CCB

Public Comment Period Type: Verification

Location: China

Project Activity: ARR

Sectoral Scope: 14. AFOLU

Methodology: AR-ACM003

ERRs achieved during the monitoring period: 385,325 tCO₂e

Benefits achieved during the monitoring period:

1. Radix pseudostellariae, Capsicum annum L and Dendrobium nobile Lindl were planted within the project zone bringing extra income to local villagers.
2. Six species were discovered including three kinds of animals and three kinds of wild plants.
3. 80 villagers were employed as technicians, of which 60% were women.

Public Comment Period: 9 March 2022 – 8 April 2022

Figure 2 Published on VCS and CCB website

The monitoring report (Simplified Chinese Version) has been available in village committees and the local Forestry bureaus upon completion.

The on-site verification and stakeholders' interviews were held in Weng'an County and Huangpin County on 08-April-2022 and An'long County on 06-April-2022. Stakeholder meetings in the project areas were organized locally by the Weng'an County, Huangping County and An'long County Forestry Bureaus through inviting villagers in each region, technicians, tree planting workers, local villagers, representatives

from Forestry Bureau, and project leader of Shanghai Libra Investment & Management Co., Ltd were invited to participate the meetings. At the same time, questionnaires were sent to them to help grasp the bigger picture during the project verification. Opinions and suggestions were collected from the questionnaires. Meanwhile, the content of monitoring procedures and provided monitoring documents were thoroughly explained.

2.3.2 Dissemination of Summary Project Documents (G3.1)

After the project was registered, a brief project progress including project location, project registered date, expected annual emission reduction, monitoring period and expected verification date has already been posted for stakeholders. With the implementation of the project, the project verification documentation has already been made available on the VCS and CCB websites from 09-March-2022 to 08-April-2022 for all stakeholders to obtain detailed project information and progress verification. In addition, the monitoring reports, summaries, monitoring manuals and other relevant documents in Chinese version had been posted on the village bulletin board by the contact person of each village committee on 12-March-2022, so that villagers can keep abreast of the project.

2.3.3 Informational Meetings with Stakeholders (G3.1)

Before the project began, the socio-economic and environmental conditions around the project area were obtained through PRA surveys conducted by the Guizhou Academy of Social Sciences.

The identified stakeholder of Local villagers in Weng'an County, Huangpin County and An'long County refers to 28,500²¹ local villagers who own forest land tenure of this project and 80 skilled technicians worked as long-term workers. This group of the stakeholders is the focus of attention during this monitoring period. To fully and comprehensively grasp the impact exerted on the stakeholders from 121 villages, three ways are adopted namely stakeholder meeting, questionnaires, and opinion statistical book. For the fairness of results, all three survey methods adopted the same survey questions. The breakdown of these 3 means is shown as below:

Firstly, during this monitoring period on 22-October- 2021, 40 villagers, village committee, forest bureau, and government representatives from 31 villages²² were organized by the project proponent and the local forestry bureau to attend the stakeholders' meeting at the forestry bureau of Weng'an County, in order to prepare for the project verification and collect the views of stakeholders before the project verification. The meeting site, meeting time and the meeting agenda have been made known to the meeting

²¹ As mentioned in Section 1.2 of the monitoring report, temporary planting workers are those who own forest land tenure of this project.

²² These 31 village accounts for 15% of the total number of 25,690 stakeholders. In addition, the 31 villages are geographically adjacent to each other to facilitate meetings, therefore, the stakeholder meeting selected these villages as representatives to participate.

participants via the notice of meeting posted on the bulletin of the involved 31 villages. The meeting introduced the registration of the project, the first phase emission reduction has been issued on 23-September-2021, the plan of the verification work, how to collect and summarize the data. It has also been made clear in the meeting that according to *Carbon Sink Cooperation Agreement* 60% of the profit from the first monitoring period will be distributed to village committees and villagers who owned the forest land tenure of this project. To assess the effectiveness of the meeting, attendance and agenda are two important metrics in the informational meetings. The full attendance of each meeting indicates that stakeholders put large share of value on the project. As for agenda, special attention has been paid to the number of topics discussed during the meeting to avoid unnecessary time added to each meeting. After the meeting, it is shown that 40 villagers agreed to continue to support the project and to cooperate fully with the verification efforts.

Secondly, in order to further understand the impact of the project on stakeholders after the implementation, the project owner conducted a questionnaire-based survey in 25 villages that involved the largest number of stakeholders²³ in November 2021. The project owner distributed a total of 100²⁴ questionnaires in 25 villages (some questionnaires are shown in Figure 3). The distribution of the questionnaires was done with the assistance of the village committees, and as many stakeholders as possible were invited to actively participate in the questionnaires through village committee broadcasts and other means. Table 2-1 below summarizes the background information of the stakeholders who participated in the questionnaire, which was divided into five groups, namely farmers, technicians, government officials, Forestry Bureau officials, and village committee members. To understand the environmental, livelihood and socio-economic improvements of the villagers, the questionnaire included "What changes do you think the project has made to the surrounding environment since its implementation?" "Has it improved your standard of living?" "Do you have job opportunities?" and other related questions. In the end, a total of 100 questionnaires were collected.

Table 2-1 Background information of these 100 stakeholders

Categories	Proportion
Nationality	32% of them are Buyi, 38% of them are Miao and the rest are Han.
Educational Level	10.6% and 14.5% are at the primary and high school levels, respectively, with the rest are all at the junior high school level.
Career	Mostly farmers, the rest is composed of technicians, government officials and village committee members.

²³ The number of stakeholders involved in these 25 villages was 20,006, accounting for about 70% and a total of 100 people filled out the questionnaires.

²⁴ The number is calculated based on random sampling method, refer to Section 4.3.1 for more information.

Gender	66% are female and 34% are male.
Age-bracket	30~60 years old

安徽碳汇造林利益相关方调查问卷
调查时间: 2021.10.13

被调查人: 姓名: 年龄: 40 民族: 汉族 性别: 男 所在地: 安徽省合肥市
职业: 技术工人 其他:

是否了解本项目?
1. 了解 2. 一般了解 3. 不了解

项目实施后, 您认为项目对周围环境的改变有哪些?
1. 泥石流减少, 土壤得到改善: ()
2. 动物和植物数量有所增长: ()
3. 提高空气质量: ()

项目实施后, 您的幸福感是否增加?
1. 增加 2. 一般增加 3. 没有增加

项目实施后, 项目区域的社区凝聚力及大家聚在一起举行活动或交流的机会是否有所增加?
1. 增加 2. 一般增加 3. 没有增加

项目实施后, 您觉得项目对您而言是否有风险? 有什么风险?
1. 没有风险 2. 有风险 (风险内容:)

项目实施后, 您认为女性的社会地位提高了吗?
1. 提高了 2. 没有变化 3. 降低了

项目开始之后, 您是否从公共渠道收到或看到项目的相关进度和信息? (比如项目文件公示、利益相关方会议通知等)
1. 是 2. 否

您在项目检查公示期间, 所有的疑问或者建议都有技术工人为你们解答吗?
1. 是 2. 否

项目实施后, 是否提高了您的生活水平? (如果有在何方面?) 收入增加, 生活质量提高

项目实施后, 是否有强制占用您家的土地的情况发生?
1. 没有 2. 有 (占用情况描述:)

项目实施后, 是否发放了碳汇补助? 你得到了多少?
1. 没有 2. 有 (发放情况描述:)

项目实施后, 您是否得到了工作的机会? 工资是多少?
1. 没有 2. 有 (临时: 400元/月) (永久:)

安徽碳汇造林利益相关方调查问卷
调查时间: 2021.10.18

被调查人: 姓名: 年龄: 45 民族: 汉族 性别: 男 所在地: 安徽省合肥市
职业: 技术工人 其他:

是否了解本项目?
1. 了解 2. 一般了解 3. 不了解

项目实施后, 您认为项目对周围环境的改变有哪些?
1. 泥石流减少, 土壤得到改善: ()
2. 动物和植物数量有所增长: ()
3. 提高空气质量: ()

项目实施后, 您的幸福感是否增加?
1. 增加 2. 一般增加 3. 没有增加

项目实施后, 项目区域的社区凝聚力及大家聚在一起举行活动或交流的机会是否有所增加?
1. 增加 2. 一般增加 3. 没有增加

项目实施后, 您觉得项目对您而言是否有风险? 有什么风险?
1. 没有风险 2. 有风险 (风险内容:)

项目实施后, 您认为女性的社会地位提高了吗?
1. 提高了 2. 没有变化 3. 降低了

项目开始之后, 您是否从公共渠道收到或看到项目的相关进度和信息? (比如项目文件公示、利益相关方会议通知等)
1. 是 2. 否

您在项目检查公示期间, 所有的疑问或者建议都有技术工人为你们解答吗?
1. 是 2. 否

项目实施后, 是否提高了您的生活水平? (如果有在何方面?) 收入增加, 生活质量提高

项目实施后, 是否有强制占用您家的土地的情况发生?
1. 没有 2. 有 (占用情况描述:)

项目实施后, 是否发放了碳汇补助? 你得到了多少?
1. 没有 2. 有 (发放情况描述:)

项目实施后, 您是否得到了工作的机会? 工资是多少?
1. 没有 2. 有 (临时:) (永久: 200元/月)

以下由技工填写

你们在项目检查公示期间, 对项目涉及的人员提出的疑问是否都解答了?
1. 是 2. 否

在项目实施的过程中是否给你提供了相应的培训?
1. 是 2. 否

项目实施后, 您是否得到了工作的机会? 工资是多少?
1. 没有 2. 临时: (永久: 200元/月)

项目实施后, 您认为收入是否比以前增加了?
1. 增加了 2. 没有变化 3. 减少了

被聘用为技工后, 您认为这份工作是否占用了您国家法定节假日时间?
1. 是 2. 否

被聘用为技工后, 是否得到安全保障? 是否提供了相关培训及相关安全保障设备?
1. 是 2. 否

项目实施后, 是否出现过拖欠工资的情况?
1. 是 2. 否

项目实施后, 您的职业技术能力是否得到提高?
1. 是 (何方面: 树木监测、树木抚育) 2. 否

Figure 3 Questionnaires distributed to stakeholders

Lastly, it was not convenient to conduct on-site questionnaires or meeting in the remaining 65 villages because of the small percentage of stakeholders involved, the scattered geographical location, and the COVID-19 pandemic. Thus, the owners posted questionnaires and feedback hotline telephone numbers on the bulletin boards of the 65 village committees and appointed a village official in each village to collect and summarize everyone's feedback and suggestions, which were eventually registered in the opinion statistical book. Finally, after a 1-month public survey period, a total of 150 stakeholders provided their feedbacks on the project, the project owner summarized the feedbacks and concluded that 100% of the villagers expressed their support for the project and believed that the project would bring benefits to the local environment and their own living standards.

To sum up, the 121 villages collected opinions from the stakeholder in 3 different forms, and the total number of people who responded to the opinions was 290, which is representative of all stakeholders. The evidence to support the representativeness is based on the sampling formula of 28,580 people (the calculation is as follows). The sample size of this project survey is greater than 90, so the number of people represented is sufficient. The formula is shown as below:

$$n \geq \frac{1.645^2 \times N \times p(1-p)}{(N-1) \times 0.1^2 \times p^2 + 1.645^2 \times p(1-p)}$$

Where:

Parameters	Description
n	Sample size.
N	The total number of villagers is 28,580 (Total number of community members involved in this project.)
p	The expected value is 0.75 based on the local experience value.
1.645	Represents the 90% confidence as required in the Standard that 90/10 confidence/precision as the criteria for the reliability of sampling efforts for small-scale CDM project activities.
0.1	Represents the 10% relative precision.

Thus, substituting in the values gives:

$$\frac{1.645^2 \times 28580 \times 0.75(1-0.75)}{(28580-1) \times 0.1^2 \times 0.75^2 + 1.645^2 \times 0.75(1-0.75)} = 90$$

The auditor's on-site verification and stakeholder interviews were held in An'long County on 06-April-2022 and in Huangping County and Weng'an County on 08-April-2022. Stakeholder meetings in the project areas were organized locally by the Weng'an County, Huangping County and An'long County Forestry Bureaus through inviting villagers in each region, attended by technicians, tree planting workers, local villagers, representatives of forestry bureaus and project leader of Guizhou Xinzhanxin Agricultural Technology Co., Ltd.

2.3.4 Community Costs, Risks, and Benefits (G3.2)

During the PRA survey before the project start, project proponent once explained the potential costs, risks, and benefits to relevant villagers and stakeholders. At that time the project proponent explained the potential costs, risks, and benefits as follows:

Costs: massive manpower needed for planting and occupy the roads during the planting;

Risks: natural disaster

Benefits: soil improvement, rocky desertification control.

During this monitoring period, through the daily visits of project technicians, the potential costs, risks and benefits of this project were conveyed and explained to relevant villagers and stakeholders again for further feedback. Besides, in stakeholders' meeting held on 22-October-2021, project proponent

explained the potential costs, risks, and benefits to relevant villagers and stakeholders if they agreed to do the verification, and asked for feedback. The following is the potential costs, risks, and benefits to relevant villages and stakeholders:

Potential Costs	Because logging is prohibited, more natural gas must be purchased for cooking.
Potential risks	1. The nature disaster when doing trees survey, such as landslide or debris flow. 2. The emergency when doing trees survey, for example, fall accidentally or get bitten by a poisonous snake. 3. lower productivity
Benefits	1. Carbon credit revenue²⁵ 2. Since villagers can increase their income without having to work away from their hometowns, their sense of well-being increases. For monitoring technicians, each gets a monthly salary of CNY 200²⁶.

Since the project has been carried out, it has achieved phased results and has a positive impact on the community residents in all aspects. The following main information has also been communicated to all stakeholders through village committee meetings, technicians and bulletin boards.

1. After the project was implemented, the technicians have received corresponding income, which increased the income of the technicians.
2. The operation of the project has made trees grow healthily, and the ecological environment of the community and the living environment of the residents have also been significantly improved.
3. The development of the project requires manual inspection, management and protection, so it provides a lot of job opportunities for the local farmers. Thus, many villagers choose to work on the spot instead of going out to work far away from their hometown.
4. Due to the annual technical training, the working skills of the farmers in the community have been improved, and the opportunities for them to communicate with each other have also been increased.

²⁵ According to the *Carbon Sink Project Cooperation Agreement*, 60% of profit from the first monitoring period has been distributed to all village committees and villagers who owned forest land tenure of this project.

²⁶ As a result of this project, the local forest area has increased and additional technicians are needed to meet the daily forest management and protection tasks. For this reason, the local forestry bureau hired 80 technicians by open recruitment, whose main job is to complete forest management and maintenance tasks. On the other hand, because the project is a carbon sink project, it is necessary to carry out tree monitoring, field survey, daily communication with villagers and form a feedback mechanism with PP, so Guizhou Xinzhanxin hired the above 80 technicians as long-term and part-time project monitoring technicians, and paid an additional salary of CNY 200 per month.

5. The project gives farmers a stronger sense of forest protection and more professional knowledge of afforestation and forest protection, which enables the local forestry bureau to carry out forest management and protection work more efficiently.
6. After the implementation of this project, trees grow well and the forest has been formed, thus improving the soil, water and biodiversity of the area. Gradually, a lot of plants and animals appeared on the previously barren land suitable for afforestation.

Meanwhile, during the on-site visit (specified in section 2.3.6), the project proponent also explained the above potential costs, risks and benefits if doing the verification and asked for their opinion. All the attendees can express their understanding about risks and costs. They all agreed the verification implementation.

2.3.5 Information to Stakeholder on Verification Process (G3.3)

The status and process of the project for CCB and VCS verification has been published through routine villager assembly and posted on every 121 village notice boards before April-06-2022 when the on-site verification began. On the other hand when project proponent and Guizhou Xinzhanxin have known the on-site visit time, the technicians would begin to inform the villagers from door to door. The mobile phone number of contact person of the project was published on the meeting notice so the villagers can directly make a call-in case they have any problem about the project.

The progress of project implementation has also been informed to all stakeholders through village committee meetings, technicians and bulletin boards, which can be summarized as the registration of the project and the preparation for the second monitoring period.

2.3.6 Site Visit Information and Opportunities to Communicate with Auditor (G3.3)

The auditor conducted surveys on site plots and project forests from 06-April-2022 to 08-April-2022. The project proponent organized stakeholder meetings with auditors' on-site participation in Huangping County and Weng'an Forestry Bureau on 08-April-2022, and in An'long County on 06-April-2022 respectively, technicians, tree planting workers, local villagers, representatives from Forestry Bureaus, county government, and project leader of Shanghai Libra Investment & Management Co., Ltd and Guizhou Xinzhanxin Agricultural Technology Co., Ltd. to verify the project status. All the participants expressed their feelings and experiences to the auditor about the project. Auditor also asked the villagers whether the implementation of the project had a significant impact on their lives and whether they had any complaints. The villagers paid more attention to about how to quantify the amount of emission reduction produced by trees. They raised relevant questions on how the emission reduction was calculated and how the height and diameter of trees were measured. The project proponent and auditor provided detailed answers to stakeholder representatives for all the questions. After the meeting, the auditor

interviewed each participant separately and asked for their opinions and suggestions. The villagers have all expressed the willingness to continue to participate in the project, not only because of the employment opportunities that have been created for local rural communities but also the increasing incomes and improved living conditions. Officials also demonstrated their support for the project implementation.

2.3.7 Stakeholder Consultation (G3.4)

Stakeholder consultations can range from questionnaires surveys to and stakeholder meetings to opinion statistical books, and stakeholders are required to exchange their opinions on the project and their willingness to participate.

To fully and comprehensively grasp the impact exerted on the stakeholders from 121 villages, three ways were adopted namely stakeholder meeting, questionnaire-based survey and opinion statistical book. The breakdown of these 3 means are shown as below:

Firstly, during this monitoring period on 22-October-2021, 40 villagers, village committee, forest bureau and government representatives from 31 villages were organized by the project proponent and the Forestry Bureau to attend the stakeholders' meeting at Weng'an county, in order to prepare for the project verification and collect the views of stakeholders before the project verification. After the meeting, all the essential opinions from stakeholders were taken down on the meeting records and it is shown that 40 villagers participated in the meeting agreed to continue to support the project and to cooperate fully with the verification efforts.

Secondly, in order to further understand the impact of the project on stakeholders after the implementation, in November 2021, the project owner organized a stakeholder opinion collection activity. Due to the scattered project locations, the owner selected 25 villages that involved the largest number of stakeholders to conduct a face-to-face on-site questionnaire survey. The project owner distributed a total of 100 questionnaires in 25 villages. The distribution of the questionnaires was done with the assistance of the village committees, and as many stakeholders as possible were invited to actively participate in the questionnaires through village committee broadcasts and other means. To understand the environmental, livelihood and socio-economic improvements of the villagers, the questionnaire included "What changes do you think the project has made to the surrounding environment since its implementation?" "Do you have job opportunities?" and other related questions. In the end, a total of 100 questionnaires were collected.

Lastly, it was not convenient to conduct on-site questionnaires in the remaining 65 villages because of the small percentage of stakeholders involved, the large and scattered geographical location, and the COVID-19 pandemic. Thus, the owners posted questionnaires and feedback hotline telephone numbers

on the bulletin boards of the 65 village committees and appointed a village official in each village to collect and summarize everyone's feedback and suggestions, which were eventually registered in the opinion statistical book. Finally, after a 1-month public survey period, a total of 150 stakeholders provided their feedbacks on the project, the project owner summarized the feedbacks and concluded that 100% of the villagers expressed their support for the project and believed that the project would bring benefits to the local environment and their own living standards.

