

QIANXINAN AFFORESTATION PROJECT IN GUIZHOU PROVINCE



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

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1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or Impact Estimated by the End of Project Lifetime	Section Reference
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 demonstration role.	4.2
2) Material welfare of the minorities people and the populations that are in the project area	4.2
3) Provide experience of forest planting and management in Karst region.	4.1.1
4) Maintenance of biodiversity populations, improvement and / or maintenance of existing conditions at the beginning of the project	5

1.2 Standardized Benefit Metrics

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
GHG emission reductions or removals	Net estimated emission removals in the project area, measured against the without-project scenario	8,198,544 tCO ₂ e	3.2.4
	Net estimated emission reductions in the project area, measured against the without-project scenario	N/A	N/A
Forest ¹ cover	For REDD ² projects: Estimated number of hectares of reduced forest loss in the project area measured against the without-project scenario	N/A	N/A
	For ARR ³ projects: Estimated number of hectares of forest cover increased in the project area measured against the without-project scenario	32,047 Ha	2.1
Improved land management	Number of hectares of existing production forest land in which IFM ⁴ practices are expected to occur as a result of project activities, measured against the without-project scenario	N/A	N/A
	Number of hectares of non-forest land in which improved land management practices are expected to occur as a result of project activities, measured against the without-project scenario	N/A	N/A

¹ 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*)

² Reduced 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*)

³ Afforestation, 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*)

⁴ Improved 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	Estimated by the End of Project Lifetime	Section Reference
Training	Total number of community members who are expected to have improved skills and/or knowledge resulting from training provided as part of project activities	24,035	2.3
	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities	16,825	2.3
Employment	Total number of people expected to be employed in project activities, ⁵ expressed as number of full-time employees ⁶	24,035	2.3
	Number of women expected to be employed as a result of project activities, expressed as number of full-time employees	16,825	2.3
Livelihoods	Total number of people expected to have improved livelihoods ⁷ or income generated as a result of project activities	24,035	2.3
	Number of women expected to have improved livelihoods or income generated as a result of project activities	16,825	2.3
Health	Total number of people for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	N/A	N/A

⁵ 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.

⁶ 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 the UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])

⁷ Livelihoods 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	Estimated by the End of Project Lifetime	Section Reference
	Number of women for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	N/A	N/A
Education	Total number of people for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	N/A	N/A
	Number of women and girls for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	N/A	N/A
Water	Total number of people who are expected to experience 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
	Number of women who are expected to experience 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
Well-being	Total number of community members whose well-being ⁸ is expected to improve as a result of project activities	24,035	2.3
	Number of women whose well-being is expected to improve as a result of project activities	16,825	2.3

⁸ Well-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, Livelihoods, Health, Education and Water), and may also include other benefits such as strengthened legal rights to resources, increased food security, conservation of access to areas of cultural significance, etc.

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
Biodiversity conservation	Expected change in the number of hectares managed significantly better by the project for biodiversity conservation, ⁹ measured against the without-project scenario	32,047	5.2
	Expected number of globally Critically Endangered or Endangered species ¹⁰ benefiting from reduced threats as a result of project activities, ¹¹ measured against the without-project scenario	4	5.2

⁹ Managed for 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, e.g. enhancing the status of endangered species

¹⁰ Per IUCN's Red List of Threatened Species

¹¹ In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit

2 GENERAL

2.1 Project Goals, Design and Long-Term Viability

2.1.1 Summary Description of the Project (G1.2)

The Qianxinan afforestation project in Guizhou Province 2018 (hereafter referred as “the project”) is located in Xingren City, Xingyi City, Ceheng County, Zhenfeng County, and Qinglong County, Guizhou Province, China. The project is to establish forest on the barren land to generate GHG emission reductions and contribute to local sustainable development. The project is jointly implemented by Forestry Bureau of Xingren City, Forestry Bureau of Xingyi City, Forestry Bureau of Ceheng County, Forestry Bureau of Zhenfeng County and Forestry Bureau of Qinglong County.

32,047ha of forest was established by direct planted on degraded lands in five counties. Xingren City, Xingyi City, Ceheng County, Zhenfeng County, and Qinglong County belongs to Qianxinan, Guizhou Province.

The project activity aims to:

- Sequester greenhouse gas and mitigate climate change;
- Enhance biodiversity conservation by increasing the connectivity of forests;
- Improve soil and water conservation in the Karst region;
- Generate income and job opportunities for local communities.

There is no natural renewal and reforestation before the project, and all sites were covered by the barren hill. The main objective specie is Cypresses which is native species according to the baseline survey.

The implementation of the project would reduce the GHG emissions for 8,198,544CO₂e in 20years, with an average annual GHG emission of 409,927tCO₂e.

2.1.2 Project Scale

Project Scale	
Project	
Large project	✓

2.1.3 Project Proponent (G1.1)

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2.1.4 Other Entities Involved in the Project

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2.1.5 Physical Parameters (G1.3)

Qianxinan Buyi and Miao autonomous prefecture is located in southwest Guizhou province, the pearl river upstream, and Qiannan adjacent east, west and bordering Yunnan Qujing city, south to baise of Guangxi Zhuang autonomous region, on the other side of the Nanpan river and Hongshui river, north adjacent to Liupanshui city, Anshun city, autonomous prefecture jurisdiction area of 16804 square kilometers, within the territory of distribution of Buyi, Miao, Han, Yao, GeLao, Hui, 35 people. As of 2016, Guizhou southwest Buyi Miao autonomous prefecture jurisdiction 1 city 7 Counties. In 2016, the permanent population of Buyi and Miao autonomous prefecture in southwest Guizhou was 2.8382 million. The Buyi Miao autonomous prefecture in southwest Guizhou is a typical low-latitude and high-altitude mountain area, belonging to the south-north pan river basin of the pearl river system. The whole terrain is high in the west and low in the east, high in the north and low in the south. The highest point is the peak of Qishe and Liangzhaogao plateau in Xingyi city, which is 2207.2 meters above sea level. The lowest point is the Daliu estuary along the Hongshui river in Wangmo County, which is 275 meters above sea level with a height difference of 1932.2 meters, and most of them are between 1000 and 2000 meters above sea level. In the territory of the state, the topography is undulating and complex, which can be divided into five different landform areas, namely, low mountain erosion mountain canyon area. Trough dam area of karst plateau; Karst erosion area; Karst erosion mountain area; Erosion of the mountain valley.

Climate

Xingyi subtropical mountain monsoon humid climate, summer without heat, winter without cold, abundant rainfall, long sunshine. In most of the annual average temperature between 15 DHS ~ 18 DHS, January average temperature 7.1 °C, the average temperature of 22.2 °C in July. In the same season, the annual precipitation is between 1300 ~ 1600 mm, and the frost free period is between 275 ~ 334 days.

Xingren city is a warm, warm, winter and dry climate, due to various factors, the plateau type of north subtropical temperate humid monsoon climate. The city all the year round average temperature of 15.2 °C. The hottest July, the average temperature in 22.1 °C. On January the coldest, the average temperature of 6.1 °C. Extreme maximum temperature 34.6 °C, the minimum temperature of 7.8 °C. For the number of days for more than 10 °C for 243 days, more than 10 °C accumulated temperature of 4588 °C. Northeast of spindle, wave seedling Jiang River, Shahe, bifurcation PuHe at an altitude of 1000 meters below the river valley of the annual average.

Ceheng in subtropical humid monsoon climate, warm climate, annual average sunshine 1514 hours annual average temperature 19.2 °C, extreme maximum temperature 36.5 °C, extreme minimum temperature of 4 °C below zero, for many years, the average frost-free period is 345 days, annual average rainfall of 1340.7 millimeters, frost-free period 345 days. The main features are: no cold winter, hot summer, wet spring dry summer, hot rain with the same season, warm spring early, cool autumn late.

Zhenfeng county belongs to subtropical monsoon humid climate, mild climate, winter no cold, summer no cool agency, the annual average temperature of 16.6 degrees. Annual rainfall of 1000-1400 mm, frost-free period of 260-340 days

Qinglong is a cold wet plateau subtropical monsoon climate zone, mild climate, energy resources, an average annual sunshine hours 1462 hours, annual total amount of 103.26 km/cm, rain, annual average temperature of 14 °C, the total rainfall between 1500-1650 mm, frost-free period of about 320 days.

Soils

Soil introduction in Xingyi city, There are 8 soil types, 27 subtypes, 79 soil genera and 161 soil species in the city. Karst landform area natural soil is mainly lime soil followed by dry soil. Calcareous soil is mainly black calcareous soil, brown calcareous soil, yellow calcareous soil, red calcareous soil 4 subspecies, 7 soil genera, 16 soil species.

Soil introduction in Xingren city, The soil in the planning area is mainly yellow brown soil and yellow soil. The soil layer is relatively thick, generally reaching about 100cm-120cm, with a PH value between 6.5 and 7.5. Good soil quality and thick soil layer are conducive to the growth of crops. The region has the characteristics of over composition from south subtropical plant assemblage to subtropical evergreen broad-leaved mixed forest, and the plant vertical band spectrum is comparatively developed..

Ceheng County is rich in soil resources and diverse in type, creating more favorable conditions for the development of agriculture, forestry and animal husbandry and the development of diversified

management. The soil types of the county can be divided into 10 soil classes, 27 subsoil classes, 59 soil genera, 94 soil species.

The soil types in Zhenfeng county mainly include red soil, yellow soil, lime soil and rice soil. The cultivated land with a soil thickness of 10-15cm or more accounts for about 52.7% of the total cultivated land, mainly in the central and northern regions.