A survey result summary can help to outline the results of the survey conducted and provide an overview of the key points. The summary of survey results had been presented in a succinct and effective manner. Based on stakeholder opinion collection activity, minutes of the meeting recording feedback from 40 participating stakeholders, 100 copies of questionnaires, and opinion statistical book recording feedbacks from 150 stakeholders were collected by the project owner. Guizhou Xinzhanxin looked at the responses to the same question in each questionnaire and eventually came up with an overview of the responses to that question and the corresponding percentage of people, resulting in a summary report containing the original questionnaire records. The detailed survey results are listed in the table below and the results were summarized the aforementioned 3 means of conducting survey and as mentioned in 2.3.3 regardless of what method was employed, all of them were based on the same survey questions. When the auditor on-site verification, the survey result summary and corresponding different evidence were given to VVB.

Survey Results Summary Sheet

Question	Response and its proportion
Do you know about this afforestation project?	Yes. 100% of villagers know about the project.
After the implementation of this project, what changes do you think have been made to the surroundings?	100% of local villagers think that the living environment and the air quality were both improved, arable land were protected and natural disasters occurrence such as debris flow were reduced.
After the implementation of this project, do you feel the boost in happiness?	100% of villagers think they feel the boost in happiness.
After the implementation of this project, has your awareness of protecting local flora and fauna improved?	100% of villagers think their awareness of protecting local plants and animals has increased.
After the implementation of this project, can	Yes, 100% of villagers think there is increased

you see the increase opportunities for communication and holding events by all the people?	communication.
After the implementation of this project, what risks do you think the project will pose? (If there is any, please specify)	100% of villagers think there is no risk posed to them,
After the implementation of the project, do you think the status of woman has improved?	100% of villagers think the status of woman has improved.
Since the beginning of the project, did you get informed of the project updates and relevant information via public channels? (Include but not limited to project document for public comment, notice of stakeholder meeting)	Yes, 100% villagers think they can easily get access to project document, notice of meeting, monitoring report summary and so on.
After the implementation of the project, has your living level improved?	Yes, 100% of villagers think their living level has improved due to the increased income.
After the implementation of the project, whether there is forced occupation of land?	No, 100% of villagers think their rights were guarded.
After the implementation of the project, do you get any job opportunities? How much do you get paid?	100% of villagers think they got job opportunities. For technicians, each get CNY2,400 per year.

The survey results were concluded by summarizing and analyzing the information from stakeholder opinion collection activity. The results are shown as follows

- Most of the local villagers enjoyed the benefits of afforestation since it can help prevents soil erosion, purifies the air, protects land and reduces natural disasters. At the same time, they have gradually increased their awareness of the protection of local flora and fauna.

- Since then, most local villagers have been trained in terms of carbon trading, venture capital or carbon credits. Now they are looking forward to conducting carbon trading in this monitoring period.

- Local villagers believe that the project can 1) create a constant stream of employment opportunities; 2) hope to gain more revenue by selling carbon credits in this monitoring period; 3) improve the local environment, protected arable land and reduced natural disasters; 4) improve the social status of the women involved in planting trees at the beginning of the project has been improved.

Stakeholders air no negative views on the continuation of project.

During the Stakeholder Consultation, the project proponent would sort out the potential problems in the project according to the opinions of stakeholders then improve them in a timely manner. During this verification period, the project design is not affected by stakeholder input.

2.3.8 Continued Consultation and Adaptive Management (G3.4)

At the beginning of the project, the project proponent has identified a fixed contact person, which is referred to as a technician in this project. A technician is responsible for the communication of 2 to 3 villages, collecting all the suggestions and problems from the villagers. The task of these technicians is not only to provide feedback of the villagers' suggestions and problems directly to the project manager of Guizhou Xinzhanxin, but also to enable the project manager of Guizhou Xinzhanxin to communicate the progress of the project to all the villagers through the technicians, and timely post and hand out project materials. When the technicians passed the problems from villagers to the project proponent, the project proponent positively responded and solved them. For example, during the planting process, when some villagers reported that their farming tools were old, the project proponent decided timely replaced them with new tools. At the same time, there is an opinion statistical book published on the notice board in each of the 121 villages throughout the lifetime of the project. Stakeholders can write their comments or suggestions in the book anytime anonymously if they wish in order to feel free when expressing their disagreements. The project proponent will check the book regularly and collect all the comments received.

On the other hand, 80 technicians have been working on forest management and tree and CCB monitoring. Since the start of this project, the technicians have been trained annually in forest management and monitoring and have been kept in touch with the project proponent. When the project needs to measure the monitoring data, they can complete the measurement work in a timely and accurate manner. The technicians pass the information on tree growth, diseases, pests and weather conditions to the proponent. In turn, the proponent regularly imparts knowledge and skills of tree management to the technicians.

The technicians as the project monitoring executor have surveyed the project area. The distance from one village to another is so short that villagers can talk directly to the technicians even the local forestry

bureaus if the locals have any opinions. Meanwhile, technicians will also do a regular visit to the villages and collect comments if any.

Before the project began, Guizhou Xinzhanxin and Libra company developed a perfect Adaptive Management plan, which expounded on how to determine the contact person of each village, how to contact the project manager of Guizhou Xinzhanxin, how to deal with daily routine communication matters, and how to take problem-solving measures, etc. So far, the design and implementation of the project have not been modified, as comment received do not affected the design of the project.

2.3.9 Stakeholder Consultation Channels (G3.5)

During this monitoring period, firstly, stakeholders were informed of the status and progress of the project through the bulletin board updated monthly by the village committee, and their comments were recorded in the village committee's complaint book. This information is fed back to the project proponent by the contact person in each village for a timely response. Secondly, the villagers can also make suggestions on the project during the technicians' monthly visits. Finally, stakeholders can communicate and give feedback to the project proponent at any time through the published phone number of contact person.

2.3.10 Stakeholder Participation in Decision-Making and Implementation (G3.6)

In the project planning phase, the farmers were fully involved in the land selection, planting pattern selection, through villagers meeting and PRA methods.

All the critical information regarding decision-making was already published to local stakeholders and the decision should be revised according to further discussion in case there is any feedback from stakeholders. During the monitoring period, the opinions and suggestions of stakeholders were obtained through stakeholder opinion collection activity and stakeholders' meeting, and they were involved in decision-making.

On 22-October-2021, 40 villagers, village committee, forest bureau and government representatives from 31 villages were organized by the project proponent and the forestry bureau to attend the stakeholders' meeting at the Weng'an county, in order to prepare for the project verification and collect the views of stakeholders before the project verification. The meeting notices were already published on the notice board outside of each village committee offices together with the contact numbers so that those who missed the meetings can also share their opinions. The meeting introduced the registration of the project, the plan of the verification work and how to collect and summarize the data. The villagers agreed to continue to support the project and to cooperate fully with the verification efforts.

In November 2021, the project owner organized a stakeholder opinion collection activity. Due to the scattered project locations, the owner selected 25 villages that involved the largest number of

stakeholders to conduct a face-to-face on-site questionnaire survey, and the remaining 65 villages were surveyed by posting questionnaires on the bulletin boards and providing feedbacks. In this way, the villagers were able to participate in the implementation of the project.

The periodic project development has been published on the notice board with the contact persons' information. If there is any negative feedback, a meeting will be immediately held in the village.

In this monitoring period, 60% of village meeting attendees were females and they were given priority in terms of project-related job assignment. In this light, this project is welcomed by all the females.

2.3.11 Anti-Discrimination Assurance (G3.7)

The project proponent should obey Labor Law of the People's Republic of China with anti-discrimination assurance, and workers have signed up voluntarily regardless of gender, race, religion or any other basis. In case any discrimination proved to be true, the person who is responsible for the discrimination shall be fired immediately and the project proponent will find someone else to take over his/her job. During the current monitoring period, 48 women were employed as technicians.

2.3.12 Grievances (G3.8)

As set out in registered PD, the project proponent nominated a specific staff in charge of recording and collecting conflicts and grievances of local communities and individual farmers. Forest patrollers in each project site play an important role in treating with ordinary conflicts and grievances and report to the forest stations or bureau. Firstly, once getting the reports, project proponent and local forest agency shall contact and discuss with relevant community or other stakeholders within 3 days. Secondly, the specific staff of project proponent should propose a solution and mediation within a week based on all collected information from relevant parties. Finally, the complications or grievances shall be dealt within 30 days. If the dispute cannot be settled by the forestry bureau, then it can be submitted to the county's first-level arbitration department or court. Under the circumstances, the judgment or the arbitration result would be taken as the final solution and it should be signed by both parties and then they should keep a copy respectively. The time limit for submitting the dispute to the arbitration commission or appealing to the court is 30 days.

No grievances received during this monitoring period.

2.3.13 Worker Training (G3.9)

The training for 80 technicians were held in October 2021 during this monitoring period. The training was divided into two sessions in order to facilitate the technicians to participate and ensure the attendance of all the technicians. One session was held within the county Forestry Bureau while the other one was held in the conference room of the village, where the project is located. For the training held in the conference

room of the village, the villagers could also take part in if they are interested in. In addition to the Guizhou Xinzhanxin's project manager, the experts from the local forestry bureau were also invited to participate in teaching for each training session. These 80 technicians were consist of 25 technicians conducting field measurement and 55 technicians conducting community surveys were the core of the entire monitoring team in the project. In this monitoring period, the field measurement work was mainly conducted by 25 technicians while the other 55 technicians cooperated with them. The working guideline of 'the seasoned technicians help the green hand' was adopted, which means technicians who are familiar with the work process should help unseasoned technicians to become accustomed to the new working conditions, and then an auxiliary technician is assigned to keep records of working process. The 80 technicians should attend the training every year and with the gained skills, there is no need to worry about the loss of professional technicians and the works of technicians can be carried on in the future. There are no new technicians in this monitoring period, still the same 80 technicians from the first monitoring period. The training sessions mainly include aspects of physical safety, health and monitoring technology, such as to measure tree height and DBH, etc. The training is to provide orientation and training for the project's technicians. These technicians are all from the villages where the project is located. They are very familiar with the local villagers and the natural environment, and also have the ability to learn the knowledge of forest monitoring, so they represent local capacity. Priority is given to the following training topics:

-Forest land inspection

Firstly, fire is the most concerning factor. Forest inspections shall be conducted regularly to strictly check the purpose of strangers entering the forest and to prevent the deed of unauthorized logging. Patrol shall be reinforced in the fire-prone season, inter alia, before and after the Tomb-sweeping Day. At the same time, an environmentally friendly way of worshipping ancestors shall be encouraged, so as to eliminate all kinds of fire and fire hazards for preventing fire occurrence. Also, pesticides should be used following the national standards, although the occurrence of pests and diseases should be strictly controlled in the spring and autumn. In addition, the survival rate of forest land should be ensured to meet the national requirements by observing and reporting constantly if the saplings use nutrition bags. If there are endangered plants, protective action should be taken in time, such as hanging warning signs, pulling warning lines, and then the circumstance should be reported to relevant departments by taking photos, videos and recordings. The wild animals in the forest must be protected and recorded by taking photos and photographing as far as possible, which can strengthen publicity and raise the villagers' awareness of animal protection. With respect to the growth and situation of plants and animals in the forest lands, reporting and keeping in touch with the contact person of Guizhou Xinzhanxin should be timely and constantly. When necessary, guarding in the forest and waiting for the contact person of Guizhou Xinzhanxin to protect the forest lands together.

-The use of monitoring and measuring instruments

Monitoring and measuring instruments were used during the inspection. The height of the tree can be measured by altimeter while the circumference of the tree can be measured by tape measure. For precisely locating the fixed monitoring sample, the GPS measuring instrument shall be used. Records information including the geographic location of the site, latitude and longitude, the site number, the carbon layer, the height of each tree and the perimeter of the 1.3-meter site, survival rate, shrub growth, and the presence or absence of animals.

-Data records

During the training each year, the technicians were taught monitoring methods and rules in the form of physical demonstrations, especially the equipment usage, data recording, unit conversion, etc. The score data measurement team consists of 25 technicians who should prepare all the instruments and materials for monitoring within a week after the monitoring period was determined. They conducted the measurement of tree height and diameter separately and all the measurements and data recording were completed in 1 month. In the end, the data summary statistics was submitted to Guizhou Xinzhanxin for verification.

-Safety measures

Technicians are required to wear protective tools such as hard hats and gloves.

-community surveys

Through interviews and questionnaire surveys, the trained technicians learned the opportunities for communication, villagers' happiness index, women's social status, carbon credit payment status, living conditions and how villagers obtain project-related information through public channels.

2.3.14 Community Employment Opportunities (G3.10)

The Project mobilized the participation of the entire community, including women, ethnic minorities and the financially-strapped people. The working conditions provided everyone with equal opportunities to get a job.

During the implementation of the project, the total number of local farmers involved in planting was approximately 28,500 of which 60% were women. The 28,500 participating farmers were temporary employees who volunteered to be employed throughout the planting period of the project, from 15 March 2016 to November 2017. In addition, 80 locals were employed for project management as technicians for both project management and monitoring survey, with 60% of women and they were regularly trained in relevant skills. The 80 technicians are long-term employees. The relevant interests of temporary planting workers and long-term technicians have been involved in the first monitoring period, only 80 long-term

technicians are involved in this monitoring period. As mentioned in 2.3.13, these 80 technicians have been working from the first monitoring period to the second monitoring period. There are no new technicians involved. Therefore, temporary planting workers and technicians are involved in this monitoring period.

All the planting opportunities are provided to the local adults in good health condition. However, in Guizhou, large parts of adult male are working in the developed provinces for a higher salary. The females are more welcomed in planting. After the planting, they get paid 60 CNY per person per day for the number of trees they planted.

For the selection of planting workers, the village committee and project proponent had a principle to find qualified and reliable staff without any discrimination of age, sex, marital status, ethnicity, social status or religious convictions, political ideas and/or sexual orientation.

As mentioned previously, there are 80 technicians for project management. These 80 technicians are hired by local forestry bureau who are familiar with local villagers and forestry-related situations, therefore, Guizhou Xinzhanxin, after communication with the forestry bureau, decided to pay 200 CNY per person per month for hiring them as technicians of this project on a long-term, part-time basis. They are responsible for project-related management and monitoring, and the villagers' daily communication, field survey, the formation of feedback mechanism with Guizhou Xinzhanxin, etc.

2.3.15 Relevant Laws and Regulations Related to Worker's Rights (G3.11)

The local people would be under the protection of Labor Law of the People's Republic of China, Labor contract and no forced labor is allowed, and they are free to establish and join any labor organizations as they wish. In addition, by posting the labor law propaganda materials in the village, the villagers are aware of their right to participate in the work. There was regular new-employee training provided to workers before they started the job, which clearly indicates their rights and mechanism for grievance appeal, and the worker's rights are guaranteed in the labor contracts for each worker. The new employee training was in accordance with the *Labor Law of People's Republic of China* which guarantees the protection of employee's rights and benefits.

2.3.16 Occupational Safety Assessment (G3.12)

The project owner has referred to Safety and Healthy in Forestry Work published by ILO and Labor Law of the People's Republic of China and adapted them to meet the local conditions to ensure workers' health and safety. The workers' health and safety policy, including items covering the health insurance scheme for workplace accidents and evacuation plan is made available for workers and implemented by the village committee.

The yearly technicians' training introduces cases for the involved technicians to explain in detail how to complete the construction or monitoring work under the premise of ensuring safety. Besides, in order to reduce security risks to the lowest ratings, the project manager of Guizhou Xinzhanxin reminded the importance of safe operation repeatedly in daily communication with technicians. The technicians were told that they should contact and inform the Guizhou Xinzhanxin if special circumstances happened. Guizhou Xinzhanxin, as the project proponent, would respond the needs of technicians in a timely manner, for example, to replace the old farming tools, to help them arrange another patrol to make up for the routine patrols that are suspended during extreme weather or when they were ill.

2.4 Management Capacity

2.4.1 Required Technical Skills (G4.2)

The following skills are required for the development of the project:

- Ability to interact with different actors: If there is any intense dispute, the one shall have the ability to deal with it as soon as possible. Moreover, the organizing and coordination ability is essential for the stakeholders' meetings and relevant surveys.
- Development of projects with rural populations: the rural project is a project with large number project owners so that the developer should have the ability for getting the authorization that require abundant employee and times
- Skills on afforestation: what kinds of trees is suit for the land? How many trees should be planted? How to manage the forest and so on
- Skills on the development of carbon projects and environmental services: how to draft PD, what evidence collected, how to hold the stakeholders meeting, how to conduct the monitoring plan, how to calculate GHG sink and so on.
- Skills on the evaluation and monitoring of biodiversity: how to do CCB monitoring is the main skill for the developer such as whether the animal increased, their living range enlarged, the number of plants and species increased.

2.4.2 Management Team Experience (G4.2)

Local forestry bureaus and Shanghai Libra Investment & Management Co., Ltd. acted as the expert group (Management team) who in charge of guiding and coordinating the project's overall implementation and decision-making process. Although their responsibilities are slightly different, the synergy between them has made the effective management possible.

Local Forestry Bureau already set up an expert pool on the land, soil, vegetation, animals and other natural resources affected by forests. Besides, forestry bureaus fed massive data to the biodiversity report and the experts from that pool provided assistance and share experience during the biodiversity

monitoring. In addition, local forestry bureaus also engage in field visits, and this is seen as a valuable form of community engagement. If there's a specific issue regarding something that stakeholders want to discuss, the forestry bureaus representatives are willing to meet out on site and look it over. Seeing plantation and operations help the whole community to understand plantation better, opening up opportunities for the community members to talk to.

Shanghai Libra Investment & Management Co., Ltd. is experienced in carbon measurement and monitoring. In the past, Shanghai Libra Investment & Management Co., Ltd. has successfully developed many different kinds of carbon projects in China, including validation and verification under GS, VCS and CDM standards. In addition, Shanghai Libra is experienced in relationship building. This is an important community engagement skill because this can help to better understand the needs of community and how best serve those needs. Relationship building can also help to build trust and credibility with the local community. These experiences have been applied to the implementation and management of the Project.

Overall, both Shanghai Libra Investment & Management Co., Ltd. and the local Forestry Bureau have specialized skills and domain knowledge. The local Forestry Bureau has strong community management skills, as its job responsibilities can include coordination and management of all types of forestry work within different village committees. Shanghai Libra Investment & Management Co., Ltd. has extensive experience in the development and management of forestry carbon sink projects, so the company is capable of coordinating and organizing community work in various community settings. In addition, the healthy relationship-building process also facilitate the collaboration and engagement.

2.4.3 Project Management Partnerships/Team Development (G4.2)

The management team of the project experienced in forest project management and carbon project development. Also, local Forestry Bureau provided instruction of reforestation and forest management, conducted the specific supervision of the implementation, and collected specific activity data at a routine basis. During this monitoring period, the measurement of data and the monitoring of biodiversity are mainly undertaken by 80 technicians employed by Guizhou Xinzhanxin. The local Forestry Bureau and local government provided technical support for community engagement and biodiversity assessment. The project manager of Guizhou Xinzhanxin was responsible for on-site verification, continuously guiding the tasks and specifications of these technicians, and the final data collection and inspection.

Therefore, the project management team and monitoring team has sufficient experience and skills required by the project.