There are 52 families and 116 species of tree species (including bamboos) in Qinglong county, with a forest coverage rate of 5.02%. At present, there are 210,755 cubic meters of forest storage, among which, 155,299 cubic meters of timber forest storage, 20,800 cubic meters of open forest storage, 166,699 cubic meters of scattered storage, and 17,949 cubic meters of peripheral tree storage mainly in villages. Wild plant variety, relatively large, such as longxuancao, roxburgh rose, skin, wood oil, grease wax. Wild drug resources mainly include bottle, huangjing, asparagus, dipsacus, baimao, unicorn lotus, eucommia, gentian, pondweed, trichoderma, honeysuckle.

Ecosystem

Xinyi City, Diverse landforms and favorable climate form unique biological resources. Here, subtropical and temperate plants can grow, with more than 530 kinds of crop varieties. It is famous for producing high-quality flue-cured tobacco, yulong, plantain taro and ginger. The annual yield of grade flue-cured tobacco is 4,700 tons, which occupies an important position in the whole province. More than 30 kinds of dried fruit. It's available all year round. Xingyi da hong pao (red mandarin), haizi pear, winter pear long renowned. There are more than 1000 species of medicinal plants such as bamboo sun, eucommia ulmoides and yellow grass.

Xingren city can be divided into three types: karst landform, erosion landform and accumulation landform, in which karst landform accounts for 71.68%, erosion landform accounts for 28.32%, and accumulation landform is scattered and overlapped in karst and erosion landform. Mountain, hill, basin dam, water area and other types can be formed according to the surface, among which the mountain area is 1497559 mu, accounting for 55.90% of the total area of the county. Hilly area 917400 mu, accounting for 34.3% of the total area; Basin dam area of 248,362 mu, accounting for 9.3% of the total area; The water area covers 14178.00 mu, accounting for 0.5% of the total area.

There are nearly 200 families and more than 800 species of trees in Ceheng County, most famous for the Chinese fir, beech, red tallow, date and pine-leaf yunnan pine, with a forest coverage rate of 60%. There are over 1200 varieties of medicinal plants including ganoderma lucidum, bamboo-sun, tianmendong, huangjing, hundred parts, wugui, panax pseudo-ginseng, eucommia ulmoides, and four tiles.

Zhenfeng County is rich in resources, with 18,121 hectares of cultivated land, 364,888 mu of woodland, and a forest coverage rate of 15.2%. The county has a pleasant climate, abundant rainfall and ample light, and is suitable for the growth of various crops. It is rich in sub-tropical fruits such as rice, corn, wheat, rape, tobacco, Chinese prickly ash, sand kernel, honeysuckle, yulong, tea, early-maturing vegetables and

sugarcane. County within the pearl river system, water flow into the north pan river flows through the pearl river to the sea, basin area, high water energy reserves.

There are 52 families and 116 species of tree species (including bamboo) in Qinglong county, and the forest coverage rate is 5.02%. Wild plant variety, relatively large, such as longxuancao, roxburgh rose, skin, wood oil, grease wax. Wild drug resources mainly include bottle, huangjing, asparagus, dipsacus, baimao, unicorn lotus, eucommia, gentian, pondweed, trichoderma, honeysuckle, honeysuckle, fungus ganoderma, wu huatong, etc. Wild edible fungus mainly includes fungus, lentinus edodes, bamboo.

2.1.6 Social Parameters (G1.3)

Project sites in Guizhou province Qianxinan Xingyi, XingRen city, Ceheng, Zhenfeng and Qinglong, including four city/county is 66 counties in guizhou and depth is funding county, statistics show that 2015 qianxinan poverty rate was 13.8%, the poverty population is 432300 people, accounted for 8.8% of the province. In 2015, the GDP of qianxinan was 80.165 billion yuan, ranking the seventh place in Guizhou with backward economy. The reason is that the foundation of primary industry is weak, productivity is low, and labor surplus; The second industry has low innovation ability, weak product competitiveness, weak industrial system foundation and excessive dependence on resources. The tertiary industry, especially the modern service industry, is severely underdeveloped and cannot fully absorb large amounts of surplus labor. A variety of factors restrict agricultural and rural economic development.

2.1.7 Project Zone Map (G1.4-7, G1.13, CM1.2, B1.2)

The project is located in Xingren City, Xingyi City, Ceheng County, Zhenfeng County, and Qinglong County, Guizhou Province, China. The geographical coordinates: 104°51'-104°55'E and 24°38'-25°23'N is the project of Xingyi; 104°54'-105°34'E and 25°18'-25°47'N is the project of Xingren; 105°27'-106°12'E and 24°38'-25°19'N is the project of Ceheng; 105°25'-105°56'E and 25°07'-25°44'N is the project of Zhenfeng; 105°01'-105°25'E and 25°33'-26°11'N is the project of Qinglong.

The location of the project activity in Guizhou Province is illustrated in Figure1-1. The geographical coordinates of the project activity are listed below.

Table 1 Geographical Coordinates of the Project Activity in Five Counties

	East longitude	North latitude
Xingren City	104°54'-105°34'	25°18'-25°47'
Xingyi City	104°51'-104°55'	24°38'-25°23'
Ceheng County	105°27'-106°12'	24°38'-25°19'
Zhengfeng County	105°25'-105°56'	25°07'-25°44'
Qinglong County	105°01'-105°25'	25°33'-26°11'



Figure1-1 Qianxinan, Guizhou Province

2.1.8 Stakeholder Identification (G1.5)

Most of the towns in five counties are affected by project activities, so all local villagers in these towns are identified as stakeholders. Forest planting needs to be approved by the local government and the local forestry bureau should be identified as a stakeholder. Planting techniques are provided by the Forestry Bureau, which is also identified as a stakeholder. In addition, in order to assess the environmental and social benefits of project outcomes, local governments in five counties were identified as stakeholders.

2.1.9 Stakeholder Descriptions (G1.6, G1.13)

The afforestation department of Forestry Bureau provides technical support to the project. The Forestry Bureau and the government are responsible for managing the forests and the ecological environment. Residents of the local participating projects are responsible for pits and planting and other related matters.

2.1.10 Sectoral Scope and Project Type

The activity implemented by the project is the establishment of forests on land. Therefore corresponds to VCS scope 14 “Agriculture, Forestry and Other Land Use” as an Afforestation, Reforestation and Revegetation (ARR).

2.1.11 Project Activities and Theory of Change (G1.8)

Karst rocky desertification is a process of land degradation involving serious soil erosion, extensive exposure of basement rocks, drastic decrease in soil productivity, and the appearance of a desert like landscape. It is caused by irrational, intensive land use on a fragile Karst geo ecological environment. The process is expanding rapidly, and it is daily reducing the living space of residents and is the root of disasters and poverty in the Karst areas of southwestern China. The tectonic, geomorphic and environmental background to Karst rocky desertification is analyzed. Population pressure and the intensive land use that have led to this serious land degradation are described. Although the problem concerns the Chinese Government and some profitable experience in the partial restoration or reconstruction of the ecological environment has been gained, effective remedial action has not been achieved on a large scale.

Aiming to contribute to the local sustainable development, especially to mitigating the water and soil erosion, 32,047ha of forest would be established by direct planting on degraded land in these five counties.

Considering the goal of the project activity, the native species *Cunninghamia Lanceolata* and weeping cypress is chosen as the target species. Seedling planting is chosen as the forestation method. Seedling must be robust with developed root system, has no mechanical damage and no diseases, and has complete crown.

Implementation of the comprehensive rocky desertification control project, the local government developed a comprehensive rocky desertification control mode, improve local production conditions and ecological environment, enhance the quality of life, create a good investment and development environment and play a leading and demonstration role.

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Plant native species of trees, including preparing land for planting	Establish a forest, create job opportunities	Improve the local environment	Generate GHG emission removals	Climate
Offer permanent and temporary job opportunities related to forest planting and management	Increase household incomes of local residents	Improve living level of local villages	Improve well-being of local residents	Community
Provide technical skills and training of forest planting and management	Improve motivation of community groups	Enhance capabilities of local residents	Enhance social cohesion	Community
Conduct continuous management and protection of the forest	Improve local ecological environment	Provide better habitat for wild lives	Increase local biodiversity	Biodiversity

2.1.12 Sustainable Development

Ever since the comprehensive rocky desertification control project for Karst areas started in 2008, 1.89 million hectares of forests have been planted, which contributes to the preliminary control in the rocky desertification from previously constant expansion to currently net reduction. The end of 2011, China recorded a total area of 12.002 million hectares of rocky desertification lands, decreasing by 960,000 hectares from the figure in 2005, with an annual shrinkage of 160,000 hectares and reduction rate at 1.27%.

Preliminary ecological benefits: Compared with figures before the project implementation, the project areas recorded increases in the average vegetation coverage by 15 percentage points, the community plant abundance and the biodiversity index from 0.735 to 1.521 as well as decreases in the total soil erosion from 5.11 million tons to 1.7031 million tons, with a reduction rate of up to 66.68%.

Increased economic benefits: During the comprehensive rocky desertification control project, efforts were made to improve ecological environment and develop green industries, so as to promote local industrial restructuring and sustainable social and economic development, enhance the transfer and local employment of surplus labors and increase per capita net income of farmers by 12.48% from RMB3916.13 to RMB4394.88.