2.4.4 Financial Health of Implementing Organization(s) (G4.3)

All the project participators including project operating organization, Guizhou Xinzhanxin, and Shanghai Libra Investment & Management Co., Ltd. are legally registered company in China, and according to the public information listed in National Enterprise Credit Information Publicity System, none of them were

involved in nor complicit in any form of corruption such as bribery, embezzlement, fraud, favoritism, cronyism, nepotism, extortion, and collusion.

During this monitoring period, according to a third-party financial audit report provided by Guizhou Xinzhanxin and Shanghai Libra, there were no financial problems with Guizhou Xinzhanxin Company and Shanghai Libra in the recent year. There is no financial problem, so they can support the finance of the project and keep the project running normally.

2.4.5 Avoidance of Corruption and Other Unethical Behavior (G4.3)

In the institutional policy, in its code of ethics, all types of acts of corruption such as bribery, embezzlement, fraud, favoritism, patronage, nepotism, extortion, and collusion are rejected. During this monitoring period, any interest issues of the project have been made public and transparent, and any information and documents could be obtained from public channels. For preventing the occurrence of corruption, in stakeholder meetings, technical training meetings, villagers' opinion survey, and other personnel gathering occasions, project proponent and village committee leaders have repeatedly reiterated the serious consequences of corruption and immoral behavior, so that project participants have been awakened and paid attention to this. In addition, project proponent set up a mechanism for villagers to report violations if they are found. The contact between stakeholders is two-way feedback, and project information can be shared at all levels of platforms, so there is no corruption in any form.

2.4.6 Commercially Sensitive Information (Rules 3.5.13 – 3.5.14)

None of the project documents will be considered as commercially sensitive information, and all of the documentations are available to any stakeholders.

2.5 Legal Status and Property Rights

2.5.1 Recognition of Property Rights (G5.1)

The ownership of the forest land of the Project belongs to the village collective, and local villagers have the right to use the land within the project boundary. The land is a barren land suitable for afforestation. The number of the landowners is so big that they authorized Guizhou Xinzhanxin as project proponent. The project proponent and forestry department are responsible for the comprehensive implementation and management of the project.

The local government proved that the land belongs to all the villagers so no one can encroach as private property and change the land usage. No matter whether the Project is applied for the VCS project or not, the land is owned by the village collective. The local government is responsible for all local villagers if there is anything relating to the encroachment of the locals' rights to the land.

Village committee also have right to authorize Guizhou Xinzhanxin as a representative of project owner and Guizhou Xinzhanxin only has right related to carbon sink project including decide to develop the Project under which standard, who to sell, selling price, etc²⁷.

During this monitoring period, the trees were growing well, and the ownership of the trees remains unchanged. Guizhou Xinzhanxin keeps on completing the work of this monitoring period in accordance with the contract to ensure that the villagers can receive the payment on time. According to the *Carbon Sink Project Cooperation Agreement*, 60% of profit from the first monitoring period has been distributed to all village committees and villagers who owned forest land tenure of this project.

2.5.2 Free, Prior and Informed Consent (G5.2)

Prior to the commencement of project, all the project lands are collectively owned by local villagers. In January 2016, the project participant and local Forest Bureau held a consultant meeting with local village committees during the PRA survey before the project start. PRA surveys and stakeholder meetings collected stakeholders' opinions on project design and their willingness to participate. To make sure the successful development of the project, Guizhou Xinzhanxin Agricultural Technology Co., Ltd and the village collective which had the ownership of forest land had signed a carbon sink afforestation cooperation and development agreement, which clarifies the forest land rights by all parties during the project crediting period. The agreement also provides that farmers or collectives who have title to the wasteland on which the project is located will receive the benefits specified in the agreement when the project generates revenue. According to the *Carbon Sink Project Cooperation Agreement*, 60% of profit from the first monitoring period has been distributed to all village committees and villagers who owned forest land tenure of this project So, the project will not encroach on private property, community property or government property. Furthermore, all lands are wastelands and no occupation involved so no compensation or return would happen.

The project documents on the information of the project such as the nature, size, pace, the scope of the project, the reason for it, and its duration are presented in the native language to villagers.

2.5.3 Property Right Protection (G5.3)

Prior to the project implementation, the project area is mainly barren land suitable for afforestation, farmers voluntarily use these lands to plant trees, therefore, the project activities have not led to involuntary removal or relocation of property rights holders from their lands or territories, and does not force rights holder to relocate activities important to their culture or livelihood.

²⁷Source: carbon sink project cooperation agreement signed between village committee and Guizhou Xinzhanxin

2.5.4 Identification of Illegal Activity (G5.4)

Under the current law of China, any illegal logging activities will be fined or sentenced to punishment. Currently, all project lands are defined for forestry purposes by the local government. Deforestation must be carried on under the approval of the local Forestry Bureau, and the forests are nursed by project staff regularly as a result of the implementation of the project, so there will no room for illegal deforestation. The project benefits are gained from legal activities. Therefore, the project's climate, community and biodiversity impacts will not be affected by the illegal activities.

2.5.5 Ongoing Disputes (G5.5)

Because the project proponent signed a carbon sink cooperation agreement with the village committees, the forest land was developed reasonably and legally. According to the *Carbon Sink Project Cooperation Agreement*, 60% of profit from the first monitoring period has been distributed to all village committees and villagers who owned forest land tenure of this project. Besides, village committees and villagers are satisfied with the implementation of the project and agreed with the continuation of carbon asset development. So, during this monitoring period has no ongoing disputes.

2.5.6 National and Local Laws (G5.6)

The project conforms to all kinds of regulations in the forestry field, as listed below:

- PRC Constitution, PRC Forest Law, PRC Forest Law Implementing Regulations, PRC Wildlife Protection Law, Forest Fire Prevention Regulations, Insect Control Regulation, PRC Production Safety Law, PRC Labour Law;
- Technology regulation of national ecological public welfare forest construction;
- Inspection and acceptance regulation of ecological public welfare forest construction;
- The main provisions of technical design and investigation of forest resources;
- Measurement and monitoring guide to afforestation project carbon sinks;
- Design code for afforestation operation;
- The technical specification for afforestation;
- Regulations for tending of forest;
- The planning and design principles of ecological public welfare forest construction;

-Seedling quality classification of main afforestation tree species.

According to the Inspection and Acceptance Report of the project, the project has complied with the above regulations and laws during the construction period and will be under regular inspection by local government during the implementation period to ensure continuous compliance.

3 CLIMATE

3.1 Monitoring GHG Emission Reductions and Removals

3.1.1 Data and Parameters Available at Validation

Data / Parameter	A _i																												
Data unit:	ha																												
Description:	Area of strata i																												
Source of data:	Field measurement																												
Value applied:	The difference among planting category is sapling size of China fir, Masson pine and Cypress. Tree plantation within each category is the same. The area of each category (A_i) is listed below. <table><tr><th>Project Stratifications number</th><th>Category of tree</th><th>Year to plant</th><th>Area (ha)</th></tr><tr><td>proj-1</td><td>China fir</td><td>2016</td><td>12,000</td></tr><tr><td>proj-2</td><td>China fir</td><td>2017</td><td>5,000</td></tr><tr><td>proj-3</td><td>Masson pine</td><td>2016</td><td>13,000</td></tr><tr><td>proj-4</td><td>Masson pine</td><td>2017</td><td>3,500</td></tr><tr><td>proj-5</td><td>Cypress</td><td>2016</td><td>4,000</td></tr><tr><td>proj-6</td><td>Cypress</td><td>2017</td><td>1,500</td></tr></table> The total area is 39,000ha.	Project Stratifications number	Category of tree	Year to plant	Area (ha)	proj-1	China fir	2016	12,000	proj-2	China fir	2017	5,000	proj-3	Masson pine	2016	13,000	proj-4	Masson pine	2017	3,500	proj-5	Cypress	2016	4,000	proj-6	Cypress	2017	1,500
Project Stratifications number	Category of tree	Year to plant	Area (ha)																										
proj-1	China fir	2016	12,000																										
proj-2	China fir	2017	5,000																										
proj-3	Masson pine	2016	13,000																										
proj-4	Masson pine	2017	3,500																										
proj-5	Cypress	2016	4,000																										
proj-6	Cypress	2017	1,500																										
Justification of choice of data or description of measurement methods and procedures applied:	N/A																												
Purpose of Data	The parameter is used to calculate actual net GHG removals.																												
Comments	N/A																												

Data / Parameter	BEF _{2,j}
Data unit	Dimensionless
Description	Biomass expansion factor for conversion of stem biomass to above-ground biomass
Source of data	The People's Republic of China Second National Communication on Climate Change, issued by NDRC, 2013
Value applied:	See Table 4-1 for details
Justification of choice of data or description of measurement methods and procedures applied	National authority data
Purpose of Data	The parameter is used to calculate actual net GHG removals.
Comments	N/A

Data / Parameter	CF _{TREE}
Data unit	t C t ⁻¹ d.m.
Description	Carbon fraction of tree biomass for species or group of species j
Source of data	The People's Republic of China Second National Communication on Climate Change, issued by NDRC, 2013
Value applied:	See Table 4-1 for details
Justification of choice of data or description of measurement methods and procedures applied	National authority data
Purpose of Data	The parameter is used to calculate actual net GHG removals.
Comments	N/A

Data / Parameter	D _j
Data unit	t d.m.m ⁻³
Description	Basic wood density
Source of data	The People's Republic of China Second National Communication on Climate Change, issued by NDRC, 2013
Value applied:	See Table 4-1 for details
Justification of choice of data or description of measurement methods and procedures applied	National authority data

Purpose of Data	The parameter is used to calculate actual net GHG removals.
Comments	N/A

Data / Parameter	R_j
Data unit	Dimensionless
Description	Root-shoot ratio
Source of data	The People's Republic of China Second National Communication on Climate Change, issued by NDRC, 2013
Value applied:	See Table 4-1 for details
Justification of choice of data or description of measurement methods and procedures applied	National authority data
Purpose of Data	The parameter is used to calculate actual net GHG removals.
Comments	N/A

Data / Parameter	t_{VAL} (for calculation of n)
Data unit	Dimensionless
Description	Two-sided Students t-value, at infinite degrees of freedom for the required confidence level
Source of data	Students t-distribution table in the tool ' <i>Calculation of the number of sample plots for measurements within A/R CDM project activities</i> ' (Version 02.1.0)
Value applied	1.645
Justification of choice of data or description of measurement methods and procedures applied	Use the 90% confidence level for determination of biomass stock in A/R CDM project activities
Purpose of data	The parameter is used to calculate number of sample plots for measurements
Comments	This parameter was not included in the registered PD since it is only applicable for calculating number of sample plots during verification

3.1.2 Data and Parameters Monitored

Data / Parameter	$V_{TREE,j}; V_{TREE,l,p,j,i}$			
Data unit	m^3			
Description	Stem volume of tree species j ; Stem volume of tree l of species j in sample plot p of stratum i			
Source of data	Calculated			
Description of measurement methods and procedures to be applied	The ex-post estimation during this monitoring period has used allometric equations of each tree species to calculate the stem volume.			
Frequency of monitoring/recording	Before every verification event			
Value applied:	Project Stratification s number	Category of tree	Sample plot ID	$V_{TREE,l,p,j,i}(m^3)$
	Proj -1	China fir	ID-W4	1.16732
			ID-A16	1.11308
			ID-A24	1.24005
			ID-A25	1.10973
			ID-A21	1.21508
			ID-A4	1.09156
			ID-A1	1.16122
			ID-A19	1.11805
	Proj -2	China fir	ID-A37	1.10841
			ID-A38	1.31575
			ID-A36	1.16940
	Proj -3	Masson pine	ID-A44	1.30407
			ID-A49	1.17471
			ID-A56	1.22365
			ID-W13	1.06598
			ID-W7	1.16558
			ID-H21	1.22343
			ID-H12	1.26443
			ID-H20	1.25029
			ID-H18	1.27825
	Proj -4	Masson pine	ID-A58	1.30347
			ID-W19	1.22331
			ID-W15	1.30153
	Proj -5	Cypress	ID-A62	1.24556
			ID-H32	1.07930

			ID-H22	1.16083
			ID-H38	1.16266
	Proj -6	Cypress	ID-H37	1.04418
			ID-H35	1.17285
Monitoring equipment	N/A			
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures prescribed under National Forest Inventory are applied. In absence of these, QA/QC procedures from published handbooks or from IPCC GPG LULUCF 2003 may be applied.			
Purpose of data	The parameter is used to calculate actual net GHG removals.			
Calculation method	For the ex-post estimation during the following verification, using allometric equations based on tree dimensions to calculate the stem volume. The tree dimensions usually comprise of height and diameter at breast height. China fir: $V_{TREE,j} = 0.000088296 \times D^{(1.94097 - 0.0044583 \times (D+H))} \times H^{(0.76012 + 0.0056841 \times (D+H))}$ Masson pine: $V_{TREE,j} = 0.000094602 \times D^{(1.88156 - 0.0030651 \times (D+H))} \times H^{(0.76840 + 0.0046574 \times (D+H))}$ Cypress: $V_{TREE,j} = 0.000085626 \times D^{(1.91480 - 0.0045828 \times (D+H))} \times H^{(0.74041 + 0.00668 \times (D+H))}$			
Comments	N/A			

Data / Parameter	$H_{l,p,j,i}$; $DBH_{l,p,j,i}$
Data unit	m; cm
Description	Height of tree l of species j in sample plot p of stratum i ; Diameter at breast height of tree l of species j in sample plot p of stratum i
Source of data	Field measurements in sample plots
Description of measurement methods and procedures to be	Standard operating procedures (SOPs) prescribed under national forest inventory are applied. In absence of these, SOPs from published handbooks or the IPCC GPG LULUCF 2003, may be

applied	applied.																																	
Frequency of monitoring/recording	Before every verification event																																	
Value applied:		<table><thead><tr><th>Project Stratifications number</th><th>Category of tree</th><th>Average $D_{BH}(cm)$</th><th>Average H(m)</th></tr></thead><tbody><tr><td>Proj -1</td><td>China fir</td><td>6.36</td><td>6.45</td></tr><tr><td>Proj -2</td><td>China fir</td><td>6.57</td><td>6.67</td></tr><tr><td>Proj -3</td><td>Masson pine</td><td>6.49</td><td>6.66</td></tr><tr><td>Proj -4</td><td>Masson pine</td><td>6.54</td><td>6.67</td></tr><tr><td>Proj -5</td><td>Cypress</td><td>6.49</td><td>6.56</td></tr><tr><td>Proj -6</td><td>Cypress</td><td>6.46</td><td>6.54</td></tr></tbody></table>	Project Stratifications number	Category of tree	Average $D_{BH}(cm)$	Average H(m)	Proj -1	China fir	6.36	6.45	Proj -2	China fir	6.57	6.67	Proj -3	Masson pine	6.49	6.66	Proj -4	Masson pine	6.54	6.67	Proj -5	Cypress	6.49	6.56	Proj -6	Cypress	6.46	6.54				
Project Stratifications number	Category of tree	Average $D_{BH}(cm)$	Average H(m)																															
Proj -1	China fir	6.36	6.45																															
Proj -2	China fir	6.57	6.67																															
Proj -3	Masson pine	6.49	6.66																															
Proj -4	Masson pine	6.54	6.67																															
Proj -5	Cypress	6.49	6.56																															
Proj -6	Cypress	6.46	6.54																															
Monitoring equipment	$DBH_{l,p,j,i}$: Vinyl tape, wooden stake $H_{l,p,j,i}$: Hypsometer metric tape The equipment mentioned above has a state-recognized certificate of qualification and no need to be calibrated.																																	
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures prescribed under National Forest Inventory are applied. In absence of these, QA/QC procedures from published handbooks or IPCC GPG LULUCF 2003 may be applied. The measure is in line with LY/T 2253-2014 <Guidelines on carbon accounting and monitoring for afforestation project> issued by National Forest Bureau ²⁸ & HJ 710.1-2014 ‘ <i>Technical guidelines for biodiversity monitoring—terrestrial vascular plants</i> ’ ²⁹ issued by Ministry of environmental protection.																																	
Purpose of data	The parameter is used to calculate actual net GHG removals.																																	
Calculation method	These two parameters are three trees dimensions used as entry data into the volume equations for the calculation of stem volume of trees.																																	
Comments	For the ex-post estimation during the following verification, the allometric equations of each tree species will be used to calculate the stem volume, and the allometric equation used will be demonstrated to be appropriate for the purpose of estimation of tree biomass by applying the tool ‘Demonstrating appropriateness of allometric equations for estimation of above ground tree biomass in A/R CDM																																	

²⁸<https://www.renrendoc.com/p-20779950.html>

²⁹<http://www.doc88.com/p-4512190031524.html>

	project activities' in project monitoring report.
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Data / Parameter	A_i ; $A_{PLOT,i}$																					
Data unit	ha																					
Description	Area of stratum i ; Size of sample plot in stratum i																					
Source of data	Field measurement																					
Description of measurement methods and procedures to be applied	Standard operating procedures (SOPs) prescribed under national forest inventory are applied. In absence of these, SOPs from published handbooks or the IPCC GPG LULUCF 2003, may be applied.																					
Frequency of monitoring/recording	Before every verification event																					
Value applied:	A_i:<table><thead><tr><th>Project Stratifications number</th><th>Category of tree</th><th>Area (ha)</th></tr></thead><tbody><tr><td>Proj -1</td><td>China fir</td><td>12000</td></tr><tr><td>Proj -2</td><td>China fir</td><td>5000</td></tr><tr><td>Proj -3</td><td>Masson pine</td><td>13000</td></tr><tr><td>Proj -4</td><td>Masson pine</td><td>3500</td></tr><tr><td>Proj -5</td><td>Cypress</td><td>4000</td></tr><tr><td>Proj -6</td><td>Cypress</td><td>1500</td></tr></tbody></table> $A_{PLOT,i}$:0.07065(ha)	Project Stratifications number	Category of tree	Area (ha)	Proj -1	China fir	12000	Proj -2	China fir	5000	Proj -3	Masson pine	13000	Proj -4	Masson pine	3500	Proj -5	Cypress	4000	Proj -6	Cypress	1500
Project Stratifications number	Category of tree	Area (ha)																				
Proj -1	China fir	12000																				
Proj -2	China fir	5000																				
Proj -3	Masson pine	13000																				
Proj -4	Masson pine	3500																				
Proj -5	Cypress	4000																				
Proj -6	Cypress	1500																				
Monitoring equipment	GPS measuring equipment																					
QA/QC procedures to be applied	Standard operating procedures (SOPs) prescribed under national forest inventory are applied. The measure is in line with LY/T 2253-2014 <Guidelines on carbon accounting and monitoring for afforestation project> ³⁰																					
Purpose of data	The parameter is used to calculate actual net GHG removals																					

³⁰<https://www.renrendoc.com/p-20779950.html>

Calculation method	N/A
Comments	N/A

Data / Parameter	$N_{i,j}$
Data unit	tree/ha
Description	Number of the tree species j of strata i
Source of data	Field measurement
Description of measurement methods and procedures to be applied	Standard operating procedures (SOPs) prescribed under national forest inventory are applied. In absence of these, SOPs from published handbooks, or from the IPCC GPG LULUCF 2003, may be applied.
Frequency of monitoring/recording	Before every verification event
Value applied:	Please refer to ER calculation sheet for details
Monitoring equipment	Counter
QA/QC procedures to be applied	Standard operating procedures (SOPs) prescribed under national forest inventory are applied. The measure is in line with LY/T 2253-2014 <Guidelines on carbon accounting and monitoring for afforestation project>
Purpose of Data	The parameter is used to calculate actual net GHG removals
Calculation method	N/A
Comments	N/A

Data / Parameter	n
Data unit	Dimensionless
Description	The number of sample plots
Source of data	Calculation
Description of measurement methods and procedures to be applied	This value is estimated based on a pre-sampling developed in the Project Area before monitoring.
Frequency of monitoring/recording	Before first verification.

Value applied:	25
Monitoring equipment	/
QA/QC procedures to be applied	$n = \left(\frac{t_{VAL}}{E} \right)^2 \times \left(\sum_i w_i \times s_i \right)^2$
Purpose of Data	The parameter is used to calculate actual net GHG removals
Calculation method	See § 3.1.3 - Number of sample plots
Comments	/

Data / Parameter	n _i				
Data unit	Dimensionless				
Description	Number of sample plots allocated to strata i				
Source of data	Calculation				
Description of measurement methods and procedures to be applied	This value is estimated based on a pre-sampling developed in the Project Area before monitoring.				
Frequency of monitoring/recording	Before first verification				
Value applied:	Project Stratifications	Category of tree	n _i	number of sampling plots	
	PROJ-1	China fir	8	8	
	PROJ-2	China fir	3	3	
	PROJ-3	Masson pine	9	9	
	PROJ-4	Masson pine	2	3	
	PROJ-5	Cypress	2	3	
	PROJ-6	Cypress	1	3	
Monitoring equipment	/				

QA/QC procedures to be applied	$n_i = n \times \frac{w_i \times s_i}{\sum_i w_i \times s_i}$
Purpose of Data	The parameter is used to calculate actual net GHG removals
Calculation method	See § 3.1.3 - Number of sample plots
Comments	/

Data / Parameter	W _i			
Data unit	Dimensionless			
Description	Relative weight of the area of stratum <i>i</i> ; dimensionless			
Source of data	Calculation			
Description of measurement methods and procedures to be applied	The relative weight of the area of a stratum <i>i</i> is equal to the area of the stratum <i>i</i> divided by the project area.			
Frequency of monitoring/recording	Before first verification.			
Value applied:		Project Stratifications	Category of tree	W _i
		PROJ-1	China fir	0.30769
		PROJ-2	China fir	0.12821
		PROJ-3	Masson pine	0.33333
		PROJ-4	Masson pine	0.08974
		PROJ-5	Cypress	0.10256
		PROJ-6	Cypress	0.03846
Monitoring equipment	/			
QA/QC procedures to be applied	The relative weight of the area of stratum <i>i</i> is equal to the area of the stratum <i>i</i> divided by the project area			
Purpose of Data	The parameter is used to calculate number of sample plots			
Calculation method	See § 3.1.3 - Number of sample plots			
Comments	/			

Data / Parameter	S _i			
Data unit	Dimensionless			
Description	Estimated standard deviation of biomass stock per unit area in strata <i>i</i>			
Source of data	Calculation			
Description of measurement methods and procedures to be applied	In accordance with the tool, known from existing data related to the project area or existing data related to a similar area. According to the evidence issued by Local Forestry Bureau, the standard deviation of forestry survey and sampling in this area requires a commonly used coefficient of variation C, which is 30% in Guizhou ³¹ .			
Frequency of monitoring/recording	Before first verification.			
Value applied:		Project Stratifications	Category of tree	S _i
		PROJ-1	China fir	38.996
		PROJ-2	China fir	37.945
		PROJ-3	Masson pine	40.638
		PROJ-4	Masson pine	39.772
		PROJ-5	Cypress	30.712
		PROJ-6	Cypress	28.896
Monitoring equipment	/			
QA/QC procedures to be applied	The variable coefficient times biomass carbon reserves at the end of Period（t.d.m•ha-1）			
Purpose of Data	The parameter is used to calculate number of sample plots			
Calculation method	See § 3.1.3 - Number of sample plots			
Comments	/			

³¹ <http://www.doc88.com/p-4512190031524.html>.

Data / Parameter	E
Data unit	t d.m. ha ⁻¹
Description	Acceptable margin of error (i.e. one-half the confidence interval) in estimation of biomass stock within the project boundary
Source of data	A default value equal to 10% of the mean biomass stock within the project boundary was used, and the mean biomass stock within the project boundary was estimated from the preliminary sample plots.
Description of measurement methods and procedures to be applied	The project monitoring team set 3 preliminary sample plots for each strata and calculated the mean value of the biomass stock in each strata, and the mean value of biomass stock within the project boundary was the weighted average of all strata.
Frequency of monitoring/recording	Before every verification event
Value applied	Please see Table 2 for details
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of data	The parameter is used to calculate number of sample plots for measurements
Calculation method	N/A
Comments	This parameter was not included in the registered PD since it is only applicable for calculating number of sample plots during verification

Data / Parameter	U _c
Data unit	Dimensionless
Description	Uncertainty in carbon change ΔC_{TREE}
Source of data	Calculated
Description of measurement methods and procedures to be applied	Calculated as described in Section 3.1.3
Frequency of monitoring/recording	Before every verification event
Value applied	1.99%
Monitoring equipment	N/A

QA/QC procedures to be applied	N/A
Purpose of data	The parameter is used to determine the uncertainty discount. The uncertainty is 1.99%, less than 10%, therefore no discount of the mean biomass should be applied according to the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"
Calculation method	$u_c = \frac{t_{VAL} \times \sqrt{\sum_{i=1}^n w_i^2 \times \frac{s_i^2}{n_i}}}{b_{TREE}}$
Comments	This parameter was not included in the registered PD since it is only applicable for calculating uncertainty discount

Data / Parameter	b_{TREE}
Data unit	t d.m.ha ⁻¹
Description	Mean change in tree biomass per hectare within the biomass estimation strata
Source of data	Calculated
Description of measurement methods and procedures to be applied	Calculated based on sample plots
Frequency of monitoring/recording	Before every verification event
Value applied	14.38763
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of data	The parameter is used to calculate uncertainty in carbon stock
Calculation method	N/A
Comments	This parameter was not included in the registered PD since it is only applicable for calculating uncertainty in carbon stock

Data / Parameter	t_{VAL} (for calculation of u_C)
Data unit	Dimensionless
Description	Two-sided Students t-value for a confidence level of 90 per cent and degrees of freedom equal to $n - M$, where n is total number of sample plots within the tree biomass estimation strata and M is the total number of tree biomass estimation strata
Source of data	Students t-distribution table in the tool ' <i>Calculation of the number of sample plots for measurements within A/R CDM project activities</i> ' (Version 02.1.0)
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	Before every verification event
Value applied	1.714 ³²
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of data	The parameter is used to calculate uncertainty in carbon stock
Calculation method	N/A
Comments	This parameter was not included in the registered PD since it is only applicable for calculating uncertainty in carbon stock

3.1.3 Monitoring Plan

Monitoring team

The monitoring team consists of project proponent, Shanghai Libra, technicians and the forestry bureau. Firstly, Shanghai Libra sets the monitoring boundary, the number of plots, and drafts monitoring manual and tables. Secondly, project proponent and technicians select the sample plots at random and mark out

³²During this monitoring period, $n=29$, $M=6$, therefore $n-M=23$, so t_{VAL} is the two-sided Students t-value for a confidence level of 90 per cent and degrees of freedom of 29 which is 1.714 according to the t-distribution Table.

the plots with ropes. Thirdly project proponent and Shanghai Libra confirm the monitoring frequency and notify the technicians and the forestry bureaus. Lastly, the monitoring results will be double-checked by experts of the forestry bureaus.

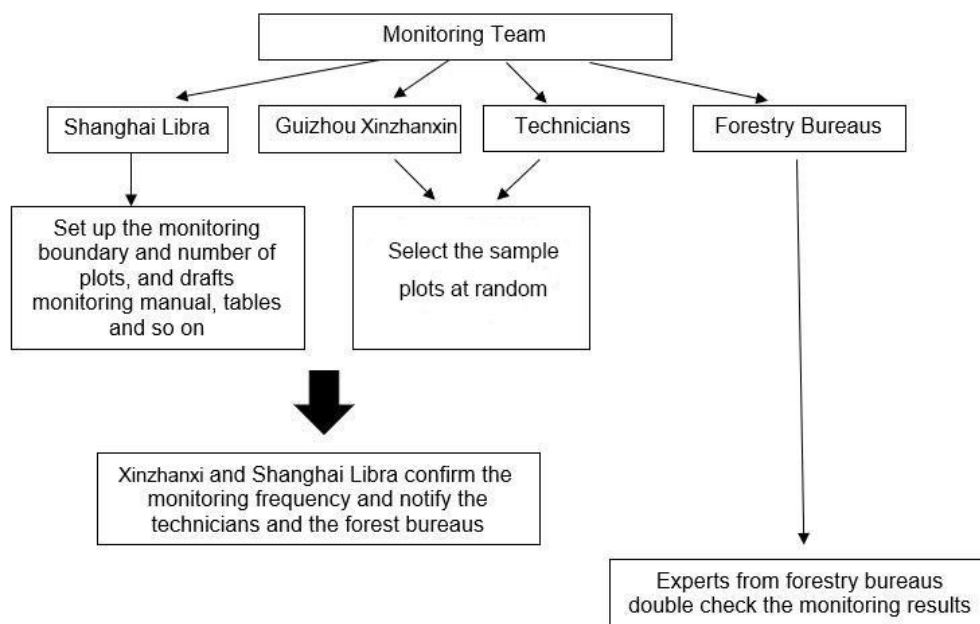


Figure 2 The figure of the monitoring team

Drafted by Shanghai Libra, Monitoring Manual has been provided to each member of the monitoring team with a specific explanation to make sure they fully understand all the monitoring processes and issues concerned.

For this monitoring period, the monitoring task was assigned in January 2022, and the monitoring team started the field measurement and recording work from 01-January to 12-January 2022.

Monitoring process

i) Monitor the applicability conditions listed in methodology, tools, and VCS standard v4.2 have been met

As mentioned in Section 3.1.2, the methodology AR-ACM0003 (version 2.0.0) is applicable under the following conditions:

- a) The land subject to the project activity does not fall in the wetland category.
- b) Soil disturbance attributable to the project activity does not cover more than 10 percent of the area in each of the following types of land when these lands are included within the project boundary:
 - i. Land containing organic soils.

- ii. The land which, in the baseline, is subjected to land-use and management practices and receives inputs listed in Appendix 1 and Appendix 2 in the methodology.

To monitor the applicability conditions, the following steps have been taken:

Step 1 Monitoring of boundary

During this monitoring period, technicians have strictly followed the monitoring plan in PD, which stipulates the measurement and management of project boundary coordinates. Boundary information such as original records has been retained and backed up by electronic and paper documents until the end of this monitoring period.

The monitoring team used GPS or other methods to verify project boundaries and determine afforestation boundaries. The actual boundary does not exceed the design boundary after verification.

Step 2 Applicability of Methodology

Consolidated afforestation and reforestation baseline and monitoring methodology AR-ACM0003/Version 2.0.0 'Afforestation and reforestation of lands except wetlands' is applicable under the following conditions:

- a) The land subject to the project activity does not fall in the wetland category.
- b) Soil disturbance attributable to the project activity does not cover more than 10 percent of the area in each of the following types of land when these lands are included within the project boundary:
 - i. Land containing organic soils.

The soil disturbance due to this project is in line with the requirements of soil and water conservation. Afforestation density was 1,209 plant/ha soil disturbance area ratio was 1.93%³³, less than 10%, and there was no repeated disturbance.

- ii. The land which, in the baseline, is subjected to land-use and management practices and receives inputs listed in Appendix 1 and Appendix 2 in the methodology.

The afforestation plot of this project belongs to the forestry land stipulated by the state, and there is no agricultural activity before or after the afforestation activity of this project; therefore, there is no situation where existing agricultural activities have been transferred.

Therefore, AR-ACM0003 (Version 2.0.0) is applicable to the proposed project.

Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (Version 01) is applicable under the following conditions:

³³Proportion of soil disturbed area: $0.16 \text{ m}^2 \times 1209 / 10000 \text{ m}^2 = 1.93\%$. Among them, 0.16 m^2 was derived from the surface area calculated from the specification of artificial afforestation cavities in the Project Design (40cm*40cm)

- a) Forestation of the land within the proposed project boundary performed with or without being registered as the VCS project activity shall not lead to violation of any applicable law even if the law is not enforced.

The forestation of the land within the project boundary does not lead to violation of any applicable law.

- b) The tool does not apply to small-scale afforestation and reforestation project activities.

The proposed project is a large-scale afforestation project.

Therefore, the combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (Version 01) is applicable for the proposed project.

Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities (Version 04.2) has no internal applicability conditions.

ii) **Post-stratification and determining the number of plots**

During the monitoring, if there are changes in terms of the area and boundary, the carbon stratification of the project needs to update. In addition, if the number of carbon stratum and the area change, the number of sample plots need to be recalculated.

Prior stratification from the baseline survey is the basis for project monitoring in the future. But the variables in the project implementation make the actual situation deviate from the plan. Therefore, the project needs to consider tree species, patterns and other factors in actual planting, and update stratification to post-stratification.

During this monitoring period, the area and boundary of the project have not changed, and the carbon layer is consistent with the carbon layer in the project description, so the number of sample plots has not changed.

Step 1 Calculation of the number of sample plots

Using tool 'Calculation of the number of sample plots for measurements within A/R CDM project activities (Version 02.1.0)' gets the number of plots within each stratum. In order to ensure the statistical independence of each stratum, the number of sample plots is at least 3. The calculation process is as follows:

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

$$n_i = n * \frac{w_i * s_i}{\sum_i w_i * s_i} \quad (2)$$

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 conservatively determined as 30%. This 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.

The calculated results of the above monitoring parameters are shown in the following table:

Table 2 Number of sample plots

Project Stratification s	Category of tree	W _i	S _i	t _{VAL}	E	n	n _i	Number of sample plots
PROJ-1	China fir	0.30769	38.996	1.645	12.7468	25	8	8
PROJ-2	China fir	0.12821	37.945				3	3
PROJ-3	Masson pine	0.33333	40.638				9	9
PROJ-4	Masson pine	0.08974	39.772				2	3
PROJ-5	Cypress	0.10256	30.712				2	3
PROJ-6	Cypress	0.03846	28.896				1	3

Step 2 Setting sample plots

There are 121 plots in this project, and 29 of the 121 plots with 6 carbon layers should be randomly selected as the sample plots. Random sampling was to list 121 plots containing ID Numbers of 6 carbon layers in the Excel table, and then set a random number formula in the table for random calculation. According to the number of sample plots of each carbon layer, the sample plots of each carbon layer were randomly calculated and selected. Finally, 29 sample plots were obtained, including the ID Numbers of the sample plots.

The monitoring agency needs to set fixed sample plots due to measuring requirements at regular intervals. Plot size is set to be a circular area with a diameter of 30m. The plot needs to determine the location at the center point of the plot. The location of the fixed sample plot should be set systematically, but the starting fixed sample plot needs to be set randomly use GPS in field work. The location, administrative positions, number of carbon stratus and carbon sub-stratus of each plot should be documented to ensure that the distribution of fixed sample plots is uniform. Fixed plots measuring methods and procedures must be in strict accordance with the technical details of Forest Resources Planning and Design Technical Regulations.

Table 3 The Sample plots table

Sample plots ID	Project Stratifications	Latitude and longitude	Category of tree	Year
ID-W4	PROJ-1	E107°30'31" N27°02'02"	China fir	2016
ID-A16	PROJ-1	E105°13'24" N25°06'14"	China fir	2016
ID-A24	PROJ-1	E105°18'46" N25°14'19"	China fir	2016
ID-A25	PROJ-1	E105°16'11" N25°10'14"	China fir	2016
ID-A21	PROJ-1	E105°19'21" N25°13'7"	China fir	2016
ID-A4	PROJ-1	E105°22'46" N25°06'09"	China fir	2016
ID-A1	PROJ-1	E105°23'06" N25°05'52"	China fir	2016
ID-A19	PROJ-1	E105°11'57" N25°08'36"	China fir	2016
ID-A37	PROJ-2	E105°09'14" N25°13'22"	China fir	2017
ID-A38	PROJ-2	E105°09'36" N25°13'30"	China fir	2017
ID-A36	PROJ-2	E105°13'07" N25°13'53"	China fir	2017
ID-A44	PROJ-3	E105°24'33" N25°19'05"	Masson pine	2016
ID-A49	PROJ-3	E105°25'59" N25°19'0"	Masson pine	2016
ID-A56	PROJ-3	E105°27'37" N25°18'06"	Masson pine	2016
ID-W13	PROJ-3	E107°30'14" N27°06'57"	Masson pine	2016

ID-W7	PROJ-3	E107°33'33" N27°01'35"	Masson pine	2016
ID-H21	PROJ-3	E107°49'41" N27°04'46"	Masson pine	2016
ID-H12	PROJ-3	E107°53'32" N27°04'17"	Masson pine	2016
ID-H20	PROJ-3	E107°53'37" N26°59'42"	Masson pine	2016
ID-H18	PROJ-3	E107°53'57" N26°52'39"	Masson pine	2016
ID-A58	PROJ-4	E105°25'37" N25°13'09"	Masson pine	2017
ID-W19	PROJ-4	E107°26'38" N27°3'13"	Masson pine	2017
ID-W15	PROJ-4	E107°24'45" N27°05'16"	Masson pine	2017
ID-A62	PROJ-5	E105°04'03" N24°58'15"	Cypress	2016
ID-H32	PROJ-5	E107°46'21" N27°02'26"	Cypress	2016
ID-H22	PROJ-5	E107°44'36" N26°57'18"	Cypress	2016
ID-H38	PROJ-6	E107°40'52" N26°54'45"	Cypress	2017
ID-H37	PROJ-6	E107°40'32" N26°53'50"	Cypress	2017
ID-H35	PROJ-6	E107°45'41" N26°53'37"	Cypress	2017

Step 3 Determine the sample location

The sample is fixed circular area with a diameter of 30m each. When a sample on a slope is to be selected, the gradient must be monitored, and the horizontal long should be converted into oblique long. The management methodology (irrigation, fertilization, etc.) within the samples must be the same as those outside the samples.