Good social benefits: After the implementation of the comprehensive rocky desertification control project, the local government developed a comprehensive rocky desertification control mode, improve local production conditions and ecological environment, enhance the quality of life, create a good investment and development environment and play a leading and demonstration role.¹²

2.1.13 Implementation Schedule (G1.9)

Date	Milestone(s) in the project's development and implementation
30-10-2013	Started the baseline survey.
20-01-2014	The Project Design for Afforestation Operation was finished.
26-02-2014	The afforestation project design was approved by Qianxinan Forest Bureau.
19-03-2014	Biodiversity survey report of the project was completed.
31-03-2014	Participatory Rural Appraisal (PRA) report of the project was completed.
15-04-2014	Prepared land for planting (start date of crediting period)
15-10-2015	Completed planting

2.1.14 Project Start Date

According to VCS standard, 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 15-04-2014 when the preparing land for planting started.

2.1.15 Benefits Assessment and Crediting Period (G1.9)

Planting started: Apr. 2014, the date in which the native community starts its activities and leads to reducing greenhouse gas emissions.

The project crediting period is from 15-04-2014 to 14-04-2034 with a lifetime of 20 years which is the same as the CCB benefits assessment period.

2.1.16 Differences in Assessment/Project Crediting Periods (G1.9)

The GHG emissions accounting, climate adaptive capacity and resilience, community, and/or biodiversity assessment and periods are all the same.

¹² http://english.forestry.gov.cn/index.php?option=com_content&view=article&id=694:achievements-of-comprehensive-rocky-desertification-control-project-in-carst-areas&catid=14&Itemid=115

2.1.17 Estimated GHG Emission Reductions or Removals

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
15/04/2014-14/04/2015	6,513
15/04/2015-14/04/2016	18,357
15/04/2016-14/04/2017	40,727
15/04/2017-14/04/2018	74,686
15/04/2018-14/04/2019	119,363
15/04/2019-14/04/2020	172,946
15/04/2020-14/04/2021	232,914
15/04/2021-14/04/2022	296,487
15/04/2022-14/04/2023	360,945
15/04/2023-14/04/2024	423,853
15/04/2024-14/04/2025	483,187
15/04/2025-14/04/2026	537,375
15/04/2026-14/04/2027	585,306
15/04/2027-14/04/2028	626,283
15/04/2028-14/04/2029	659,975
15/04/2029-14/04/2030	686,350
15/04/2030-14/04/2031	705,611
15/04/2031-14/04/2032	718,136
15/04/2032-14/04/2033	724,437
15/04/2033-14/04/2034	725,093
Total estimated ERs	8,198,544
Total number of crediting years	20
Average annual ERs	409,927

2.1.18 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 flat barren land, thus the risk of fire is quite low in the early phase of the project. After the trees grow to a certain age (about ten years), the risk of fire may increase, and the project owner will adopt the necessary measures for fire preventing.	Strengthen the work of forest fire prevention publicity education to increase the awareness of forest fire prevention in the whole society. Education activities, mainly covering forest law and forest fire prevention regulation, are carried out to popularize the basic knowledge of fire prevention and extinguishing. Relying on the masses, we will implement mass prevention and control and effectively raise the people's awareness of forest fire prevention.
Diseases and Insects	There could be diseases and insects that may damage the planted trees, but the diseases and insects will be prevented by routine overseeing.	In order to ensure the success of afforestation and prevent the occurrence of diseases, insects and rodents, we should follow the principle of "prevention first, active elimination" and do early prevention, early arrangement and early action to prevent and control the harm of harmful organisms in a timely manner. The project construction unit and the county forest station signed the pest control responsibility. There are mainly rodents mainly in the color of plateau, with an average of 1-3 holes/mu, and the damage degree is slight. The prevention and control methods can be manually controlled by using instruments such as ground arrow and arch clip, and chemical agents can be appropriately used for the areas where the rodents and diseases and insect pests are particularly serious. It is proposed to increase forest management funds to minimize damage from pests and natural disasters.
Fertilization	Improper fertilization application would be harmful to natural environment, including polluting soil, water and air conditions, as well as the habitat of the wildlife.	In the construction process of this project, woodland clearing and hole digging will reduce the surface vegetation to a certain extent and increase the pressure of soil and water conservation and soil erosion prevention. Secondly, after fertilizer application, some residues may be discharged together with rain and affect the environment. In order to reduce the negative impact of project construction on the environment, it is necessary to ensure that the zonal plant resources are not damaged excessively during construction. When clearing woodland and digging holes, protect the surrounding woodland and trees well, and make construction arrangements, and resolutely prohibit the full reclamation and consolidation of mountains.

2.1.19 Benefit Permanence (G1.11)

In the life of the project, which is a medium-term project, the project will intervene in activities that strengthen the technical capacities of the community members, promote the development of productive alternatives to generate income and develop capacities for the administration of natural resources, strengthen the control and surveillance system and the forest governance of the community.

In this strategy, it is foreseen to strengthen forest management capacities, continue with the formation and financing of community members to be responsible for the control and monitoring of the community's territory, as well as for monitoring, reporting and verification of GHG activities. The leaders and current boards of directors will be trained in public management and governance of natural resources. It will be supported in the improvement of the educational level of the young men and women of the community, in order that they can develop capacities for the proper management of the forest in the future.

The activities of the strategy seek to jointly implement activities that reduce the pressure on the use of land and resources in the project area, thus producing benefits for the population as well as existing ecosystems.

2.1.20 Financial Sustainability (G1.12)

To facilitate the restoration of forest resources, Chinese government has launched several programs over the past years, such as the Grain for Green Program (started in 2001) that subsidizes farmers to convert degraded cropland to forests, the Natural Forest Conservation Program (launched in 1998), the Nature Reserve Development and Wild Conservation Program (started in 2000), etc.

Stakeholder seriously considered the carbon revenue and thought the revenue could help to mitigate the economic barrier. Guizhou Baiheng Fertiliser Co., Ltd signed the Communication Agreement and Emission Reduction Purchase Agreement (ERPA) with Shanghai Libra Investment & Management Co., Ltd who will purchase the carbon credits generated from the project in the following years.

2.1.21 Grouped Projects

This is not a grouped project.

2.2 Without-project Land Use Scenario and Additionality

2.2.1 Land Use Scenarios without the Project (G2.1)

The baseline scenario is the same as the conditions existing prior to the project initiation. There is no forestry land in the project area before the project. The lands will remain barren without the project.

2.2.2 Most-Likely Scenario Justification (G2.1)

The most-likely scenario is the same as baseline scenario, please refer to section 3.1.4 for detailed information.

2.2.3 Community and Biodiversity Additionality (G2.2)

The community and biodiversity additionality is demonstrated by using “Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities” (Version 01), please refer to section 3.1.5 for detailed information.

2.2.4 Benefits to be used as Offsets (G2.2)

Community benefits: To maximize the socio-economic benefit, the afforestation/reforestation design was prepared with a participatory approach. PRA methods were adopted in interviewing and consulting with farmer households in the project areas to understand the local farmers/communities’ preferences, wishes and concerns, so that the proposed project activity would better respond to their desires for livelihood development. Please refer to section 4 for detailed information regarding community benefits.

Biodiversity benefits: After the afforestation project is fully launched, it not only produces positive benefits to soil erosion control, but also has far-reaching significance to wildlife resources protection. In the future, efforts should be made to strengthen the protection of natural forests, and the felling of natural forests should be banned in an all-round way. Meanwhile, the non-forested areas of most suitable forests should be restored as natural forests, which is more conducive to the survival and development of wildlife. Please refer to section 5 for detailed information regarding biodiversity benefits.

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

The full project documentation will be published on VCS and CCB website for public comments, as well as the project summary in Chinese version, and the local communities and other stakeholders can easily download from the website. The project owner will notice local stakeholders through the routine villager assembly regarding every milestones of the project development, including listing, registered, issuance, etc.

2.3.2 Dissemination of Summary Project Documents (G3.1)

Along with the project implementation, the project documentation will be published on VCS and CCB website for all stakeholders to obtain the detailed project information and development progress. Also, the summary of project description in local language will also be disseminated to local communities through local government, as long as the summary of monitoring reports during each verification.

2.3.3 Informational Meetings with Stakeholders (G3.1)

In order to ensure the effectiveness of all parties involved, the investigation team conducted a participatory rural assessment (PRA) of the five counties before the start of the project, so as to obtain basic data and information on the local socio-economic status and environmental issues, and to further understand the stakeholders. The main socio-economic and environmental issues, collect opinions and suggestions from project participants, and analyze the potential impact of the project.

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

During PRA surveys and stakeholder meetings, project owner explained potential costs, risks, and benefits to relevant communities and stakeholders, and then asked for feedback.

2.3.5 Information to Stakeholders on Validation and Verification Process (G3.3)

The description of the validation and verification process was made known through a training, in which the representative of the community were present.

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

The local stakeholders will be informed timely regarding the project process, especially when the auditor would take the site visit. As long as the audit plan has been settled, the project owner will arrange a stakeholder meeting with auditor during the site visit.

2.3.7 Stakeholder Consultations (G3.4)

Stakeholder consultations include PRA surveys and stakeholder meetings, requiring stakeholders to present their opinions on project design and their willingness to participate.

Collect feedback on the questionnaire, which is summarized as follows:

- Most local farmers are well aware of the benefits of afforestation. They understand that forestry can reduce soil erosion, clean the air, protect the land, and reduce natural disasters. And they also have a strong sense of protection for animals and plants.
- Most local farmers have never heard of carbon trading or carbon credits. After the introduction, they strongly agreed that the project should be registered as a carbon sink project and joined the carbon trading market.
- Local farmers believe that the project can 1) create jobs; 2) get more benefits from selling carbon credits; 3) improve the local environment, protect cultivated land, and reduce natural disasters;.