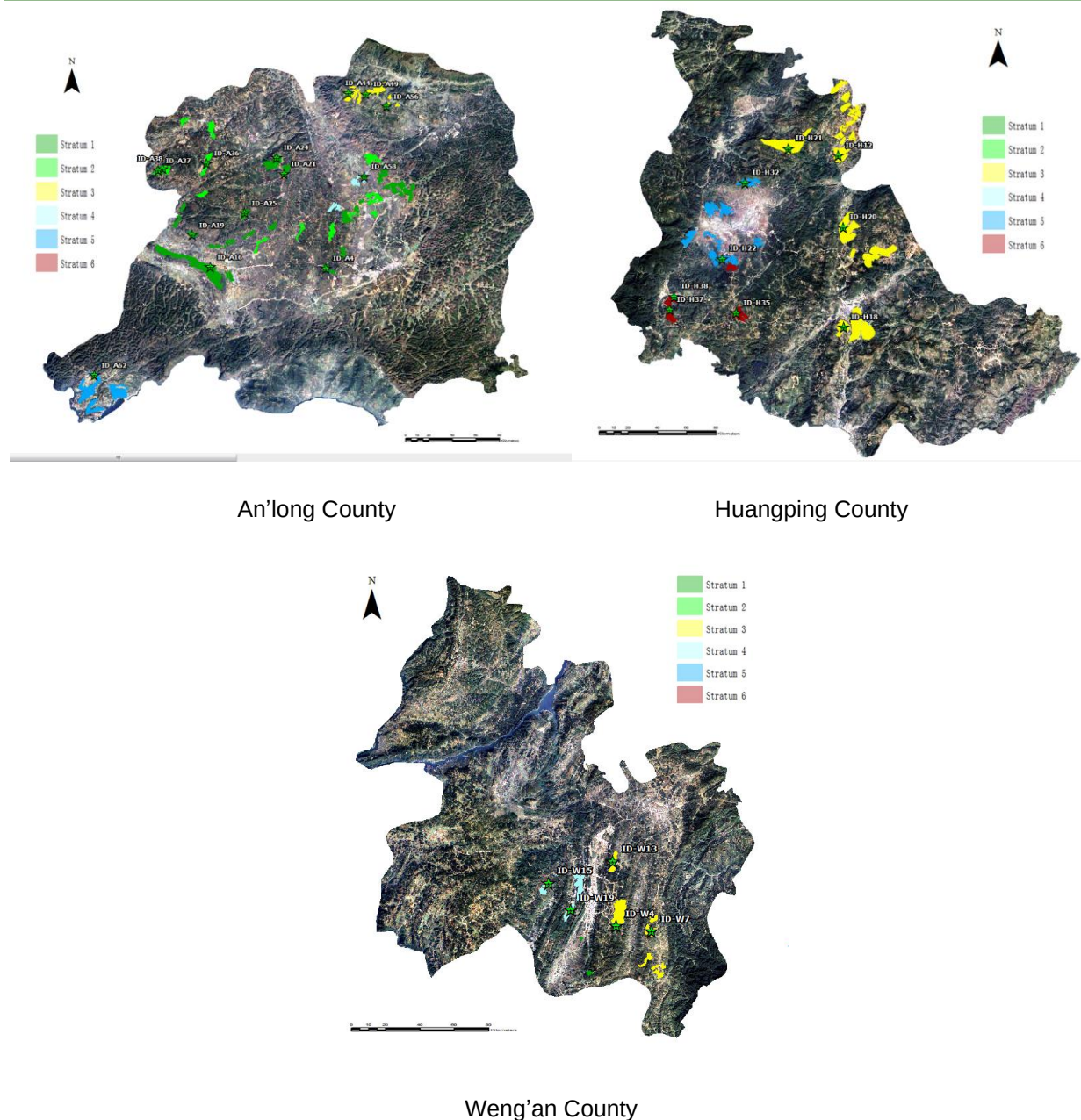


Figure 3 The Sample plots location with star signs

iii) Method for estimation of the change in carbon stock

The actual net GHG removals by sinks are calculated by the equation (3):

$$\Delta C_{p,t} = \Delta C_{TREE_PROJ,t}$$

Where:

$\Delta C_{p,t}$ = Change in the carbon stocks in project, occurring in the selected carbon pools, in year t; t CO₂-e

$\Delta C_{TREE_PROJ,t}$ = Change in carbon stock in tree biomass in project in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; t CO₂-e

And the tool ‘Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity’ (Version 04.2) is used to estimate the change in carbon stock above the ground, and Method (b) (Direct estimation of change by re-measurement of sample plots), this method (b) is estimated change in carbon stock in trees between two points of time in Section 6 of the tool has applied for the monitoring during the following verification.

Mean carbon stock in trees within the tree biomass estimation strata and the associated uncertainty are estimated as follows (all time-dependent quantities relate to the time of measurement):

$$C_{TREE} = \frac{44}{12} \times CF_{TREE} \times B_{TREE} \quad (4)$$

$$B_{TREE} = A \times b_{TREE} \quad (5)$$

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

$$u_C = \frac{t_{VAL} \times \sqrt{\sum_{i=1}^M w_i^2 \times \frac{s_i^2}{n_i}}}{|b_{TREE}|} \quad (7)$$

Where:

C_{TREE} = Change in carbon stock in trees between two successive measurements; t CO₂-e

CF_{TREE} = Carbon fraction of tree biomass; t C/t d.m.

B_{TREE} = Change in biomass within the biomass estimation strata; t d.m.

A = Sum of the area of the biomass estimation strata; ha

b_{TREE} = Mean change in tree biomass per hectare within the biomass estimation strata; t d.m./ha

w_i = Ratio of the area of stratum i to the sum of areas of biomass estimation strata (i.e. $w_i = A_i/A$); dimensionless

b_{TREE} = Mean change in tree biomass per hectare in strata i; t d.m./ha

u_C = Uncertainty in ΔC_{TREE}

t_{VAL} = Two-sided Student's t-value for a confidence level of 90 per cent and degrees of freedom equal to $n - M$, where n is total number of sample plots within the tree biomass estimation strata, and M is the total number of tree biomass estimation strata

s_i^2 = Variance of mean change in tree biomass per hectare in stratum i ; (t d.m. ha-1)²

n_i = Number of sample plots, in stratum i , in which tree biomass was re-measured

Mean tree biomass per hectare in a stratum and the associated variance are estimated as follows:

$$b_{TREE,i} = \frac{\sum_{p=1}^{n_i} b_{TREE,p,i}}{n_i} \quad (8)$$

$$s_i^2 = \frac{n_i \times \sum_{p=1}^{n_i} b_{TREE,p,i}^2 - (\sum_{p=1}^{n_i} b_{TREE,p,i})^2}{n_i \times (n_i - 1)} \quad (9)$$

Where:

$b_{TREE,i}$ = Mean change in tree biomass per hectare in strata i ; t d.m./ha

$b_{TREE,p,i}$ = Change in tree biomass per hectare in plot p in stratum i ; t d.m. ha-1

s_i^2 = Variance of mean change in tree biomass per hectare in stratum i ; (t d.m. ha-1)²

n_i = Number of sample plots, in stratum i , in which tree biomass was re-measured

Mean tree biomass per hectare within the project boundary and its variance were estimated as follows (Equation (14) in methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"(Version 04.2):

$$b_{TREE} = \sum_{i=1}^M w_i \times b_{TREE,i} \quad (10)$$

$$s_{b_{TREE}}^2 = \sum_{i=1}^M w_i^2 \times \frac{s_i^2}{n_i} \quad (11)$$

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
- $b_{TREE, t, i}$ Mean tree biomass per hectare in stratum i at a given point of time in year t; t d. m. ha⁻¹
- $s_{b_{TREE}}^2$ 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_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
- n_i Number of sample plots in stratum i
- M Number of tree biomass estimation strata within the project boundary

Uncertainty of the mean tree biomass per hectare within the project boundary was estimated as (Equation (15) in methodological tool 'Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities' (Version 04.2):

$$u_c = \frac{t_{VAL} \times \sqrt{\sum_{i=1}^M w_i^2 \times \frac{s_i^2}{n_i}}}{b_{TREE}} \quad (12)$$

Where:

- U_c 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. Two-sided Student's t-value for a confidence level of 90 per cent and degrees of freedom equal to n – M, where n is total number of sample plots within the tree biomass estimation strata, and M is the total number of tree biomass estimation strata. According to the Two-sided Student's t-value, n is 29 and M is 6 while n-m is 23 with the corresponding t_{VAL} value of 1.714.

iv) **Methods of plot biomass measurement**

Tree biomass per hectare in a sample plot is estimated by applying one of the plot measurement methods provided in Appendix 1 of the Tool. For the project, the measurement of fixed area plots for the calculation.

In this method, sample plots of the same size (e.g. or of a hectare) are installed in a stratum. All trees in a sample plot above a minimum dimension are measured and the biomass of each tree is estimated. The biomass of the individual trees is added and the sum is divided by the area of the sample plot to obtain the plot biomass value.

The plot biomass value (i.e. per-hectare tree biomass at the centre of the plot) is estimated as follows (all time-dependent variables relate to the time of measurement):

$$b_{TREE,p,i} = \frac{B_{TREE,p,i}}{A_{PLOT,i}} \quad (13)$$

$$B_{TREE,p,i} = \sum_j B_{TREE,j,p,i} \quad (14)$$

$$B_{TREE,j,p,i} = \sum_l B_{TREE,l,j,p,i} \quad (15)$$

Where:

$b_{TREE,p,i}$ = Tree biomass per hectare in sample plot p of stratum i; t d.m./ha

$B_{TREE,p,i}$ = Tree biomass in sample plot p of stratum i; t d.m.

$A_{PLOT,i}$ = Size of sample plot in stratum i; ha

$B_{TREE,j,p,i}$ = Biomass of trees of species j in sample plot p of stratum i; t d.m.

$B_{TREE,l,j,p,i}$ = Biomass of trees l of species j in sample plot p of stratum i; t d.m.

Biomass of a tree in a sample plot is estimated by using the following equation:

$$B_{TREE,l,j,p,i} = V_{TREE,l,p,j,i} \times D_j \times BEF_j \times (1 + R_j) \quad (16)$$

Where:

$B_{TREE,l,p,j,i}$ = Biomass of tree l of species j in sample plot p of stratum i; t d.m.

$V_{TREE,l,p,j,i}$ = Stem volume of tree l of species j in sample plot p of stratum i, estimated from the tree dimension(s) as entry data into a volume table or volume equation; m³

D_j = Density of tree species j; t d.m/m³

BEF_j = Biomass expansion factor for conversion of tree stem biomass to above-ground tree biomass, for tree species j; dimensionless

R_j = Root-shoot ratio for tree species j; dimensionless

For the Stem volume of tree l of species j in sample plot p of stratum i $V_{TREE,l,p,j,i}$, the tree dimensions used as entry data into a volume equations are Height of tree ($H_{l,p,j,i}$) and Diameter at breast height of trees ($DBH_{l,p,j,i}$).

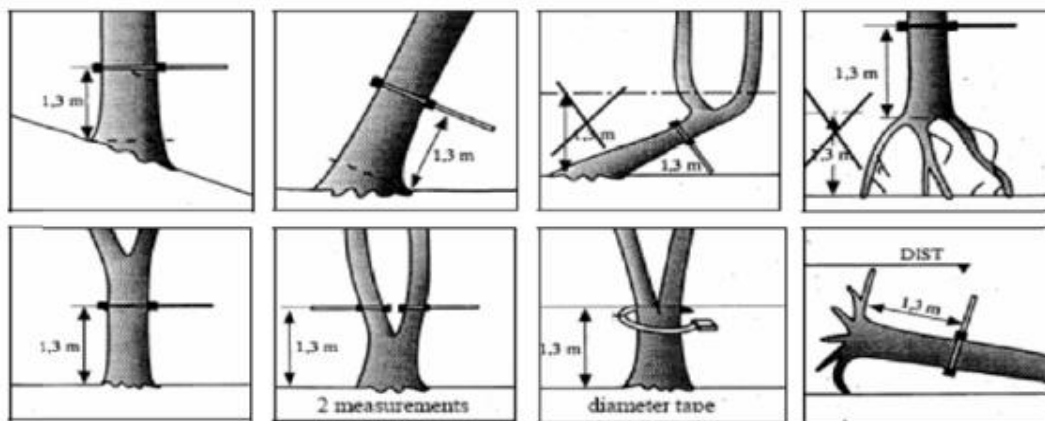


Figure 4 Tree measurements

The minimum diameter at breast height (DBH) measured is 2.7 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 2.0 cm in all sample plots were measured. DBH was measured at 1.3 m above the ground in the manner as shown in the 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 (Figure-6).

Some preventive measures were taken into account:

- Measurement tape was kept in a position that perpendicularly cut the tree axe at 1.3 m;
- On inclined terrain, DBH measurement at 1.3 m is taken from an uphill position
- For fork trees, according to the point where the fork divides the stem, was used the following methodology. If the fork began (the point where the core is divided) below 1.3 m height, each stem having the diameter required (≥ 10 cm) was considered as a tree and was measured. Diameter measurement of each stem was taken at 1.3 m height. If the fork began at 1.3 m or a little higher, the tree was counted as a single tree. The diameter measurement was thus carried out below the fork intersection point, just below the bugle that could influence the DBH.

Data management

All data collected as part of monitoring is archived electronically. All information should be stored by the technology department of the project owner and all the material has a physical copy for backup. And all data collected shall be archived for a period of at least two years after the end of the last crediting period of the project activity.

Statistical table of tree monitoring records of sample land								
Category of tree:								
No	High (m)	The perimeter (cm)	No	High (m)	The perimeter (cm)	No	High (m)	The perimeter (cm)
1			44			87		
2			45			88		
3			46			89		
4			47			90		
5			48			91		
6			49			92		
7			50			93		
8			51			94		
9			52			95		
10			53			96		
11			54			97		
12			55			98		
13			56			99		
14			57			100		
15			58			101		
16			59			102		
17			60			103		
18			61			104		
19			62			105		
20			63			106		
21			64			107		
22			65			108		
23			66			109		
24			67			110		
25			68			111		
26			69			112		
27			70			113		
28			71			114		
29			72			115		
30			73			116		
31			74			117		
32			75			118		
33			76			119		
34			77			120		
35			78			121		
36			79			122		
37			80			123		
38			81			124		
39			82			125		
40			83			126		
41			84			127		
42			85			128		
43			86			129		
Monitoring supervisor (signature):			Reviewer (signature):			Monitoring period:		

Figure 5 Plot of tree monitoring table

QA/QC

There is a systematic internal review and correction process. The technicians provide the original record forms. The checks on the data and the detection of negative growth which might be caused by data entry errors are done by Guizhou Xinzhanxin. Then, Guizhou Xinzhanxin provides feedback to the technicians and correct the data before sharing with Libra. Libra drafts the monitoring report based on the raw data and cross check with the forestry bureau experts. If there is no further comment from the experts, Libra finalizes the report. All parties are required to reply to any questions raised within 30 days. The monitoring equipment should be updated annually if there are new versions or more efficient monitoring tools available. The forestry bureaus are responsible for the monitoring equipment renewal or update.

3.1.4 Dissemination of Monitoring Plan and Results (CL4.2)

Once the project has been registered, both registered Chinese and English version of the Project Description, monitoring manual and monitoring plan have been posted on bulletin boards in 121 villages and on the VERRA website which can be easily download by stakeholders. A brief project progress

including project location, project registered date, expected annual emission reduction, monitoring period and expected verification date has also been posted for stakeholders.

Public comments, monitoring plan, manual and the Chinese version MR summary has been posted on bulletin boards in 121 villages and on the VERRA website which can be easily download by stakeholders. The technicians also communicated effectively with the local villagers at any time, and the technician also explained how the project was monitored, how to collect data, and how to record the patrol inspection.

For each verification, the monitoring team summarized all the comments received from stakeholders and corresponding responses regarding the monitoring plan and results, which will be published on VCS and CCB website along with the monitoring report for each monitoring period. During the monitoring period, no feedback from villagers was collected, which indicates that the public is satisfied with the process and monitoring plan of the project implementation.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions

Baseline net GHG removals by sinks

As described above, the baseline scenario is the continuation of existing land use which remains to be barren land suitable for afforestation. Based on the applied methodology AR-ACM0003 (Version 2.0.0), the baseline net GHG removals by sinks is estimated as follows:

$$\Delta C_{BSL,t} = \Delta C_{TREE_BSL,t} + \Delta C_{SHRUB_BSL,t} + \Delta C_{DW_BSL,t} + \Delta C_{LI_BSL,t} \quad (17)$$

Where:

- $\Delta C_{BSL,t}$ = Baseline net GHG removals by sinks in year t; t CO₂-e
- $\Delta C_{TREE_BSL,t}$ = Change in carbon stock in baseline tree biomass within the project boundary in year t, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO₂-e
- $\Delta C_{SHRUB_BSL,t}$ = Change in carbon stock in baseline shrub biomass within the project boundary, in year t, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO₂-e
- $\Delta C_{DW_BSL,t}$ = Change in carbon stock in baseline dead wood biomass within the project boundary, in year t, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities"; t CO₂-e

$\Delta C_{L_BSL,t}$ = Change in carbon stock in baseline litter biomass within the project boundary, in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities”; t CO₂-e

According to the tool Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities v04.1, Carbon stock in trees in the baseline can be accounted as zero if all of the following conditions are met: (a) The pre-project trees are neither harvested, nor cleared, nor removed throughout the crediting period of the project activity; (b) The pre-project trees do not suffer mortality because of competition from trees planted in the project, or damage because of implementation of the project activity, at any time during the crediting period of the project activity; (c) The pre-project trees are not inventoried along with the project trees in monitoring of carbon stocks but their continued existence, consistent with the baseline scenario, is monitored throughout the crediting period of the project activity.

For this project, the carbon stock and change in carbon stock is estimated as zero under the following 3 conditions: a) this project does not involve harvesting, clearing and removing of pre-project trees throughout the crediting period of the project activity; b) under the approval of Forestry Bureau, the tree-planting activity in this project is conducted under the condition of no disturbing the pre-existing tree, therefore, the pre-project trees do not suffer mortality or damage because of implementation of the project activity, at any time during the crediting period of the project activity; c) The trees planted in the project have been marked by hanging tree number signs, and original trees before the project do not hanging signs, which means that these original trees are not counted during the monitoring of the project, that is to say, pre-project trees are not inventoried along with the project trees in monitoring of carbon stocks . Above all, the baseline scenario $\Delta C_{TREE_BSL,t}$, $\Delta C_{SHRUB_BSL,t}$ is zero. Therefore, set the project baseline carbon variation of zero, $\Delta C_{BSL,t}=0$.

3.2.2 Project Emissions

Actual net GHG removals by sinks

According to the applied methodology AR-ACM0003 (Version 2.0.0), GHG emissions resulting from removal of herbaceous vegetation, combustion of fossil fuel, fertilizer application, use of wood, decomposition of litter and fine roots of N-fixing trees, construction of access roads within the project boundary, and transportation attributable to the project activity shall be considered insignificant and therefore accounted as zero.

The actual net GHG removals by sinks shall be calculated as the sum of the changes in carbon stocks in the project minus the increase in non-CO₂ GHG emissions within the project boundary, which is shown as follows:

$$\Delta C_{ACTUAL,t} = \Delta C_{P,t} - GHG_{E,t} \quad (18)$$

Where:

$\Delta C_{ACTUAL,t}$ = Actual net GHG removals by sinks, in year t ; t CO₂-e

$\Delta C_{P,t}$ = Change in the carbon stocks in project, occurring in the selected carbon pools, in year t ; t CO₂-e

$GHG_{E,t}$ = Increase in non-CO₂ GHG emissions within the project boundary as a result of the implementation of the A/R CDM project activity, in year t , as estimated in the tool "Estimation of non-CO₂ GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity"; t CO₂-e

According to the tool, the use of fire for site preparation and/or to clear the land of harvest residue prior to replanting is specifically excluded from the project management and therefore non-CO₂ GHG emissions are estimated as zero.

$$GHG_{E,t} = 0$$

Change in the carbon stocks in project, occurring in the selected carbon pools in year t shall be calculated as follows:

$$\Delta C_{P,t} = \Delta C_{TREE_PROJ,t} + \Delta C_{SHRUB_PROJ,t} + \Delta C_{DW_PROJ,t} + \Delta C_{LI_PROJ,t} + \Delta SOC_{AL,t} \quad (19)$$

Where:

$\Delta C_{P,t}$ = Change in the carbon stocks in project, occurring in the selected carbon pools, in year t ; t CO₂-e

$\Delta C_{TREE_PROJ,t}$ = Change in carbon stock in tree biomass in project in year t , as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO₂-e

$\Delta C_{SHRUB_PROJ,t}$ = Change in carbon stock in shrub biomass in project in year t , as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO₂-e

$\Delta C_{DW_PROJ,t}$ = Change in carbon stock in dead wood in project in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities”; t CO₂-e

$\Delta C_{L_PROJ,t}$ = Change in carbon stock in litter in project in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities”; t CO₂-e

$\Delta SOC_{AL,t}$ = Change in carbon stock in SOC in project, in year t, in areas of land meeting the applicability conditions of the tool “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”, as estimated in the same tool; t CO₂-e

For conservativeness, only change in carbon stock in tree biomass of project will be considered. Therefore, the above equation can be simplified as:

$$\Delta C_{P,t} = \Delta C_{TREE_PROJ,t} \quad (20)$$

And the tool ‘*Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity*’ (Version 04.2) is used to estimate the change in carbon stock above the ground. According to the tool, change in carbon stock in trees between two points of time is estimated by using one of the following methods or a combination thereof:

- (a) The difference of two independent stock estimations;
- (b) Direct estimation of change by re-measurement of sample plots;
- (c) Estimation by proportionate crown cover;
- (d) Demonstration of “no-decrease”.

Method (b) is efficient when there is a significant correlation between the plot biomass values on the two occasions (e.g. when there has been no harvest or disturbance in a stratum and therefore no significant spatial re-distribution of biomass has occurred in the stratum after the first estimation) For the project, there will be no harvest or disturbance during the project period, thus Method (b) should be selected to be selected, but this method is applicable only in ex-post estimation of change in carbon stock in trees for monitoring of project activities. Therefore, Method (a) is used for the ex-ante estimation during validation, and method (b) has been used in this monitoring period.

Under Method (a), the change in carbon stock in trees and the associated uncertainty are estimated as follows:

$$\Delta C_{TREE} = C_{TREE,t1} - C_{TREE,t2} \quad (21)$$

$$u_{\Delta C} = \frac{\sqrt{(u_1 \times C_{TREE,t1})^2 + (u_2 \times C_{TREE,t2})^2}}{|\Delta C_{TREE}|} \quad (22)$$

Where:

ΔC_{TREE} = Change in the carbon stocks in trees during the period between two points of time t1 and t2; t CO₂-e

$C_{TREE,t1}$ = Carbon stock in trees as estimated at time t1; t CO₂-e

$C_{TREE,t2}$ = Carbon stock in trees as estimated at time t2; t CO₂-e

$u_{\Delta C}$ = Uncertainty in ΔC_{TREE}

u_1, u_2 = Uncertainties in $C_{TREE,t1}$ and $C_{TREE,t2}$ respectively

For this monitoring period, $C_{TREE,t2}$ means carbon stock in trees as estimated from 15-March-2016 to 31-December-2020. $C_{TREE,t1}$ means carbon stock in trees as estimated from 15-March-2016 to 31-December-2021.

Because it is the second verification over this monitoring period. $C_{TREE,t1} = 1,028,716\text{tCO}_2\text{e}$, $C_{TREE,t2} = 643,391\text{tCO}_2\text{e}$.

Hence, $\Delta C_{TREE} = C_{TREE,t1} - C_{TREE,t2} = 1,028,716\text{tCO}_2\text{e} - 643,391\text{tCO}_2\text{e} = 385,325\text{tCO}_2\text{e}$

Carbon stock in trees at a point of time is estimated by using one of the following methods or a combination thereof:

- (a) Estimation by measurement of sample plots;
- (b) Estimation by modelling of tree growth and stand development;
- (c) Estimation by proportionate crown cover;
- (d) Updating the previous stock by independent measurement of change.

For this monitoring period, Method (a) is used for the ex-post estimation during the monitoring period.

According to the Tool, under this method, random sample plots are installed in the strata (e.g. systematic sampling with a random start) and measured.

This method is more efficient when the sample plots are optimally allocated to the strata keeping in view the expected mean tree biomass per hectare and its variability in the strata. The number of sample plots and their allocation to strata may be estimated by using the A/R methodological tool 'Calculation of the number of sample plots for measurements within A/R CDM project activities'.

The carbon stock in trees in the tree biomass estimation strata is estimated as follows:

$$C_{TREE,i,j} = \sum_{i,j} A_i \times N_{i,j} \times \frac{44}{12} \times CF_{TREE,j} \times B_{TREE,j} \quad (23)$$

$$B_{TREE,j} = V_{TREE,j} \times D_j \times BEF_j \times (1 + R_j) \quad (24)$$

Where:

$C_{TREE,i,j}$	=	Carbon stock in trees of tree species j of strata i ; t CO ₂ -e
A_i	=	Area of strata i ; Mu
$N_{i,j}$	=	Number of the tree species j of strata i ; trees/ha
$CF_{TREE,j}$	=	Carbon fraction of tree biomass for tree species j ; t C/t d.m.
$B_{TREE,j}$	=	Biomass of one tree of tree species j ; t d.m.
$V_{TREE,j}$	=	Stem volume of one tree of tree species j ; t d.m.
D_j	=	Density of tree species j ; t d.m/m ³
BEF_j	=	Biomass expansion factor for conversion of tree stem biomass to above-ground tree biomass, for tree species j ; dimensionless
R_j	=	Root-shoot ratio for tree species j ; dimensionless

Selection of allometric equations is based on the tool “Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities”, In this tool, a species-specific or group-of-species-specific allometric equation derived from trees growing in edapho-climatic conditions similar to those in the project area is considered appropriate, and hence can be used for ex post estimation of tree biomass, if at least one of the following conditions is satisfied:

- (a) The equation is used in the national forest inventory, or the national GHG inventory, of the host Party;
- (b) The equation has been used in commercial forestry sector of the host Party for ten years or more;
- (c) The equation was derived from a data set of at least 30 sample trees, and the value of coefficient of determination (R²) obtained was not less than 0.85.

The calculation formulas of this monitoring period are the allometric equations from DB52/T 702_2011 < The binary standing tree volume table of Chinese Fir>, DB52/T 703_2011 < The binary standing tree volume table of Pinus Massoniana plantation > and DB52/T 773_2012 < The binary standing tree volume table of Cypresses >. These three formulas are the local standards of Guizhou Province where the project

is located. Since the criteria are used for national forest inventory in the host country, meeting the option (a) in the above criteria, which is in line with the requirement of the tool.

Referring to the equation in the Tool, the mean carbon stock in trees within the tree biomass estimation strata is estimated as follows:

$$C_{TREE,i,j} = \sum_{i,j} A_i \times N_{i,j} \times \frac{44}{12} \times CF_{TREE,j} \times B_{TREE,j} \quad (25)$$

And the biomass of tree is estimated as follows by referring to equation (5) in Appendix 1 of the Tool:

$$B_{TREE,j} = V_{TREE,j} \times D_j \times BEF_j \times (1 + R_j) \quad (26)$$

Where:

$C_{TREE,i,j}$	=	Carbon stock in trees of tree species j of strata i ; t CO ₂ -e
A_i	=	Area of strata i ; Mu
$N_{i,j}$	=	Number of the tree species j of strata i ; trees/ha
$CF_{TREE,j}$	=	Carbon fraction of tree biomass for tree species j ; t C/t d.m.
$B_{TREE,j}$	=	Biomass of one tree of tree species j ; t d.m.
$V_{TREE,j}$	=	Stem volume of one tree of tree species j ; m ³ .
D_j	=	Density of tree species j ; t d.m/m ³
BEF_j	=	Biomass expansion factor for conversion of tree stem biomass to above-ground tree biomass, for tree species j ; dimensionless
R_j	=	Root-shoot ratio for tree species j ; dimensionless

The tree species adopted in the project are China fir, Masson pine, Cypress. Allometric equation are used to estimate the average merchantable volume of one tree ($V_{TREE,j}$)

China fir ³⁴	$V_{TREE,j} = 0.000088296 \times D^{(1.94097 - 0.0044583 \times (D+H))} \times H^{(0.76012 + 0.0056841 \times (D+H))}$
Masson pine ³⁵	$V_{TREE,j} = 0.000094602 \times D^{(1.88156 - 0.0030651 \times (D+H))} \times H^{(0.76840 + 0.0046574 \times (D+H))}$

³⁴ DB52/T 702_2011 < The binary standing tree volume table of Chinese Fir>.

³⁵ DB52/T 703_2011 < The binary standing tree volume table of Pinus Massoniana plantation >.

Cypress ³⁶	$V_{TREE,j} = 0.000085626 \times D^{(1.91480.0045828 \times (D+H))} \times H^{(0.74041 + 0.00668 \times (D+H))}$
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Where, $V_{TREE,j}$ = Stem volume of one tree of tree species j; m³

Wood density (D_j), biomass expansion factor (BEF_j), root-shoot ratio (R_j) and carbon fraction for China fir, Masson pine and Cypress (CF_{TREE}) are listed in the below.

Table 4-1 Wood density, BEF, Root-shoot ratio and carbon fraction used in the proposed project activity

Parameter	China fir		Masson pine		Cypress	
	factor	Source	factor	Source	factor	Source
Wood density (D_j) (tonnes d.m.m-3)	0.307	The tree species involved in the proposed project can be obtained from the table using the values in the second national bulletin on climate change of the People's Republic of China "list of land-use change and forest greenhouse gases"	0.380	The tree species involved in the proposed project can be obtained from the table using the values in the second national bulletin on climate change of the People's Republic of China "list of land-use change and forest greenhouse gases"	0.478	The tree species involved in the proposed project can be obtained from the table using the values in the second national bulletin on climate change of the People's Republic of China "list of land-use change and forest greenhouse gases"
$BEF_{2,j}$	1.634		1.472		1.732	
Root-shoot ratio (R_j)	0.246		0.187		0.22	
CF_{TREE}	0.52		0.46		0.51	

According to the growing years of the description of the project activity, the aboveground biomass can be categorized into six Project Stratifications.

Table 4-2 Tree biomass per hectare in sample plots

Sample ID	$b_{tree,p,i}$	Sample ID	$b_{tree,p,i}$	Sample ID	$b_{tree,p,i}$	Sample ID	$b_{tree,p,i}$	Sample ID	$b_{tree,p,i}$
Proj-1-	10.42	Proj-1-07	10.37	Proj-3-01	18.82	Proj-3-	18.24	Proj-5-	17.97
Proj-1-	9.94	Proj-1-08	9.98	Proj-3-02	16.95	Proj-3-	18.04	Proj-5-	15.57
Proj-1-	11.07			Proj-3-03	17.66	Proj-3-	18.44	Proj-5-	16.75
Proj-1-	9.91	Proj-2-	9.90	Proj-3-04	15.38	Proj-4-	18.81	Proj-6-	16.78
Proj-1-	10.85	Proj-2-	11.75	Proj-3-05	16.82	Proj-4-	17.65	Proj-6-	15.07
Proj-1-	9.75	Proj-2-	10.44	Proj-3-06	17.65	Proj-4-	18.78	Proj-6-	16.92

³⁶ DB52/T 773_2012 < The binary standing tree volume table of Cyresses >.

According to the 'Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities', all trees in a sample plot above a minimum dimension are measured and the biomass of each tree is estimated. According to the HJ 710.1-2014 'Technical guidelines for biodiversity monitoring—terrestrial vascular plants', the minimum dimension is 2cm. So, if the dimension of tree in the sample plot is not above 2cm, V_{TREE} , t of the tree is equal to 0. The dimension of the sample trees in this project is all over 2cm.

Table 4-3 Tree biomass per hectare in stratum

Sample ID	Tree species	Area (ha)	$b_{tree,i}$ (t d.m. ha-1)	W_i	S_i^2	$W_i \cdot b_{tree,i,t}$	Number of Plots n_i	S^2_{bTREE}
Proj-1	China fir	12000	10.29	0.30769	0.22854	3.16613	8	0.00270
Proj-2	China fir	5000	10.70	0.12821	0.90503	1.37185	3	0.00496
Proj-3	Masson pine	13000	17.56	0.33333	1.09310	5.85327	9	0.01349
Proj-4	Masson pine	3500	18.41	0.08974	0.43723	1.65211	3	0.00117
Proj-5	Cypress	4000	16.76	0.10256	1.44013	1.71891	3	0.00505
Proj-6	Cypress	1500	16.26	0.03846	1.06103	0.62536	3	0.00052

Uncertainty of the mean tree biomass per hectare within the project boundary was estimated as (Equation (15) in methodological tool 'Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities' (Version 04.2):

$$b_{TREE} = \sum_{i=1}^M w_i \times b_{TREE,i} = 14.38763$$

$$S_{b_{TREE}} = 0.167003$$

$$u_C = \frac{t_{VAL} \times \sqrt{\sum_{i=1}^M w_i^2 \times \frac{S_i^2}{n_i}}}{b_{TREE}} = 0.0199$$

Table 4-4 Statistical parameters from monitoring

Item	Unit	Value
		Total
B_{TREE} (Tree biomass of the project)	t d.m.	561,117.57
C_{TREE} (Carbon stock in trees of the project)	t CO ₂ e	1,028,716
$\Delta C_{p,t}$ (Change in the carbon stocks in project)	t CO ₂ e	385,325
U_c (Uncertainty in C_{TREE})	%	1.99%

According to the Appendix 2 of the tool, the uncertainty in the estimated mean value of a parameter is more than 10 per cent, the estimated mean value is either increased or decreased by a percentage of the uncertainty. The table provides the uncertainty discount factors to be applied for different ranges of uncertainty.

Uncertainty discount factors

Uncertainty	Discount (% of U)
$U \leq 10\%$	0%
$10 < U \leq 15$	25%
$15 < U \leq 20$	52%
$20 < U \leq 30$	75%
$U > 30$	100%

Due to the calculation result of U_c is less than 10%, thus discount for this monitoring period is zero.

3.2.3 Leakage

According to the applied methodology AR-ACM0003 (Version 2.0.0), leakage emission is estimated as follows:

$$LK_t = LK_{AGRIC,t} \quad (27)$$

Where:

LK_t = GHG emissions due to leakage, in year t; tCO₂-e

$LK_{AGRIC,t}$ = Leakage due to the displacement of agricultural activities in year t, as estimated in the tool “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity”; tCO₂-e

According to the A/R Methodological tool “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity”, leakage emission resulting from displacement of the activities is composed of decrease in carbon stock in the carbon pools of the land and change in soil organic carbon stock due to land-use change in the land.

$$LK_{AGRIC,t} = \frac{44}{12} \times (DC_{BIOMASS,t} + DSOC_{LUC,t})^{37} \quad (28)$$

Where:

$LK_{AGRIC,t}$ = Leakage due to the displacement of agricultural activities in year t; tCO₂-e

$DC_{BIOMASS,t}$ = Decrease in carbon stock in the carbon pools of the land receiving the activity displaced in year t; t d.m

$DSOC_{LUC,t}$ = Change in soil organic carbon (SOC) stock due to land-use change in the land receiving the displaced activity in year t; tC ha

According to the Tool 15 “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity”, v2.0, Section 6, Paragraph 10 of the tool refers to the leakage emissions caused by the displacement of grazing activities are considered insignificant in some conditions, and hence accounted as zero. However, for the project, the baseline situation is barren land suitable for afforestation, which means there is no vegetation. In addition, the karst area is unsuitable for grazing, so the project does not involve grazing³⁸. Since there is no grazing, the condition of relocation of livestock from within the project area to outside the project area does not exist. Therefore, the leakage due to grazing mentioned in Tool 15 (a) Animals are displaced to existing grazing land and the total number of animals in the receiving grazing land (displaced and existing) does not exceed the carrying capacity of the grazing land; (b) Animals are displaced to existing non-grazing grassland and the total number of animals displaced does not exceed the carrying capacity of the receiving grassland; (c) Animals are displaced to cropland that has been abandoned within the last five years; (d) Animals are displaced to forested lands, and no clearance of trees, or decrease in crown cover of trees and shrubs, occurs due to the displaced animals; (e) Animals are displaced to zero-grazing system is not applicable.

³⁷Equation (1) in page 5 in the A/R Methodological tool “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity” (Version 02.0)

³⁸ According to the baseline survey and biodiversity baseline survey of the project.

On the other hand, the project was implemented by manual operation, rather than mechanical operation. Besides, no weeding, chopping, pruning, intermediate cutting activities are going to be conducted during the crediting period because of the natural condition, the economic condition and the slow growth pattern. Fertilization and watering are not going to take place, neither. Therefore, there is no expected leakage due to a decrease in carbon stock in the carbon pools of the land and a change in soil organic carbon stock. In other words, there is no expected leakage due to the displacement of agricultural activity from the project activity.

Above all, the leakage emission is accounted as zero in this monitoring period.

3.2.4 Net GHG Emission Reductions and Removals

The net anthropogenic GHG removals by sinks shall be calculated as follows:

$$\Delta C_{AR,t} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t \quad (29)$$

Where:

$\Delta C_{AR,t}$	=	Net anthropogenic GHG removals by sinks, in year t ; t CO ₂ -e
$\Delta C_{ACTUAL,t}$	=	Actual net GHG removals by sinks, in year t ; t CO ₂ -e
$\Delta C_{BSL,t}$	=	Baseline net GHG removals by sinks, in year t ; t CO ₂ -e
LK_t	=	GHG emissions due to leakage, in year t ; t CO ₂ -e

The net anthropogenic GHG removals by sinks are summarized below.

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01-January-2021 to 31-December-2021	0	385,325	0	385,325
Total	0	385,325	0	385,325

Year	Change in GHG benefit (tCO ₂ e)	Buffer 10% (tCO ₂ e)	VCUs	VCUs available
01-January-2021 to 31-December-2021	385,325	38,533	346,792	346,792
Total	385,325	38,533	346,792	346,792

Buffer calculating: buffer credits are determined by the non-permanence risk rating (as determined in the AFOLU Non-Permanence Risk Report).

The non-permanence risk rating of the Project is derived from the risk report calculation and corresponds to 10%. This value was specifically calculated during this Monitoring Period and coincides with the calculated value presented in the PD.

The number of GHG credits issued to the project during this Monitoring period, considering the buffer credits, is 346,792 t VCUs.

The total VCUs that must be deposited in the AFOLU pooled buffer account are 38,533 t VCUs.

3.3 Optional Criterion: Climate Change Adaptation Benefits

N/A

3.3.1 Activities and/or processes implemented for Adaptation (GL1.3)

N/A.

4 COMMUNITY

4.1 Net Positive Community Impacts

4.1.1 Community Impacts (CM2.1)

During this monitoring period, all the project-affected groups expressed their true feelings which were collected by the method of village meeting, questionnaire-based survey sent out by the technicians, household survey, field interview, stakeholder opinion collection activity etc. The influence raised by the project including the increase of income, the creation of close-knit community, the obvious improvement of the natural environment, etc. The project proponent also formed the Community Impacts of the project by aggregating everyone's statement, which is showed as the following table:

Community Group	Local villagers in Huangping County, Weng'an County, An'long County (including 80 skilled technicians who worked as long-term workers, 48 of whom are women, and villagers who owned forest land tenure of this project).
Impact(s)	1.Improved living environment 2.Increased household income and living level (direct impact on 80 long-term technicians in 121 villages in 3 counties)
Type of Benefit/Cost/Risk	1. 60% of the carbon profit for the first monitoring period was paid to the village committees and villagers who owned the forest land tenure of this project involved in 121 villages in accordance with the <i>Carbon Sink Afforestation Cooperation and Development Agreement</i> , which directly improved the incomes.