2.3.8 Continued Consultation and Adaptive Management (G3.4)

There is a Suggestion Book published on the notice board of the local village throughout the lifetime of the project. Stakeholders can write their comments or suggestions in the book anytime. The project owner will check the book regularly and collect all the comments received.

2.3.9 Stakeholder Consultation Channels (G3.5)

Local villagers directly impacted by the project were invited through their most convenient way: the routine villager assembly. Local policy makers and forest experts were also invited by phone calls. All the stakeholder have been informed directly or through their legitimate representatives.

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

In the project planning phase, stakeholders were fully involved in the land selection, planting pattern selection, etc, through villagers meeting and PRA methods. During the project implementation, the local communities and government will play as the direct implementers of the project, and the project proponent will play as coordinator who is in charge of the overall management. All the critical information regarding decision-making will be published to local stakeholders, and the decision should be revised according to further discussion in case there is any feedback from stakeholders.

2.3.11 Anti-Discrimination Assurance (G3.7)

The project owner should obey *Labor Law of the People's Republic of China* with anti-discrimination assurance, and workers will sign up voluntarily regardless of gender, race, religion or any other basis. In case of any discrimination, the project owner will demand the person who is responsible for discrimination end his/her involvement with the project immediately and find someone else to take over his/her job.

2.3.12 Feedback and Grievance Redress Procedure (G3.8)

If there is a conflict of interest between the parties, the stakeholders can appeal through the village representative or directly to the local forestry bureau, which is the most effective way to solve the problem. They appeal through the phone number of the relevant contact or file a complaint during the meeting. In addition, community villagers participate in project implementation and can identify or seek to resolve conflicts and dissatisfaction in the project.

The project owner has appointed a staff member to record and collect conflicts and dissatisfaction between local communities and individual farmers. Employed forest patrols will play an important role in dealing with common conflicts and dissatisfaction and report to the Forestry Bureau. Upon receipt of the patrolman's report, the relevant management unit will contact and discuss with the relevant community or other stakeholders within 3 days. The specific staff member shall propose a solution and mediation plan within one week based on all the information collected by the relevant parties, and the conflict shall be

handled within 30 days.

2.3.13 Accessibility of the Feedback and Grievance Redress Procedure (G3.8)

The Procedure of Feedback and Attention of Claims will take into account the traditional methods that the Communities and Other Actors use to resolve their conflicts, which will be available to all interested parties, the community and other actors; said information will be available from consultation.

2.3.14 Worker Training (G3.9)

Interview with local communities indicated that local farmers/communities were usually short of access to quality seed sources and lack skills for producing high quality seedlings and for successful tree planting, as well as for preventing planted trees from being subject to fire, pest and disease attack. This is one of the important barriers of local communities in planting trees on their lands. In the proposed project activity, the local forestry bureau as well as project owner had organized the training for local communities on seed and seedling selection, nursery management, site preparation, planting models and integrated pest management. Without this project, local people would have trouble with developing alternative livelihood, resulting in a worse economy.

2.3.15 Community Employment Opportunities (G3.10)

The project mobilized the participation of the entire community, including women, minorities and the poor. The working conditions provided everyone with equal opportunities to get a job.

During the implementation of the project, the total number of local villagers involved in planting was approximately 24,035 of which 70% were women. In addition, approximately 120 locals were employed for project management and are regularly trained in relevant skills.

2.3.16 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* and no forced labor is allowed, and they are free to establish and join any labor organizations as they wish.

2.3.17 Occupational Safety Assessment (G3.12)

The project owner has referenced 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 plans is made available for workers and implemented by the village committee.

2.4 Management Capacity

2.4.1 Project Governance Structures (G4.1)

The Project Management Offices (PMOs) that have been established under the umbrella of the expert group will be responsible for coordinating the project participants and providing technical services.

The Professor will provide technical consultation and training to provincial and county technicians and the project entity staff in the measuring and monitoring of the actual GHG removals by sinks and leakage generated by the proposed project activity.

2.4.2 Required Technical Skills (G4.2)

For the development of the Project, are required skills and experience related to:

- Experience in management of natural resources conservation projects
- Ability to interact with different actors,
- Development of Projects with rural populations,
- Experience in the development of carbon projects and environmental services
- Experience in the evaluation and monitoring of biodiversity

2.4.3 Management Team Experience (G4.2)

The team has many years in management of projects of conservation of natural resources, with which it has developed capacities to interact with different types of actors, as a result of which it has established cooperation agreements with local governments, private companies, producer organizations and native communities. It has also developed a system applicable to environmental projects, which has effective tools and methodologies to have effective control over the interventions carried out.

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

The management team of the project is experience in forest project management and carbon project development, including local Forestry Bureau will provide instruction of afforestation and forest management, conduct the specific supervision of the implementation. The local Forestry Bureau and local government would provide technical support for forest management.

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

The project participator is 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.

2.4.6 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.

2.4.7 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 Statutory and Customary Property Rights (G5.1)

China has successively issued and revised a series of laws and administrative regulations related to forestry, including the Forest Law, the Regulations for Implementing the Forest Law, the Regulations for Grain for Green, the Regulations for the Protection of Wild Animals, the Regulations for the Protection of Wild Plants, the Regulation for Nature Reserve, the Regulation for Forest Fire Control, and the Regulation for Forest Diseases and Pests Control, Facilitation for Land Tenure Reform of Collective-owned Forestry Land, etc. The recent land tenure reform policy allows collectively owned lands to be contracted to individual farmer household.

2.5.2 Recognition of Property Rights (G5.1)

According to the "Constitution of the People's Republic of China" and the "Forest Law of the People's Republic of China", China's land is state property, that is, collectively owned by the whole people except the law. Prior to the start of the project, the land involved in the project was collectively owned by the village. Local villagers have the right to use the land within the project boundary, and the project owner and forestry department are responsible for the comprehensive implementation and management of the project.

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

Prior to the project initiation, some of the project land by local villages. To make sure the successful development of the project, Approval of the project by the Forestry Bureau, so the project will not encroach uninvited on private property, community property or government property.

2.5.4 Property Rights Protection (G5.3)

Prior to the project implementation, the project area is mainly barren land, therefore the project activities will not lead to involuntary removal or relocation of property rights holders from their lands or territories, and does no force rights holder to relocate activities important to their culture or livelihood.

2.5.5 Illegal Activity Identification (G5.4)

Under current law of China, any illegal logging activities will be fined or sentenced to punishment. Currently all project lands are defined for forestry purpose by local government. Deforestation must be carried on under the approval of local Forestry Bureau, and the forests are nursed by project staff regularly as a result of the implementation of the project, so there will not be 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.

2.5.6 Ongoing Disputes (G5.5)

There are mostly barren land before the project implementation, there is neither ongoing or unresolved conflicts or disputes over rights to lands, territories and resources nor any disputes that were resolved and recorded during the last twenty years.

2.5.7 National and Local Laws (G5.6)

China has successively issued and revised a series of laws and administrative regulations related to forestry, including the Forest Law¹³, the Regulations for Implementing the Forest Law¹⁴, the Regulations for Grain for Green¹⁵, the Regulations for the Protection of Wild Animals¹⁶, the Regulations for the Protection of Wild Plants¹⁷, the Regulation for Nature Reserve¹⁸, the Regulation for Forest Fire Control¹⁹, and the Regulation for Forest Diseases and Pests Control²⁰, Facilitation for Land Tenure Reform of Collective-owned Forestry Land²¹, etc. The recent land tenure reform policy allows collectively owned lands to be contracted to individual farmer household.

¹³ http://www.gov.cn/ziliao/fifg/2005-09/27/content_70626.htm

¹⁴ http://www.gov.cn/fifg/2005-09/27/content_70635.htm

¹⁵ http://www.gov.cn/gongbao/content/2003/content_62531.htm

¹⁶ http://www.gov.cn/fwxx/bw/lyj/content_396083.htm

¹⁷ http://www.aepb.gov.cn/Pages/Aepb10_ShowNews.aspx?NewsID=340

¹⁸ http://www.gov.cn/ziliao/fifg/2005-09/27/content_70636.htm

¹⁹ http://www.gov.cn/fifg/2008-12/05/content_1171407.htm

²⁰ http://www.gov.cn/fifg/2005-09/27/content_70642.htm

²¹ http://www.gov.cn/gongbao/content/2011/content_1860861.htm

2.5.8 Approvals (G5.7)

The forestry bureau of Qianxinan approved the operational design of the afforestation project.

2.5.9 Project Ownership (G5.8)

According to the "Constitution of the People's Republic of China" and the "Forest Law of the People's Republic of China", China's land is state property, that is, collectively owned by the whole people except the law. Prior to the start of the project, the land involved in the project was collectively owned by the village. Local villagers have the right to use the land within the project boundary, and the project owner and forestry department are responsible for the comprehensive implementation and management of the project.

2.5.10 Management of Double Counting Risk (G5.9)

This project will not seek to generate or has received any form of environmental or social credit.

2.5.11 Emissions Trading Programs and Other Binding Limits

The project is not involved in an emission trading program or any other mechanism that includes GHG allowance trading.

2.5.12 Other Forms of Environmental Credit

The project has not sought or received another form of GHG-related environmental credit.

2.5.13 Participation under Other GHG Programs

The project has not been registered, or is seeking registration under any other GHG programs.

2.5.14 Projects Rejected by Other GHG Programs

The project has not been rejected by any other GHG programs.

2.5.15 Double Counting (G5.9)

The credits generated from the project will be sold as offsets on VCS registry, the series number of the issued credits can be tracked to avoid any potential double counting.

3 CLIMATE

3.1 Application of Methodology

3.1.1 Title and Reference of Methodology

Consolidated afforestation and reforestation baseline and monitoring methodology ARACM0003/Version 2.0.0 "Afforestation and reforestation of lands except wetlands" is applied.

<http://cdm.unfccc.int/methodologies/DB/C9QS5G3CS8FW04MYYXDFOQDPXWM4OE>

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

Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (Version 01)

- Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities (Version 04.1).

3.1.2 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 subject to the project activity does not fall in wetland category.

The land subject to the project activity does not fall in wetland category.

- b) Soil disturbance attributable to the project activity does not cover more than 10 per cent of 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 in the afforestation activities of this project is in line with the requirements of soil and water conservation, and the land is made up of cavitation. Afforestation density was 3,100 plant/Ha, soil disturbance area ratio was 4.96%²², less than 10%, and there was no repeated disturbance.

- ii. 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.

²² Proportion of soil disturbed area: $0.16 \text{ m}^2 \times 3100 / 10000 \text{ m}^2 = 4.96\%$

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 for 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:

- 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.

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

- b) The tool is not applicable to small-scale afforestation and reforestation project activities.

The proposed project is large-scale reforestation project.

Therefore, 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 04.1) has no internal applicability conditions.

3.1.3 Project Boundary

The boundaries are the administrative boundaries of villages and forest farm, which is illustrated from Figure 1-1 before. The project location has the following qualifications:

- All the project plots were not forestry land on January 1st 2000 and even before.
- The reforestation land ownership is clear.
- The project is aiming to protect local biodiversity, mitigate water and soil erosion, and stimulate the development of local economy.

Source		Gas	Included?	Justification/Explanation
Baseline	Above-ground biomass	CO ₂	Yes	This is the major carbon pool subjected to project activity
		CH ₄	No	Not included in carbon pool
		N ₂ O	No	Not included in carbon pool
	Above-ground	CO ₂	Yes	Carbon stock in this pool is expected to increase due to the implementation of the

Source		Gas	Included?	Justification/Explanation
	biomass			project activity
		CH ₄	No	Not included in carbon pool
		N ₂ O	No	Not included in carbon pool
	Dead wood Litter and Soil organic carbon	CO ₂	No	Insignificant and exclusion is conservative.
		CH ₄	No	Not included in carbon pool
		N ₂ O	No	Not included in carbon pool
Project	Above-ground biomass	CO ₂	Yes	This is the major carbon pool subjected to project activity
		CH ₄	No	Not included in carbon pool
		N ₂ O	No	Not included in carbon pool
	Above-ground biomass	CO ₂	Yes	Carbon stock in this pool is expected to increase due to the implementation of the project activity
		CH ₄	No	Not included in carbon pool
		N ₂ O	No	Not included in carbon pool
	Burning of woody biomass	CO ₂	No	CO ₂ emissions due to burning of biomass are accounted as a change in carbon stock
		CH ₄	Yes	Burning of woody biomass for the purpose of site preparation, or as part of forest management, is allowed under this methodology
		N ₂ O	Yes	Burning of woody biomass for the purpose of site preparation, or as part of forest management, is allowed under this methodology

3.1.4 Baseline Scenario

The baseline scenario is defined by using “Combined tool to identify the baseline scenario and demonstrate additionally in A/R CDM project activities” (Version 01).

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

The project start date is 15/04/2014, when the activities that lead to the generation of GHG emission removals were first implemented. The planting activity was conducted from April 2014 to October 2015.

Before the project implementation, the project owners conduct thorough evaluation on the project activity including the incentive from carbon trading, which indicates that incentives are seriously considered during the project implementation.

STEP 1. Identification of alternative scenarios

Sub-step 1a. Identify credible alternative land use scenarios to the proposed project activity

According to additionality tool, the alternative land use scenario of the proposed project includes:

1. Continuation of pre-project land use (i.e. Lands remain barren.)
2. Agricultural use of the land
3. Forestation of the land within the project boundary without being registered as the VCS project

In identification of the alternative land use scenario, field survey and data from the local forestry bureau has been applied. The identified scenarios are deemed realistic and credible.

Sub-step 1b: Consistency of credible land use scenarios with enforced mandatory applicable laws and regulations

National, local and sectoral land-use policies or regulations since 1980s are listed below:

China has successively issued and revised a series of laws and administrative regulations related to forestry, such as the Regulations for Implementing the Forest Law, the Regulations for Grain for Green, the Regulations for the Protection of Wild Plants and Animals, the Regulation for Nature Reserve, the Regulation for Forest Fire Control, and the Regulation for Forest Diseases and Pests Control, etc.

To facilitate the restoration of forest resources, Chinese government has launched several programs over the past years, such as the Grain for Green Program (started in 2001) that subsidizes farmers to convert degraded cropland to forests, the Natural Forest Conservation Program (launched in 1998), the Nature Reserve Development and Wild Conservation Program (started in 2000), etc.

Although these programs had set overall development goals for forestry development and were started before the adoption by the COP of the CDM M&P (decision 17/CP.7, 11 November 2001), none of the programs mandate the forestation on barren lands. Moreover, these programs have not been written in laws. Whether these programs can meet the initial targets highly depends on whether the program is fully funded, but the funding gap is very big. Finally, the project area is very remote, which makes the timber less competitive in the market. Thus, the project activity can hardly get any subsidy from the government. Thus Scenario 1 remains possible baseline scenario.

The reforestation activity location is legally defined as forestry land. Farming and grazing is not allowed in these plots. Thus the second scenario "agricultural use of land" is not feasible.

Scenario 3 faces the investment and technical barrier which will be discussed in the next section. However, it does not violate any existing enforced mandatory applicable laws and regulations.

In sum, scenario 1 and 3 are in compliance with mandatory legislation and regulations.

STEP 2. Barrier analysis

Sub-step 2a: Identification of barriers that would prevent the implementation of at least one alternative land use scenario

1. Investment barrier

Debt funding not available for the land use scenarios. Commercial loan from banks for the purpose of reforestation is very unlikely due to the high risk and the economical unattractiveness in the context of remote lands.

In addition, no credit mechanisms are in place for farmers to make long term investment in plantation forestry. The income of farmers in the project area is lower than the general level of local townships and counties.

2. Technological barriers

The project is located in five nearby counties. It is hard for them to register their reforestation projects as individual project and apply for financial support. So these farmers were gathered up and signed contracts with Guizhou Baiheng, and Guizhou Baiheng then represented these local farmers to sign contracts with consulting firm (Shanghai Libra in this project) Therefore, although the forest companies and organizations are project proponents, local farmers are actually the project participants who planted trees and enjoyed the benefits thereafter.

Local farmers lack access to good quality saplings or seedlings as well as the necessary tending and forest management technique. They also lack the skills needed to produce high quality seedlings and successful tree planting, and lack the skills needed to prevent planted trees from being subject to fire, pest and disease attack. In addition, the lack of organizational instruments also prevents them from overcoming technological barriers.

The technical barriers are summarized as 1) lack of access to planting materials; 2) lack of silvicultural and forest management technology; and 3) lack of skilled or properly trained labor force. If planting trees within the project boundary without registration as a VCS project (scenario 3), these technical barriers would be applied to the project owner, and lead to the failure of the project.

After local farmers decided to register the project as a VCS project and apply for additional carbon fund, they ask Guizhou Baiheng to be their representatives. Then Guizhou Baiheng works with the project buyer to work out better implementation plan for the project, and help local farmers to conduct the planting activity better. Without applying for VCS, local farmers would face the above mentioned technical barriers.

Sub-step 2b: Elimination of land use scenarios that are prevented by the identified barriers.

Scenario 1 does not require extra investment or labor force. Thus it is not prevented by any of the identified barriers.

Scenario 3 faces the investment and technical barriers.

In sum, Scenario 3 is not feasible. Scenario 1, continuation of pre-project use (i.e. lands remain barren), remains the possible baseline scenario.

STEP 3. Investment analysis (if needed)

Scenario 1 remains the only possible baseline scenario, which makes investment analysis not necessary.

STEP 4. Common practice analysis

Only converting farmland to forest is eligible for the subsidy. Planting activities that changing barren land such as this project is not eligible for the subsidy.

All the above reasons explain that it is very difficult to conduct reforestation activity in these five counties. So that's why there is no similar reforestation activity in the project area. Since there is no similar reforestation activity within the common practice boundary, there is no need to conduct common practice analysis for this project.

Thus, the proposed project is not a common practice.

3.1.5 Additionality

Additionality has been fully analysed in the above section 3.1.4 Baseline Senario with "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities" (Version 01).

The proposed project is additional.

3.1.6 Methodology Deviations

No deviations from the procedures indicated by the methodology have been made.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions

As described above, the baseline scenario is the continuation of existing land use i.e. lands remain barren. Based on the applied methodology AR-ACM0003 (Version 2.0.0), the baseline net GHG removals by sinks is estimated as follows:

$$\Delta C_{BSL,t} = \Delta C_{TREE_BSL,t} + \Delta C_{SHRUB_BSL,t} + \Delta C_{DW_BSL,t} + \Delta C_{LI_BSL,t}$$

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

With baseline scenario, dead wood biomass and litter biomass would not be changed by local farmers. All the plots in five counties have been barren and do not change after 1970s and before the project. Thus, the change in carbon stock in baseline dead wood biomass and litter biomass can be negligible. So the $\Delta C_{BSL,t}=0$.