	2. During this monitoring period, the stakeholder opinion collection activity in November 2021 showed that the living environment of the villagers in the project area has been improved, income of 80 long-term technicians has increased significantly, and technicians in the project without going out to work. After the implementation of the project, the impact on local villagers has reached the expected goal.
Change in Well-being	1. The improvement of environmental is beneficial to all villagers. With the soil and water conservation, the crop harvest was greatly improved, so the income increased accordingly. The same applies to villagers' happiness. 2. Increased household income and living level of 80 long-term technicians: During this monitoring period, there are 80 technicians employed first by Forestry Bureau to complete forest management and maintenance tasks and because the project is a carbon sink project, it is necessary to carry out tree monitoring, field survey, daily communication with villagers so Guizhou Xinzhaxin hired the above 80 technicians as part-time project monitoring technicians, and paid an additional salary of CNY 200 per month. In this sense, every one of them got additional 2,400 CNY per year for this project, which is an increase on their household income to a certain extent. They felt a boost in happiness, which can be mainly reflected by avoiding previous unemployment and the inability to care for the elderly and children at home. At the same time, the increase in income also gives them the opportunity to refurbish the house, thereby improving the living level and increasing the sense of happiness. 3. According to the <i>Carbon Sink Project Cooperation Agreement</i>, 60% of profit from the first monitoring period has been distributed to the village committees and villagers who owned forest land tenure of this project.

Community Group	Village committees in Huangping County, Weng'an County, An'long County.
Impact(s)	It has increased the opportunities for communication of the villagers, improved the working methods and income of the villagers, and income. At the same time, women's job opportunities, income and social status have increased.
Type of Benefit/Cost/Risk	The impacts are all indirect and predicted benefit. Stakeholders have been organized at meetings where they learned that there would be more opportunities for communication and jobs, and increasing income after the implementation of the project.

Change in Well-being	Through the implementation of this project, the village committee concentrated training and organized villagers to carry out the implementation project together, which increased the opportunities of communication. The village committee helps villagers with skills, including female villagers, to become project technicians, so that they can earn more money without working outside. This improves their quality of life and standard of living, thereby improving the health and well-being of local people. At the same time, the income of working women has increased, which has not only improved the status of the family, but also improved their personal working ability.
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Community Group	Forestry bureaus of Huangping County, Weng'an County, An'long County.
Impact(s)	Achieve goals in afforestation, promote forest management and protection and the public awareness of protecting local ecological environment.
Type of Benefit/Cost/Risk	During the project verification process, the Guizhou Academy of Social Sciences (a third-party organization) has conducted a biodiversity survey and issued a report. The assessment results have reached the afforestation target, and the forest protection has been further improved. The Academy of Social Sciences (a third-party organization) has made statistics on forest coverage, fires and felled trees. This is a Cost for Forestry Bureaus. As the project trainings is to be held every year, it takes the officers time to join in the training or experts time to train the technicians. The training date and time have already complied with the requirements of the relevant forestry bureau officials, avoiding their tight schedule, and actually did not spend much time on training. At each stakeholder meeting, the question of whether a lot of time was spent on training has been asked, and meeting minutes have been provided as evidence.
Change in Well-being	Through the project, the afforestation area increased, the public's awareness of forest protection was enhanced, and knowledge of forestry-related laws and regulations, planting techniques, and insect and pest prevention was more effectively popularized. The project has asked the Forestry Bureau to provide experts for annual training of technical personnel and provide training records. Recording technicians' inspection and protection of forests, the Forestry Bureau has been assisted in achieving its afforestation goals and expanding local forest coverage.

Community Group	Governments of Huangping County, Weng'an County, An'long County.
Impact(s)	Improve the local ecological environment and improve people's living level
Type of Benefit/Cost/Risk	The impacts are all direct and predicted benefit. During the verification, results from stakeholder opinion collection activity and biodiversity survey report issued by the Guizhou Academy of Social Sciences (third-party organization) have been provided, and the people's living standards and ecological environment have been improved accordingly.
Change in Well-being	The implementation of the project has brought direct benefits to the governments of Huangping County, Weng'an County, An'long County as follows: 1. The project is welcomed by the government of 3 counties because before the implementation of the project there are a large number of underdeveloped regions and unprivileged people within the project zone, and the government's infrastructure investment are limited, so it cannot help all the people enjoy a happier life. This project has increased the income of local farmers and reduced the government's financial stemming from infrastructure investment. The increase in farmers' income has improved their living standards. 2. Through the implementation of the project, the forest has been built, which has significantly improved the local environment and reduced the economic burden of the local government on environmental governance. 3. The implementation of the project also includes the repair and upgrading of local roads. This not only helped the local government to afford part of the municipal construction fee, it also brought convenient transportation to local residents and changed their lifestyle. 4. Through the implementation of the project, the project proponent donated teaching equipments to local schools, which is a positive behavior, to help local government improve local educational conditions.

4.1.2 Negative Community Impact Mitigation (CM2.2)

In order to mitigate the negative well-being impact on community groups, the project proponent has established a problem-solving mechanism and provided a variety of ways for communities to reflect problems, including setting up an exclusive liaison in each village, opinion books in the village committee and publishing telephone numbers of project leaders. In these ways, problems and negative well-being

impacts of community groups can be smoothly and timely reflected to the project proponent. Once the project proponent is informed of these problems and negative well-being impacts, a project manager will be designated to conduct detailed investigation and solve these negative effects.

According to the survey of the community, there is no negative well-being impact on community groups in this monitoring period.

4.1.3 Net Positive Community Well-Being (CM2.3, GL1.4)

The main source of income for communities associated with the farming project zone. Their production methods are backward, affected by disasters such as floods, and agricultural production is also low. The project benefited the economy and society of project area during the monitoring period.

1) Income improvement: During the project period, the net income generated by the project includes employment and labor income by Guizhou Xinzhanxin (200 CNY per technician per month for monitoring, total of 80 technicians) as well as carbon credit sale income.

This project has significantly alleviated the mudslides and improved the soil quality in the recent years since the trees were planted. As a result, the cash crops and crop yields have raised so that farmers can not only meet their daily dietary need, but also can benefit from selling the majority to the market to increase their income. In addition, 60% of profit generated from the first VCUs issuance has been distributed to all village committees and villagers who owned the forest land tenure of this project.

The project has improved the soil condition and increased villagers' incomes. For example, as the economic crops are increased so villagers can afford the house renovation. Their living condition is improved obviously with less draught and flood.

2) Job creation: The project was provided permanent and temporary employment opportunities, including soil preparation, planting and care. Most of the opportunities belong to residents living in the project zone. A local present household earns about 20,400 CNY ³⁹ on average a year and this project can provide 2,400 CNY per technician per year, which is a very effective and direct way for local residents to improve their living standards.

3) Increased the collective communication of the village: The project provides people not only increased income but also a joyful lifestyle. Afforestation will form a close interaction between individuals, which will strengthen communication between communities and local governments, communities and communities. For instance, the villagers can often gather up for meetings and trainings to create a close-knit community.

³⁹According to the socio-economic baseline survey report issued by the Guizhou Academy of Social Sciences, the local present household earns about CNY 20,400 a year on average.

In recent years, tree planting activities have brought more communication opportunities among villages and villages, women and women. With the crop harvests and increased incomes, the instructions have been improved and villagers can enjoy this Festival more than ever, which lead to increased happiness to the local communities.

4) Technical training and demonstration: The communities generally lack seed technologies and high-quality seedlings, fire prevention, forest pest control, which is also a challenge to local community forest management. The project is jointly organized by the local forestry bureau which helps farmers understand and solve problems during the implementation of the project, such as seedling selection, seedling management, land preparation model, pest control.

Guizhou Xinzhanxin has strong expertise in the application and research of new agricultural technologies and forest efficient seedling breeding. During the implementation of this project, Guizhou Xinzhanxin organized many trainings for farmers on how to improve crop yields, how to properly use pesticides and fertilizers and how to do the soil management to speed up the growth of crops. These knowledge and skills are new but very useful to farmers.

5) Before implementation of the project, heavy water and soil erosion caused low yield of the crops on their farmland which is the main income of the farmers. The project creates the ecological benefits and changes them into the benefits of the people's livelihood, and provides a useful pilot for the national financial transfer payment and regional coordinated development, and provides policy support for the new ways of economic development and improvement of people's livelihood in multi-ethnic areas.

After six years since the commencement of this project, the soil condition has been greatly improved. Soil on the hill landform which used to be thin becomes thickening now through the planting of China fir, Masson pine, Cypress, which significantly contributes the production increase of the economic crops.

6) After the project is implemented, the area of green space and beautify the environment has been increased, which not lead to deforestation and obstruction projects. In summary, the relevance of the project area does not have a negative impact on the high value of protection.

7) Gender equality improvement: women technician accounts 60% of the total technician. Through regular training their capability has been obviously improved even better than men, that not only improve the women's confidence, also reflected the principle of equality between men and women in the work.

8) Achieve goals in afforestation, promote forest management and protection and public awareness of protecting local ecological environment: Through the project, the afforestation area was increased, the public's awareness of forest protection was enhanced, and knowledge of forestry-related laws and

regulations, planting techniques, and insect and pest prevention was more effectively popularized. There has requested more experts and training courses provided by Forestry Bureau on this project.

9) Improve the local ecological environment and improve people's living level: This project has increased the income of local farmers and reduced the government's financial pressure for infrastructure investment. The increase in farmers' income has improved their living standards. Through the implementation of the project, the forest has been built, which has significantly improved the local environment and reduced the economic burden of the local government on environmental governance. The implementation of the project also includes repairment and upgrading of local roads. This did not only help the local government to afford part of the municipal construction fee, it also brought convenient transportation to local residents and changed their lifestyle.

4.1.4 Protection of High Conservation Values (CM2.4)

No HCVs was identified related to community well-being in the project zone thus none of the HCVs related to community well-being will be negatively affected by the project.

4.2 Other Stakeholder Impacts

4.2.1 Mitigation of Negative Impacts on Other Stakeholders (CM3.2)

The negative impact on community groups is mainly reflected in the possibility of accidental injuries such as falling or slipping due to the complicated terrain and steep slope of some woodlands in the daily patrol and tree-protecting work of technicians. In addition, accidents may occur if technicians encounter special weather or natural disasters when at work, such as heavy fog or debris flow.

To mitigate these impacts, the project proponent has developed clear work guidelines⁴⁰. In order to prevent the occurrence of accidents such as falls or slips, the technicians are uniformly issued with work clothes, shoes and hats, etc., and replaced with new ones in time according to the degree of use. In addition, for avoiding the accidents caused by extreme weather, the guidelines require technicians to accurately understand the weather conditions of the day before work, and they are prohibited working in woodlands in special weather.

There is no negative well-being impact on other stakeholders during this monitoring period.

⁴⁰ Work safety standards formulated by the Guizhou Xinzhanxin Agricultural Technology Co., Ltd

4.2.2 Net Impacts on Other Stakeholders (CM3.3)

Project was not to negative impacts within and beyond the project zone. Besides, it was increased the income of the local communities and bring positive environmental benefits. Therefore, this project was not created negative impacts on the other stakeholder groups.

4.3 Community Impact Monitoring

4.3.1 Community Monitoring Plan (CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)

During this monitoring period, the project community was evaluated through 3 means namely stakeholder meetings in 31 villages (account for 15% of all stakeholders), questionnaire-based survey in 25 villages (which account for 70% of all stakeholders) and opinion statistical book collected from 65 villages (which account for 15% of all stakeholders). Due to the fact that these 25 villages accounted for the bulk of all stakeholders, sampling questionnaire-based survey was conducted. However, since the population of stakeholders is too large to study in its entirety, the random sampling method is employed to be representative of the general situation. Questions including 'what are the changes to the surrounding environment after the implementation of the project' 'does happiness increase' 'what has happened to women's social status' 'has it improved your standard of living' 'do you get any jobs and training' 'Whether the awareness of environmental protection and related laws and regulations have been raised', and etc. were raised. A total of 100⁴¹ questionnaires were issued and collected during the project (mentioned in 2.3.3). Also, before collecting the sample, the project owner carefully and completely defines the population. In addition, the sampling calculation formula is shown as below:

$$n \geq \frac{1.645^2 \times N \times p(1 - p)}{(N - 1) \times 0.1^2 \times p^2 + 1.645^2 \times p(1 - p)}$$

Where:

Parameters	Description
n	Sample size.
N	The number of villagers in these 25 villages is 20,006 (there are 28,580 stakeholders in total and as mentioned before, these 25 villages accounted for the bulk of stakeholder, which is 70%)
p	The expected value is 0.75 based on the local experience value.
1.645	Represents the 90% confidence as required in the Standard that 90/10 confidence/precision as the criteria for the reliability of sampling efforts for small-scale CDM project activities.
0.1	Represents the 10% relative precision.

⁴¹ There are 100 questionnaires in total. Among the questionnaires, 92 of them were distributed to villagers, 4 of them went to village committees and the rest 4 were handed out to officers from the Government of local counties.

Thus, substituting in the values gives:

$$n \geq \frac{1.645^2 \times 20006 \times 0.75(1-0.75)}{(20006-1) \times 0.1^2 \times 0.75^2 + 1.645^2 \times 0.75(1-0.75)} = 90$$

The final result is ≥ 90 , which means the sample size at least is 90 in this community monitoring period. By the conservative principle of the sample survey, a total of 100 questionnaires were distributed and returned before the meeting. Since the Guizhou Xinzhanxin is experienced in this field, the sample size of 100 is used as the representative of the households involved, which is reliable based on their experience.

It was shown that no negative comments and complaints were received from stakeholder.

The following key variables are monitored for this monitoring period:

The improvement as a perceived benefit:

Variable	The change of living environment
monitoring methods to be applied	Stakeholder meetings and questionnaire stakeholder opinion collection activity in November 2021 ⁴² and interview. Collect villagers' opinions on whether the living environment is improved or not by questionnaire and interview.
Frequency of monitoring/recording	Before every verification event
Affected community groups	1. Local villagers: (80 skilled technicians worked as long-term workers, and 48 of whom are women) 2. Governments of Local Counties
Result of monitoring	The changes in living environment are mainly reflected in the improvement of daily life and surrounding ecological environment. The intangible benefit is the perceived change in the living environment based on responses from the opinion collection activity. By setting clear and understandable questions in the questionnaire, the real feelings of the villagers involved in this survey can be collected. Questions such as "what are the changes in the surrounding environment after the implementation of the project?" and "whether the living environment is improved or not." were asked. The answers are generally categorized as: "I feel that after planting trees, the air in the village is much better, living in a place with fresh air is more pleasant, and the living environment has been improved." "after planting trees, the soil and water have been improved, the surrounding ecological environment has been better, and the living environment has been improved." "After the start of the project, there are more birds and small animals because of the forest, and the natural environment we live in is more beautiful." During this monitoring period, the results from stakeholder

⁴² The stakeholder opinion collection activity in this context refers to questionnaire-based survey and opinion statistical book.

	opinion collection activity show that 100% of local villagers and 100% of officers from Governments of 3 counties believed that after the implementation of the project, the living environment has improved.
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Variable	The change of living level.
monitoring methods to be applied	Stakeholder opinion collection activity and interview
Frequency of monitoring/recording	Before every verification event
Affected community groups	Governments of 3 counties
Result of monitoring	By setting clear and understandable questions in the questionnaire, the real feelings of the villagers involved in this survey can be collected. Questions such as 'has it improved your standard of living' and 'does happiness increase' were asked. During this monitoring period, the results from stakeholder opinion collection activity show that 100% of officers from Government of 3 counties believed that villagers' living level have been improved due to the implementation of the project and the happiness due to job opportunities provided by the project and the crop harvest.

Variable	Increased the collective communication of the village
monitoring methods to be applied	Stakeholder opinion collection activity and interview; Provide annual training records in October 2021; Stakeholder meeting records (22-October-2021)
Frequency of monitoring/recording	Before every verification event
Affected community groups	Village committees in project area
Result of monitoring	By setting clear and understandable questions in the questionnaire, the real feelings of the villagers involved in this survey can be collected. Questions, for example, 'has this project increased the communication among villagers?' have asked. According to the results from stakeholder opinion collection activity, 99% of the Village committees and villager representatives think the opportunities for communication of the villagers has been increased. 1. Planting and periodical trees inspection formed a communication channel between individuals, which increased communication between collective villages and local governments, communities and communities. 2. Villagers who used to be unfamiliar with each other have now become friends because of the increased communication during the planting process and attendance of training sessions. 3. The eighth day of April in the lunar calendar is a traditional festival of the Miao nationality. During festivals, Miao compatriots steam colourful rice, gather together to play Lusheng, dance or sing love songs. Through the implementation

	of the project, some local roads have been repaired, making it more convenient for villagers to travel. Therefore, the number of participants in the “Eighth of the fourth month festival of the Miao” is increasing.
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Variable	Promote forest management and protection
monitoring methods to be applied	Provide annual training records in October 2021, stakeholder opinion collection activity and interview with local villagers, technicians, village committees, and government official.
Frequency of monitoring/recording	Before every verification event
Affected community groups	Government of 3 counties, Forestry Bureaus of 3 counties and Local villagers: (including 80 technicians)
Result of monitoring	By setting clear and understandable questions in the questionnaire, the real feelings of the villagers involved in this survey can be collected. Questions, for example ‘Whether the awareness of environmental protection and related laws and regulations have been raised’ have raised. The trainings were conducted on an annual basis and the officers were very patient. After the training, the technicians promote the protection of the environment to the public, improving the ability of forest protection and management and the awareness of ecological protection. According to the stakeholder opinion collection activity, 100% of the villagers believe that the implementation of the project has improved their awareness of forest protection; 100% of officers from Government and Forestry Bureau believe that the implementation of the project has protected the local environment, and has improved local environment.

Variable	Improvement of working methods of the villagers
monitoring methods to be applied	Annual training records, stakeholder opinion collection activity and interview
Frequency of monitoring/recording	Before every verification event
Affected community groups	Villagers who were hired as technicians
Result of monitoring	By setting clear and understandable questions in the questionnaire, the real feelings of the villagers involved in this survey can be collected. Questions such as ‘after the implementation of the project, did you enhance your working methods?’ was asked. During this monitoring period, the results from stakeholder opinion collection activity show that 100% of technicians believed that due to the forestry-related training, they have upgraded their skills on pest control, fire prevention and tree monitoring.

Variable	Improvement of local ecological environment
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monitoring methods to be applied	stakeholder opinion collection activity and interview
Frequency of monitoring/recording	Before every verification event
Affected community groups	Local villagers Governments of 3 counties Village Committees of 3 counties
Result of monitoring	By setting clear and understandable questions in the questionnaire, the real feelings of the villagers involved in this survey can be collected. Questions such as 'what changes were made to the surrounding ecological environment after the implementation of the afforestation project.' During this monitoring period, the stakeholder opinion collection activity results show that 100% of officers from Government of 3 counties and representatives from village committees and technicians believed that this project has brought positive changes to the local ecological environment in the following ways: 1) the decreased occurrence of debris flow; the improvement of soil quality; 2) the increasing number of biodiversity; 3) the improved air quality.

Variable	Prevention of deteriorating living conditions and less relocation activities undertaken by villagers who had to move to well-developed areas
monitoring methods to be applied	stakeholder opinion collection activity and interview
Frequency of monitoring/recording	Before every verification event
Affected community groups	Local villagers
Result of monitoring	By setting clear and understandable questions in the questionnaire, the real feelings of the villagers involved in this survey can be collected. Questions such as 'after the implementation of the project, did you get any job opportunities' were asked. During this monitoring period, the stakeholder opinion collection activity results show that 100% of technicians believed that due to the stable employment opportunities brought by the project gas helped them gain a sense of job security and now they can have much more time to take care of their families. These aspects are the embodiment of the improvement of living conditions. Instead of a state of uncertainty about continued employment before the project, they now set their minds at ease.