3.2.2 Project Emissions

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:

$$\Delta C_{ACTUAL,t} = \Delta C_{P,t} - GHG_{E,t}^{23}$$

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

²³ Equation (2) in page 7, methodology AR-ACM0003 (Version 2.0.0)

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:

$$\Delta C_{P,t} = \Delta C_{TREE_PROJ,t} + \Delta C_{SHRUB_PROJ,t} + \Delta C_{DW_PROJ,t} + \Delta C_{LI_PROJ,t} + \Delta SOC_{AL,t}^{24}$$

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

$\Delta C_{LI_PROJ,t}$ = 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

The only change within each project stratum are planted trees. In other words, change in carbon stock above the ground is the only change to be considered in the project. The tool "Estimation of

²⁴ Equation (3) in page 7, methodology AR-ACM0003 (Version 2.0.0)

carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity” (Version 04.1) is used to estimate the change in carbon stock above the ground. A summary of the main factors used for ex-ante estimations and each source of data are presented below.

$$\Delta C_{TREE_PROJ,t} = C_{TREE,t} - C_{TREE,t-1}^{25}$$

$$C_{TREE,t} = CO_2/C * B_{TREE,t} * CF_j^{26}$$

Where:

CF_j = Carbon fraction of tree biomass for species or group of species j

$$CO_2/C = 44/12$$

$$B_{TREE,t} = V_{TREE,t} * D_j * BEF_j * (1+R_j)^{27}$$

Where:

$B_{TREE,t}$ = biomass of trees within the project boundary at time t; tonne dry materials

$V_{TREE,t}$ = merchantable volume of trees, at time t; m³

D_j = average wood density of species j; tonne dry materials/m³

BEF_j = biomass expansion factor for species j

R_j = root-shoot ratio of species j

$$V_{TREE,t} = A_i * V_{it} * N_{it}^{28}$$

Where:

A_i = area of category i; hectare (ha)

V_{it} = average merchantable volume of one tree in category i, at time t; m³/tree

N_{it} = tree number per ha in category i, at time t; tree/ha

According to the method, the associated uncertainty of the change in carbon stock in trees is estimated as follows:

²⁵ Equation (1) in page 7, The tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity” (Version 04.1)

²⁶ Equation (3) in page 8, The tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity” (Version 04.1)

²⁷ Equation (5) in page 25, The tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity” (Version 04.1)

²⁸ $V_{TREE,t}$ is stem volume of tree, estimated from the tree dimensions as entry data into a volume equation. Page 26, The tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity” (Version 04.1)

$$u_{\Delta c} = \frac{\sqrt{(u_1 \times C_{TREE,t_1})^2 + (u_2 \times C_{TREE,t_2})^2}}{|\Delta C_{TREE}|} \quad 29$$

Where:

u_1 u_2 = Uncertainties in C_{TREE,t_1} and C_{TREE,t_2} respectively

According to the tool, only sampling uncertainty is assessed and controlled. Uncertainty in values obtained from direct measurement or values derived from models is not quantified. The uncertainty should be managed through application of appropriate quality assurance and quality control (QA/QC) methods. For the project, all parameters were estimated based on the growth model and not measured at ex-ante stage. At ex-post stage, sampling uncertainty does not exist since the samples have been selected at the beginning. The sample is rectangle land with 20m*30m (600m²) each.

Therefore, uncertainty analysis is not necessary for the project.

The tree species adopted in the project are China fir and Cypresses. Local growth curves are used to estimate the average merchantable volume of one tree (V_{it})

China fir	$V=0.2134(1-e^{-0.08A})^{5.0898}$
Cypresses	$V=0.20420(1-e^{-0.05A})^{4.66995}$

Where,

V_{it} = average merchantable volume of one tree in category i, at time t; m³/tree

A – stand age, year

Wood density (D), biomass expansion factor (BEF), root-shoot ratio and carbon fraction for China fir and Cypresses are listed in the below.

Table 3-1 Wood density, BEF, Root-shoot ratio and carbon fraction used in the proposed project activity

Parameter	factor	Source	factor	Source
Wood density (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	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-
BEF	1.634		1.732	

²⁹ Equation (2) in page 7, The tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity" (Version 04.1)

Root-shoot ratio	0.246	"list of land-use change and forest greenhouse gases"	0.220	use change and forest greenhouse gases"
CF	0.520		0.510	

According to the growing years of the description of the project activity, the aboveground biomass can be categorized into two groups.

Table 3-2 Two Groups of Cypresses and China fir

Category	Year to plant	Area (ha)
Proj -1	2014	25380
Proj -2	2015	6667

Table 3-3 Number of trees per hectare for the two groups

Time year	Proj-1 tree/hectare	Proj-2 tree/hectare
15/04/2014-14/04/2015	3100	3100
15/04/2015-14/04/2016	3100	3100
15/04/2016-14/04/2017	3100	3100
15/04/2017-14/04/2018	3100	3100
15/04/2018-14/04/2019	3100	3100
15/04/2019-14/04/2020	3100	3100
15/04/2020-14/04/2021	3100	3100
15/04/2021-14/04/2022	3100	3100
15/04/2022-14/04/2023	3100	3100
15/04/2023-14/04/2024	3100	3100
15/04/2024-14/04/2025	3100	3100
15/04/2025-14/04/2026	3100	3100
15/04/2026-14/04/2027	3100	3100
15/04/2027-14/04/2028	3100	3100
15/04/2028-14/04/2029	3100	3100
15/04/2029-14/04/2030	3100	3100
15/04/2030-14/04/2031	3100	3100
15/04/2031-14/04/2032	3100	3100
15/04/2032-14/04/2033	3100	3100
15/04/2033-14/04/2034	3100	3100

Taking all the above information into the formula, we reach the table below.

Table 3-4 The GHG Removals by Sinks of the Project Activity

Year	Estimated annual project removals of Proj-1 (tCO ₂ e)	Estimated annual project removals of Proj-2 (tCO ₂ e)	Estimated total annual project removals (tCO ₂ e)
15/04/2014-14/04/2015	6513	0	6513
15/04/2015-14/04/2016	16647	1710	18357
15/04/2016-14/04/2017	36354	4373	40727
15/04/2017-14/04/2018	65136	9549	74686
15/04/2018-14/04/2019	102254	17110	119363
15/04/2019-14/04/2020	146084	26861	172946
15/04/2020-14/04/2021	194540	38373	232914
15/04/2021-14/04/2022	245385	51102	296487
15/04/2022-14/04/2023	296486	64458	360945
15/04/2023-14/04/2024	345972	77881	423853
15/04/2024-14/04/2025	392305	90880	483187
15/04/2025-14/04/2026	434323	103051	537375
15/04/2026-14/04/2027	471216	114089	585306
15/04/2027-14/04/2028	502502	123780	626283
15/04/2028-14/04/2029	527976	131998	659975
15/04/2029-14/04/2030	547657	138691	686350
15/04/2030-	561748	143861	705611

14/04/2031			
15/04/2031- 14/04/2032	570573	147562	718136
15/04/2032- 14/04/2033	574555	149880	724437
15/04/2033- 14/04/2034	574164	150928	725093

3.2.3 Leakage

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

$$LK_t = LK_{AGRIC,t}$$

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.

$$LK_{AGRIC,t} = \frac{44}{12} \times (\Delta C_{BIOMASS,t} + \Delta SOC_{LUC,t})^{30}$$

Where:

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

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

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

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

³⁰ Equation (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)

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 decrease in carbon stock in the carbon pools of the land and 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.

Therefore, leakage is zero for the proposed project..

3.2.4 Net GHG Emission Reductions and Removals

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

$$\Delta C_{AR,t} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t \quad (1)$$

Where:

- $\Delta C_{AR,t}$ = Net anthropogenic GHG removals by sinks, in year t ; t CO₂-e
- $\Delta C_{ACTUAL,t}$ = Actual net GHG removals by sinks, in year t ; t CO₂-e
- $\Delta C_{BSL,t}$ = Baseline net GHG removals by sinks, in year t ; t CO₂-e
- LK_t = GHG emissions due to leakage, in year t ; t CO₂-e

The net anthropogenic GHG removals by the project are summarized below.

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
15/04/2014-14/04/2015	0	6,513	0	6,513
15/04/2015-14/04/2016	0	18,357	0	18,357
15/04/2016-14/04/2017	0	40,727	0	40,727
15/04/2017-14/04/2018	0	74,686	0	74,686
15/04/2018-14/04/2019	0	119,363	0	119,363
15/04/2019-14/04/2020	0	172,946	0	172,946

15/04/2020-14/04/2021	0	232,914	0	232,914
15/04/2021-14/04/2022	0	296,487	0	296,487
15/04/2022-14/04/2023	0	360,945	0	360,945
15/04/2023-14/04/2024	0	423,853	0	423,853
15/04/2024-14/04/2025	0	483,187	0	483,187
15/04/2025-14/04/2026	0	537,375	0	537,375
15/04/2026-14/04/2027	0	585,306	0	585,306
15/04/2027-14/04/2028	0	626,283	0	626,283
15/04/2028-14/04/2029	0	659,975	0	659,975
15/04/2029-14/04/2030	0	686,350	0	686,350
15/04/2030-14/04/2031	0	705,611	0	705,611
15/04/2031-14/04/2032	0	718,136	0	718,136
15/04/2032-14/04/2033	0	724,437	0	724,437
15/04/2033-14/04/2034	0	725,093	0	725,093
Total	0	8,198,544	0	8,198,544

3.3 Monitoring

3.3.1 Data and Parameters Available at Validation

Data / Parameter	Ai
Data unit:	ha
Description:	Area of category i
Source of data:	Monitoring of boundaries is done using a Geographical Information

	System (GIS) which allows for integrating data from different sources (including GPS coordinates and Remote Sensing data)									
Value applied:	The difference among planting category is sapling size of Cypresses. Tree plantation within each category is the same. The area of each category (A_i) is listed below. <table><tr><th>Category</th><th>Year to plant</th><th>Area (ha)</th></tr><tr><td>Proj -1</td><td>2014</td><td>25380</td></tr><tr><td>Proj -2</td><td>2015</td><td>6667</td></tr></table> <i>The total area is 32047 ha.</i>	Category	Year to plant	Area (ha)	Proj -1	2014	25380	Proj -2	2015	6667
Category	Year to plant	Area (ha)								
Proj -1	2014	25380								
Proj -2	2015	6667								
Justification of choice of data or description of measurement methods and procedures applied:	N/A									
Purpose of Data	The parameter is used to calculate biomass of trees within the boundary and then calculate baseline emissions and project emissions. $V_{TREE,t} = A_i \cdot V_{it} \cdot N_{it}$ $B_{TREE,t} = V_{TREE,t} \cdot D_j \cdot BEF_j \cdot (1+R_j)$ $\Delta C_{TREE,t} = C_{TREE,t} = 44/12 \cdot B_{TREE,t} \cdot CF_j$									
Comments	N/A									

Data / Parameter	BEF _j
Data unit	Dimensionless
Description	Biomass expansion factor for conversion of stem biomass to above-ground biomass
Source of data	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"
Value applied:	China fir: 1.634 Cypresses: 1.732
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of Data	The parameter is used to calculate biomass of trees within the boundary and then calculate baseline emissions and project emissions. $B_{TREE,t} = V_{TREE,t} \cdot D_j \cdot BEF_j \cdot (1+R_j)$ $\Delta C_{TREE,t} = C_{TREE,t} = 44/12 \cdot B_{TREE,t} \cdot CF_j$
Comments	N/A

Data / Parameter	CF _j
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 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"
Value applied:	China fir:0.520 Cypresses:0.510
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of Data	The parameter is used to calculate baseline emissions and project emissions. $\Delta C_{TREE,t} = C_{TREE,t} = 44/12 * B_{TREE,t} * CF_j$
Comments	N/A

Data / Parameter	D _j
Data unit	t d.m.m-3
Description	Basic wood density
Source of data	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"
Value applied:	China fir:0.307 Cypresses:0.478
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of Data	The parameter is used to calculate biomass of trees within the boundary and then calculate baseline emissions and project emissions. $B_{TREE,t} = V_{TREE,t} * D_j * BEF_j * (1+R_j)$ $\Delta C_{TREE,t} = C_{TREE,t} = 44/12 * B_{TREE,t} * CF_j$
Comments	N/A

Data / Parameter	R_j
Data unit	Dimensionless
Description	Root-shoot ratio
Source of data	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"
Value applied:	China fir:0.246 Cypresses:0.220
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of Data	The parameter is used to calculate biomass of trees within the boundary and then calculate baseline emissions and project emissions. $B_{TREE,t} = V_{TREE,t} * D_j * BEF_j * (1+R_j)$ $\Delta C_{TREE,t} = C_{TREE,t} = 44/12 * B_{TREE,t} * CF_j$
Comments	N/A

Data / Parameter	V_{it}
Data unit	$m^3/tree$
Description	average merchantable volume of one tree in category i, at time t
Source of data	Calculated from growth and growth model of masson pine, Chinese fir and Chinese pine plantation in Guiyang area. And Study on biomass growth law of main vegetation types and changes of forest biomass in small watershed of banqiao river.
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of Data	The parameter is used to calculate biomass of trees within the boundary and then calculate baseline emissions and project emissions. $V_{TREE,t} = A_i * V_{it} * N_{it}$ $B_{TREE,t} = V_{TREE,t} * D_j * BEF_j * (1+R_j)$ $\Delta C_{TREE,t} = C_{TREE,t} = 44/12 * B_{TREE,t} * CF_j$
Comments	N/A

3.3.2 Data and Parameters Monitored

Data / Parameter	D
Data unit	cm
Description	Diameter at breast height of tree
Source of data	Field measurements in sample plots
Description of measurement methods and procedures to be applied	Usually the diameter at breast height of the tree, but it could be any other diameter or dimensional measurement (e.g. basal diameter, root-collar diameter, basal area, etc.) applicable for the model or data source used. Standard operating procedures (SOPs) prescribed under national forest inventory are applied. In the absence of these, SOPs from published handbooks, or from the IPCC GPG LULUCF 2003, are applied.
Frequency of monitoring/recording	Before every verification event
Value applied:	N/A
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 volume of trees, and then calculate project removals.
Calculation method	N/A
Comments	N/A

Data / Parameter	H
Data unit	m
Description	Height of trees
Source of data	Field measurements in sample plots
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:	N/A

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 volume of trees, and then calculate project removals.
Calculation method	N/A
Comments	N/A

Data / Parameter	T
Data unit	Year
Description	Time period elapsed between two successive estimations of carbon stock
Source of data	Record time
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value applied:	N/A
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of project removals $\Delta C_{TREE_PROJ,t} = C_{TREE,t} - C_{tree,0}$
Calculation method	N/A
Comments	N/A

Data / Parameter	N_{it}
Data unit	tree/ha
Description	tree number per ha in category i, at time t

Source of data	As the project continues, the value will be sampled and calculated at each monitoring.
Value applied:	3100 tree/ha for Project-1; 3100 tree/ha for Project-2;
Justification of choice of data or description of measurement methods and procedures applied	The values applied in the estimation are ex-ante from Planting design.
Purpose of Data	The parameter is used to calculate biomass of trees within the boundary and then calculate baseline emissions and project emissions. $V_{TREE,t} = A_i \cdot V_{it} \cdot N_{it}$ $B_{TREE,t} = V_{TREE,t} \cdot D_j \cdot BEF_j \cdot (1+R_j)$ $\Delta C_{TREE,t} = C_{TREE,t} = 44/12 \cdot B_{TREE,t} \cdot CF_j$
Comments	N/A

3.3.3 Monitoring Plan

According to the project methodology requirements, monitoring activities need in accordance with protocol that may have been issued or a recognized by the host country. This project chose the "Afforestation Project Carbon Measurement and Monitoring Guide" as a guide, published by Chinese State Forestry Administration. At the same time, monitoring activities also refer the VCS standards and CDM methodology to determine the content and methods for monitoring. All data from monitoring process shall be simultaneously archived and kept in paper and electronic format for at least 1-2 years after the end of the crediting period.

Table 4-1 Selection of carbon pools

Carbon pool	Selected	Justification
Above ground	Yes	Major carbon subject to the project activity
Below ground	Yes	Major carbon subject to the project activity
Dead wood	No	Conservatively omitted by the applied methodology
Litter	No	Conservatively omitted by the applied methodology
Soil organic carbon	No	Conservatively omitted by the

		applied methodology
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The following activities in the project period are required to monitor:

- Forestation activities: planting time, area, species, survival rate, saving rate, replanting rate, weeding, communities income distribution ratio;
- Silvicultural activities: tending, fertilization, thinning, felling, forest regeneration, pest control and fire protection;
- Forest disasters (e.g. deforestation, forest fires, pests and diseases) occurred in project boundary (time, place, area, boundaries, etc.)

Table 4-2 GHG Emissions by Sources other than Those Resulting from Changes in Carbon Pools

Source	Gas	Included/Excluded	Justification
Combustion of fossil fuels used for vehicles	CO ₂	Included	Potential emission source is significant due to transportation.
	CH ₄	Excluded	Potential emission is negligibly small.
	N ₂ O	Excluded	Potential emission is negligibly small.

Determine the sample number

According to IPCC(2004), 37 samples are enough for monitoring the biomass volume of a category. Selected sample numbers are listed for two categories of the project activity.

Table 4-3 Selected Sample Number of two Carbon Layer

Category	Location	Year to plant	Area(Ha)	Selected sample number
Proj-1	Xingyi, XingRen, Ceheng, Zhenfeng and Qinglong	2014	25380	30
Proj-2	Xingyi, XingRen, Ceheng, Zhenfeng and Qinglong	2015	6667	7

Monitoring of boundary

The coordinate of the project boundary should be measured and managed strictly in accordance with regulations, and saved in GIS files. Boundary information such as original records, needs to store in both electronic and printed archive in the project owner, and participants should keep a backup. Files need to be saved at least two years after the end of the crediting period.

In order to obtain valid and reliable boundary information, monitor agency need to use the GPS or other verifiable methods to verify the project boundary. Determine the actual boundaries of afforestation. If the actual boundary is larger than the boundary in the project design, the excess section is not included in project boundary; instead, if the actual border boundary is smaller than the boundary in the project design, project boundary should be based on the actual boundary. Any change in the boundary must be located by GPS or appropriate spatial data (eg satellite imagery).

During the crediting period, the project area occurs deforestation, afforestation failure and instead other land use patterns, these plots will be transferred out the project boundary, and no longer monitoring and verification. The area that has been transferred out of the project border will no longer be allowed into the project boundary. If the area that has been transferred out of the project border has been verified, the pre-carbon stocks still is valid, included in the calculation of carbon stocks.

Post-stratification and determining the number of plots

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

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.

Setting sample plots

Monitoring agency needs to set fixed sample plots due to measuring requirements at regular intervals. Plot size is set to 20m*30m. The plot needs to determine the location at the center point of the plot. The location of 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. Ensure that 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.

Determine the sample location

The sample is fixed rectangle land with 20m*30m (600m²) 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. If fire breaks out, another sample could be selected near the original sample.