The quantifiable improvement:

Variable	Households' income.
monitoring methods to be applied	Payroll of the workers who worked as technicians related to the project. And 60% of profit gained from the first monitoring period has been distributed to all village committees and villagers who

	owned forest land tenure of this project.
Frequency of monitoring/recording	Before every verification event
Affected community groups	Local villagers: (including village committees and villagers who owned forest land tenure of this project and 80 long-term technicians)
Result of monitoring	80 Villagers were hired as the technicians earned an extra CNY 200 per month total CNY 2,400 per year. During the investigation, technicians participated in the project reported that the implementation of the project increased their income. The project provides an annual income of CNY 2,400 for each technician and provide a payroll signed by the mechanic. This income provided is a very effective and direct way to improve living standards. And according to the receipts from villages, 60% of profit gained from the first monitoring period has been distributed to all village committees and villagers who owned forest land tenure of this project.

Variable	Achieve goals in afforestation
monitoring methods to be applied	Biodiversity survey report (December-2021)
Frequency of monitoring/recording	Before first verification event
Affected community groups	Forestry Bureaus of 3 counties
Result of monitoring	The goal has been already achieved during first monitoring period. 1. During the monitoring period, the technicians maintained and managed the forest land to ensure that the area of the forest land does not decrease, and there is no fire or insect damage, which meets the local government's forest management and protection standards. 2. During the monitoring period, the target reached was not only the area of tree planting, but also forest maintenance and management. Tree planting only took place in the monitoring period, but the forest maintenance and management goals were monitored in every monitoring period. 3. During this monitoring period, the technicians completed the weeding and pest prevention work in accordance with the requirements of the forest management manual. And there were no disasters such as fires or mudslides. Due to the public awareness of environmental protection, there was no illegal logging during this monitoring period. Therefore, the forest area has not decreased and the trees are growing well.

4.3.2 Monitoring Plan Dissemination (CM4.3)

Community monitoring plans and manuals for project monitoring periods have been posted on bulletin boards in villages. The monitoring report and summary has been published on the VERRA website, and the relevant villagers have understood the progress of the project. The project leader also communicated effectively with the local villagers during the publicity, and the technicians also explained how to monitor the project, how to collect data, and how to record the patrol inspection.

For each verification, the monitoring team would summarize all the comments received from stakeholders and corresponding responses regarding the monitoring plan and results, which has been published on VCS and CCB website along with the monitoring report for each monitoring period. During the monitoring period, no feedback from villagers was collected, which indicates that the public is satisfied with the process and community monitoring plan of the project implementation.

During this monitoring period, no comments on the community monitoring plan and results received.

4.4 Optional Criterion: Exceptional Community Benefits

N/A.

4.4.1 Short-term and Long-term Community Benefits (GL2.2)

N/A.

4.4.2 Marginalized and/or Vulnerable Community Groups (GL2.4)

N/A.

4.4.3 Net Impacts on Women (GL2.5)

N/A.

4.4.4 Benefit Sharing Mechanisms (GL2.6)

N/A.

4.4.5 Governance and Implementation Structures (GL2.8)

N/A.

4.4.6 Smallholders/Community Members Capacity Development (GL2.9)

N/A.

5 BIODIVERSITY

5.1 Net Positive Biodiversity Impacts

5.1.1 Biodiversity Changes (B2.1)

Change in Biodiversity	Species of plants
Monitored Change	Increased
Justification of Change	The increased plants were achieved by the implementation of afforestation program. According to the requirements of the survey method, sample plots of three types of vegetation were collected. After collecting data, the survey report was compiled by Guizhou Academy of Social Sciences. During this monitoring period, 5 species of plants were discovered and their quantities were written in the bracket as follows: <i>Duchesnea indica</i> (35 plants), <i>Urtica fissa</i> E. Pritz. (16 plants), <i>Liriodendron chinense</i> (25 plants), <i>Psilotum nudum</i> (45 plants), and <i>Sphagnum palustre</i> (420mm²).  This photo shows <i>Duchesnea indica</i>

Change in Biodiversity	Species of animals
Monitored Change	increased
Justification of Change	The increased species of animals were achieved by the implementation of the afforestation program. According to the biodiversity survey report completed by the Guizhou Academy of Social Sciences, 29 sample plots were monitored and the collection was carried out according to the direction of the transect map, which covered 630 hectares of land, each sample plot or transect line covered at least 22 hectares. During this

	monitoring period, 5 species of animals were discovered and their specific quantities were written in the bracket as follows: Bombycilla garrulus (the number is 20), Cinnyris jugularis (the number is 5), Macaca (the number is 15), Lepus sinensis (the number is 10), and gossamer-winged butterfly (the number is 25). This photo shows Cinnyris jugularis
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5.1.2 Mitigation Actions (B2.3)

Afforestation in this project used local species, implementing afforestation activity through scientific and reasonable method without burning and slash, and protecting the existing vegetation as much as possible. Therefore, implementation of this project does not decrease biodiversity of project area.

5.1.3 Net Positive Biodiversity Impacts (B2.2, GL1.4)

Firstly, due to long-term farming, the ecological structure of most project area is relatively homogenous, with lower biodiversity. The other small part is wasteland, mainly covered with grass and scattered shrubs. Afforestation of this project used local species, implementing afforestation activity with scientific and reasonable configuration method without burning and slash. The use of point-like site preparation protected the existing vegetation as much as possible. Thus, the net with-project change of biodiversity is positive.

Secondly, scientific and rational afforestation projects can adjust the hydrological cycle, reduce drought and flood risk, promote soil nutrient cycle, and improve local micro-climate and other ecological environments. In addition, as the project area is located within Huangping County, Weng'an County and An'long County, the surrounding area is concentrated of wildlife. Therefore, the revegetation of project sites will facilitate biodiversity protection of the whole project zone.

The 11 National protected species in the project zone are shown in the following table:

Animals	Plants
Moschus berezovskii	Bretschneidera sinensis
Andrias davidianus	Keteleeria pubescens
Neofelis nebulosa	Eucommia ulmoides Oliver
Viverricula indica	Liriodendron chinense
Macaca mulatta	Emmenopterys henryi Oliv.
Panthera pardus	

Moschus berezovskii, Andrias davidianus and Bretschneidera sinensis are globally endangered species according to IUCN.

5.1.4 High Conservation Values Protected (B2.4)

This area does not involve national or local conservation of High Conservation Values organisms.

5.1.5 Invasive Species (B2.5)

All the planted trees are native species and no invasive species have been introduced into any area affected by the project during this monitoring period.

5.1.6 Impacts of Non-native Species (B2.6)

No non-native species have been used in the project zone.

5.1.7 GMO Exclusion (B2.7)

No GMOs have been used to generate GHG emissions reductions or removals.

5.1.8 Inputs Justification (B2.8)

Name	Chemical pesticides
Justification of Use	The chemical pesticides are allowed to be used only if there is a serious disease problem erupted in the project area, and the pesticides will be used in accordance with the National Pesticides Policy.

Adverse Effect	Improper pesticide application would be harmful to natural environment, including polluting soil, water and air conditions, as well as the habitat of the wildlife. But for this project, pesticide will be strictly managed by well trained technicians to minimize the potential effect. Especially the biological measures to control pests and diseases will be adopted. Therefore, the pesticide application will be limited. During monitoring period, no chemical pesticides have been used since there is no occurrence of pests and disease.
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Name	Biological control agents
Justification of Use	Upon routine overseeing, the pest will be treated by biological control once occurred according to local Pest Control and Prevention Policy.
Adverse Effect	The biological control agents are natural enemy of pest which are native species and have no adverse effect on local environment and communities. During monitoring period, no biological control agents have been employed since there is no occurrence of pests and disease.

5.2 Offsite Biodiversity Impacts

5.2.1 Negative Offsite Biodiversity Impacts (B3.1) and Mitigation Actions (B3.2)

Before the project began, the project site was all barren land suitable for afforestation, with no plant growth or animal habitat, so there was no basis of biodiversity in project site. However, after the implementation of the project, by planting trees, the soil quality has been improved, the water and soil have been preserved, and more plants and shrubs have been provided for the growth conditions, as well as a habitat for many birds and small animals. As the project activities was increased the area of the habitat, as well as improve the habitats' quality, only positive biodiversity impacts can be identified. Therefore, there are no potential negative offsite impacts on biodiversity.

5.2.2 Net Offsite Biodiversity Benefits (B3.3)

Since there are no potential negative offsite impacts on biodiversity, the net offsite biodiversity benefits are positive.

5.3 Biodiversity Impact Monitoring

5.3.1 Biodiversity Monitoring Plan (B4.1, B4.2, GL1.4, GL3.4)

Sample Plots

The sample plots for monitoring biodiversity are same as the sample plots for carbon monitoring. The scope of the biodiversity survey by Guizhou Academy of Social Sciences (GASS) was set as Huangping county, Weng'an county, An'long county.

Table 5 Information table of the sample spots

The Number of Sample Plot	Sample plots ID	Carbon Layer	Latitude and longitude
1	ID-W4	Carbon Layer1	E107°30'31" N27°02'02"
2	ID-A16	Carbon Layer1	E105°13'24" N25°6'14"
3	ID-A24	Carbon Layer1	E105°18'46" N25°14'19"
4	ID-A25	Carbon Layer1	E105°16'11" N25°10'14"
5	ID-A21	Carbon Layer1	E105°19'21" N25°13'7"
6	ID-A4	Carbon Layer1	E105°22'46" N25°6'9"
7	ID-A1	Carbon Layer1	E105°23'6" N25°5'52"
8	ID-A19	Carbon Layer1	E105°11'57" N25°8'36"
9	ID-A37	Carbon Layer2	E105°9'14" N25°13'22"
10	ID-A38	Carbon Layer2	E105°9'36" N25°13'30"
11	ID-A36	Carbon Layer2	E105°13'7" N25°13'53"
12	ID-A44	Carbon Layer3	E105°24'33" N25°19'5"
13	ID-A49	Carbon Layer3	E105°25'59" N25°19'0"
14	ID-A56	Carbon Layer3	E105°27'37" N25°18'6"
15	ID-W13	Carbon Layer3	E107°30'14" N27°6'57"
16	ID-W7	Carbon Layer3	E107°33'33" N27°1'35"
17	ID-H21	Carbon Layer3	E107°49'41.21" N27°4'46"
18	ID-H12	Carbon Layer3	E107°53'32" N27°4'17"
19	ID-H20	Carbon Layer3	E107°53'37" N26°59'42"
20	ID-H18	Carbon Layer3	E107°53'57" N26°52'39"
21	ID-A58	Carbon Layer4	E105°25'37" N25°13'09"
22	ID-W19	Carbon Layer4	E107°26'38" N27°3'13"
23	ID-W15	Carbon Layer4	E107°24'45" N27°5'16"
24	ID-A62	Carbon Layer5	E105°4'3" N24°58'15"

25	ID-H32	Carbon Layer5	E107°46'21" N27°2'26"
26	ID-H22	Carbon Layer5	E107°44'36" N26°57'18"
27	ID-H38	Carbon Layer6	E107°40'52" N26°54'45"
28	ID-H37	Carbon Layer6	E107°40'32" N26°53'50"
29	ID-H35	Carbon Layer6	E107°45'41" N26°53'37"

Animal Diversity Survey

(1) Survey Tool

Digital camera, the sample plot searching line map, GPS locator, telescope, pedometer, board clip, oil-based paint marker, etc.

(2) Survey Method

In the survey of routine sample zone, the belt transect method was adopted. The survey was carried out by first finding and recording the starting point of the sample zone and then travelling in a northeast-to-southwest direction at a speed of 2-3 km/hour, while recording data and information on the number of animal entities or traces of activity found, the vertical distance from the center line of the sample zone, and the habitat and altitude of the sample strip. This survey areas include Huangping county, Weng'an county, and they were delineated on a 1:100,000-scale topographic map prior to the survey to include each route, and the actual route was chosen based on the on-site situations within the survey area. All the fresh animal feces met should be sampled for molecular biological analysis. Also, the information of other animals (including entity, feces, footprints, food tracks, etc.) in the route passed should be recorded. Meanwhile, the vegetation distribution and relevant environmental information in the area should be investigated. The animal information confirmation can be conducted through household investigation.

The 29 plots in this survey area were sampled using the random sampling methodology referred to in the project design documents.

Plant diversity survey

(1) Survey tool

The survey tools are digital camera, tape measure, tape, scissors, specimen bag, specimen holder, the ropes with the length of 1 meter, 2 meters, 5 meters and 10 meters, oil-based paint markers, etc.

(2) Vegetation survey method:

According to the characteristics of natural succession of vegetation in the karst rocky desertification area in central Guizhou, the method of typical sampling was used to investigate plant communities at each succession stage. The area of survey sample plots was divided into:

a. The arbor layer is selected to have a quadrat area of 30 meters in length and 30 meters in width, so as to determine the types and the number of arbors in the sample plot, number the identification tag,

measure the height, diameter at breast height, canopy density of these arbors and judge their viability. All the measurement results were recorded.

b. The shrub layer is selected to have a quadrat area of 5 meters in length and 5 meters in width, so as to determine the types and the number of shrubs in the sample plot, number the identification tag, measure the height, crown diameter, coverage degree of these shrubs and judge their viability. All the measurement results were recorded.

c. The herb layer is selected to have a quadrat area of 1 meter in length and 1 meter in width, so as to determine the types and the number of the herb in the sample plot, number the identification tag, measure the height, crown diameter, coverage degree of the herb and judge their vitality. All the measurement results were filled in the table.

Survey results:

From the beginning of the project, the biodiversity monitoring was mainly completed by the 80 technicians who were hired by Guizhou Xinzhanxin. All technicians have performed biodiversity monitoring during the monthly forestland inspection. They recorded the results according to the concrete scheme of monitoring plan and requirements and then summarized yearly to feedback to Guizhou Xinzhanxin project manager. The conclusion on biodiversity was obtained from a field survey conducted by the academy of social sciences of Guizhou province for two months. Results in terms of animal diversity and plant diversity were expounded as follows:

Animal diversity

As required by the survey methodology, the technicians feedback the monitoring results to the project manager of Guizhou Xinzhanxin. Afterwards, Guizhou province academy of social sciences completed the biodiversity survey report based on the survey data. The 29 sample plots were monitored and collected according to the direction of the sample diagram. The sample line covered 630 hectares of land with a minimum of 22 hectares for each sample plot and also for each sample line. In the routine sample line survey, the areas involved in the Anhuang project adopt the sample line method of Guizhou Province, and the survey was conducted all year round. The survey showed that during this monitoring period, During this monitoring period, 5 species of animals were discovered and their specific quantities were written in the bracket as follows: *Bombycilla garrulus* (the number is 20), *Cinnyris jugularis* (the number is 5), *Macaca* (the number is 15), *Lepus sinensis* (the number is 10), and gossamer-winged butterfly (the number is 25).

Plant diversity

As required by the survey methodology, the sample plots of three types of vegetation were collected. The survey report was compiled by the Academy of Social Sciences of Guizhou. According to the report, it was shown that during the monitoring period, the sample plots of three types of vegetation were collected.

The survey report was compiled by the Academy of Social Sciences of Guizhou. According to the report, it was shown that during the monitoring period, 5 species of plants were discovered and their quantities were written in the bracket as follows: *Duchesnea indica* (35 plants), *Urtica fissa* E. Pritz. (16 plants), *Liriodendron chinense* (25 plants), *Psilotum nudum* (45 plants), and *Sphagnum palustre* (420mm²).

In summary, the data of biodiversity survey demonstrated that since the afforestation project in Huangping County, Weng'an County and An'long County was implemented, the geographic characteristics of the rocky desertification have been improved to some extent. Plants and animals that had been supposed to grow in the region were found during the monitoring period, which never happened previously. It can be proven that the project management of rocky desertification has played a certain positive effect, the biodiversity in this area has started to be increased by the project. The statistical results are shown as the following table:

Table 6 Monitoring variables for biodiversity

Indicator type	Description	Monitoring indicator	Indicator unit	Survey results	Monitoring method	Monitoring frequency
State variables	The quantity and quality of forest in the project area	Forest cover	ha	39,000	By Measuring the sample spots.	Before every verification ⁴³
		Species of vegetation	/	5 species of plants.	According to the 29 sampling plots and sample line set up during the monitoring process, the monitoring points are designated for monitoring. Selecting quadrats and then taking photos for recording.	Before every verification
		Animal population associated with forest	/	5 species of animals	According to the 29 sample plots and sample line set during monitoring process, monitoring the animal entity or trace by designating sample line	Before every verification

⁴³ The monitoring frequency is before each verification, but not only one wildlife sampling event.

					and then taking photos or recording the sound.	
		Number of nature disaster especially debris flow ⁴⁴	/	0	Recorded by forest technician and confirmed by local Forest Bureau	Once every year
		Amount of precipitation	mm	1,279	Recorded by local meteorological service	Once every year
Pressure variables	The frequency or intensity of anthropogenic impacts that are directly harmful to biodiversity in the project zone	Number of fires occurred	/	None	Recorded by forest rangers and confirmed by local Forest Bureau	Once every year
		Effectuated forest area suffered insects and disease	ha	0	Recorded by forest rangers and confirmed by local Forest Bureau	Once every year
Response variables	The frequency or intensity of project interventions relevant to biodiversity	Forest area under prevention control from fires	ha	39,000	Recorded by forest rangers and confirmed by local Forest Bureau	Once every year
		Forest area under prevention control from insects and diseases	ha	39,000	Recorded by forest rangers and confirmed by local Forest Bureau	Once every year
		Forest area recovered from fire, insects or diseases		0	Recorded by forest rangers and confirmed by local Forest Bureau	Once every year
		Number of trees re-planted	/	0	Recorded by forest rangers and confirmed by local Forest Bureau	Once every year

5.3.2 Biodiversity Monitoring Plan Dissemination (B4.3)

Monitoring report has been posed for public comments and the public comment period runs from 09-March-2022 to 08-April-2022. Meanwhile, the summary of monitoring plans and monitoring results

⁴⁴ This is the variables which are linked to the improvement of soil and water conservation.

(Simplified Chinese version) has been prepared and posted on bulletin boards of all project-related villages by project proponents. The monitoring report and summary have been published on the VERRA website, and villagers understood the progress of the project. The project manager also communicated with the local villagers in an effective manner during the publicity, and the technician also have explained how the project was monitoring, how to collect data, and how to record the patrol inspection to villagers.

For each verification, the monitoring team would summarize all the comments received from stakeholders and corresponding responses regarding the biodiversity monitoring plan and results, which has been published on VCS and CCB website along with the monitoring report for each monitoring period. During the monitoring period, no feedback was collected, which indicates that the public is satisfied with the process and monitoring plan of the project implementation.

During this monitoring period, no comments on the biodiversity monitoring plan and results were received.

5.4

5.5 Optional Criterion: Exceptional Biodiversity Benefits

N/A.

5.5.1 Trigger Species Population Trends (GL3.3)

N/A.

6 ADDITIONAL PROJECT IMPLEMENTATION INFORMATION

N/A.

7 ADDITIONAL PROJECT IMPACT INFORMATION

N/A