Monitoring frequency

The monitoring of the project implementation will take place no more than two years after the project registration in order to ensure the continuity of the benefits. Periodic verification and quantitative monitoring of the project will take place no more than two year.

Measuring carbon stock changes over time

The growth of individual trees on plots will be measured at each monitoring event. Non-tree vegetation such as herbaceous plants, grasses, and shrubs will not be measured and accounted as per methodology applied. The carbon stock changes in living biomass of trees on each plot are then estimated through Biomass Expansion Factors (BEF) method.

Step-wise procedures (BEF method) of the approved baseline and monitoring methodology AR-ACM0003/Version 2.0 will be followed to monitor the verifiable carbon stock changes in the above-ground.

The volume of the commercial component of trees is calculated based on locally derived equation as follows:

Tree Species	The Volume of the Commercial Component of Trees
China fir	$B = 0.10301 \times (DBH^2 \times H)^{0.77726}$
Cypresses	$B = 0.12703 \times (DBH^2 \times H)^{0.79975}$

B: Individual biomass of trees, kg d.m,

DBH: Diameter at breast height, cm

H: Tree height, m

Put the result coming from the above equation into the formula in Section 3.2, we can get the change in carbon stocks for the proposed project.

Database management

Data management includes electronic version and printed version. All the data copy must be preserved by all the project stakeholders. The preserved documents include:

- The original monitored data, experiment data, results of data analysis and electronic database;
- All the estimated data covering change in carbon stock;
- All the maps including GIS maps;
- Monitoring reports.

Uncertainty

Necessary supporting measures will be taken in case uncertainty will be higher than required. The measures include:

- Establish specific organization
- Establish standard operation procedure
- Establish record management procedure
- Establish acceptance system

If uncertainty is higher than required, person in charge will take the necessary procedure to make sure that the uncertainty will be recorded and dealt with properly.

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

The monitoring plan and its results will be presented to the community representative and will be published on the internet for each verification process that is carried out.

3.4 Optional Criterion: Climate Change Adaptation Benefits

3.4.1 Regional Climate Change Scenarios (GL1.1)

N/A.

3.4.2 Climate Change Impacts (GL1.2)

N/A.

3.4.3 Measures Needed and Designed for Adaptation (GL1.3)

N/A.

4 COMMUNITY

4.1 Without-Project Community Scenario

4.1.1 Descriptions of Communities at Project Start (CM1.1)

Agriculture (animal husbandry and fruits cultivation) is the main income of the local communities in the project zone. However, production is subjected to the natural disasters, like droughts, heavy rain and floods. Food productivity is unsteady and the mean per capita annual income is very low, lower than the average level of the relevant project county.

Based on the survey, there are no aboriginal people living in the project zone. Consequently, no damage to non-replicable cultural property will occur under the project activities.

To maximize the socio-economic benefit, the afforestation/reforestation design was prepared with a participatory approach. PRA methods were adopted in interviewing and consulting with farmer households in the project areas to understand the local farmers/communities' preferences, wishes and concerns, so that the proposed project activity would better respond to their desires for livelihood development.

PRA is applied to obtain necessary information from various groups. Each group was lead by an expert. Specific PRA method includes:

Semi-Structure Interview with key persons, farmer households, villages, town/township governments, local forest posts and forestry bureau and nature reserves.

Hold Seminar of farmers' representatives.

Employment and income generation The proposed project activity will create over 19,035 person-days of temporary employment opportunities from planting, weeding and tending, thinning, harvesting, etc. Most employment opportunities will be taken by the local farmers/communities involved in the proposed project activity and beyond (whose lands do not fall within the project boundary). Compared with the “without project” scenario, local farmers will participate the project activity such as site preparation, planting, weeding, thinning, harvesting, etc. and earning direct benefits from the wood and non-wood products.

Strengthening social cohesion As indicated earlier, individual farmer households/communities are too weak to successfully manipulate the chain from investment, production to market especially for the timber and non-wood forest products which will take a much longer period than food and livestock production. In addition, the lack of organizational project activity will entail close interaction between individuals, communities, companies and government, with intensified communication among them and supporting networks for social and productive services. Without this project, there will be a lack of social cohesion between the local people and local communities, resulting in a bad economic development.

Technical training and demonstration Interview with local communities indicated that local farmers/communities are usually short of access to quality seed sources and lack skills for producing high quality seedlings and for successful tree planting especially in Karst region, as well as for preventing planted trees from being subject to fire, pest and disease attack. This is one of the important barriers of local communities in planting trees on their lands. In the proposed project activity, the local forestry agencies as well as companies/farms will organize the training for local communities on seed and seedling selection, nursery management, site preparation, planting models and integrated pest management. Without this project, local people will have trouble developing alternative livelihood, resulting in a worse economy. This project provides experience for people to plant and manage forests in the Karst region.

4.1.2 Interactions between Communities and Community Groups (CM1.1)

The local communities are mainly village collective, and due to low economic level, the community groups were barely active.

4.1.3 High Conservation Values (CM1.2)

No HCVs are identified, which means that there will not be negative affection by the project.

4.1.4 Without-Project Scenario: Community (CM1.3)

Agriculture is the main income sources of the communities. The communities have no habit to make use of the barren land for any land use. Thus continuing the “non-use” of the current land will have no effect

on the livelihood and well-being conditions of the local communities and community groups under the without-project land use scenario.

4.2 Net Positive Community Impacts

4.2.1 Expected Community Impacts (CM2.1)

The project's expectations will have a positive impact on local villages, increase household income and living standards, and increase actual direct benefits. By obtaining jobs and training opportunities from the project, the living standards and household income of local residents can be improved.

4.2.2 Negative Community Impact Mitigation (CM2.2)

No HCVs was identified related to community well-being in the project zone thus there is no negative well-being impacts on community groups.

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

The main source of income for communities associated with the agricultural project area. Their production methods are backward, affected by disasters such as floods, and agricultural production is also low. The project will benefit both counties economically and socially.

- 1) Income improvement: During the project period, the net income generated by the project includes employment and labor income as well as carbon trading income.
- 2) Job creation: The project will provide permanent and temporary employment opportunities, including soil preparation, planting and care. Most of the work will belong to local farmers involved in the project.
- 3) Enhance social cohesion: Afforestation will form a close interaction between individuals, which will strengthen communication between communities and local governments, communities and communities.
- 4) Technical training and demonstration: The community generally lacks high-quality seed technology and high-quality seedlings, fire protection, forest pest control, which is also an important issue in local community forest management. The project is organized by the local forestry bureau to help farmers understand and evaluate problems in the implementation of the project, such as seedling selection, seedling management, land preparation model, pest control.
- 5) The project transforms the ecological benefits 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.

6) After the project is implemented, it can increase the area of green space and beautify the environment, which will 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.

4.2.4 High Conservation Values Protected (CM2.4)

Guizhou is a multi-ethnic province. There are more than 10 minority people living in the project area, including Buyi, Miao and Dong. The net social benefits of the project can be summarized in the contribution to the material welfare of the Minorities people and the populations that are in the project area, through the generation of income through sustainable activities, capacity building and change in the attitudes of the population regarding the use of the forest, through the strengthening of the governance of its resources, as well as the preservation of the values of critical ecosystems for human well-being.

4.3 Other Stakeholder Impacts

4.3.1 Impacts on Other Stakeholders (CM3.1)

No potential negative offsite stakeholder impacts have been identified. In contract the project will bring benefits to the offsite communities, like providing additional employment opportunity, improving local environment, as well as mitigating the impacts of climate change on the project zone.

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

There is no negative well-being impacts on other stakeholders.

4.3.3 Net Impacts on Other Stakeholders (CM3.3)

Project will have no negative impacts within and beyond the project zones. Besides, it will increase the income of the local communities and bring positive environmental benefits. Therefore, this project will not create negative impacts on the other stakeholder groups.

4.4 Community Impact Monitoring

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

The project proponent will submit the community monitoring plan after validation.

4.4.2 Monitoring Plan Dissemination (CM4.3)

The monitoring plan and results of every verification will be published on VCS and CCB website which can be easily download by stakeholders. Also, a contact person with phone numbers will be published in case any stakeholders want to directly contact the project owner and raise opinions.

4.5 Optional Criterion: Exceptional Community Benefits

N/A.

4.5.1 Exceptional Community Criteria (GL2.1)

N/A.

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

N/A.

4.5.3 Community Participation Risks (GL2.3)

N/A.

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

N/A.

4.5.5 Net Impacts on Women (GL2.5)

N/A.

4.5.6 Benefit Sharing Mechanisms (GL2.6)

N/A.

4.5.7 Benefits, Costs, and Risks Communication (GL2.7)

N/A.

4.5.8 Governance and Implementation Structures (GL2.8)

N/A

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

N/A.

5 BIODIVERSITY

5.1 Without-Project Biodiversity Scenario

5.1.1 Existing Conditions (B1.1)

There are Karst peaks and forests, Karst valleys and Karst depressions. The outcrops are mainly Triassic limestone and marl. Tilled soil, rice soil, etc. Between changes in 700 ~ 1600 meters above sea level, the relative elevation of 900 meters, the climate conditions of hoodoo area has a "winter without cold, summer without heat, four spring-like, a rain in winter", the characteristics of the annual average temperature 16 ~ 18 °C, extreme maximum temperature 30 °C, extreme minimum temperature - 2 °C, 10 °C accumulated temperature of 4300 ~ 5400 °C or higher, 1380 ~ 1530 mm annual rainfall, rainfall mainly concentrated in the summer (85%), air relative humidity above 80%. Frost free period is 295 ~ 300 days.

Typical vegetation in Karst mountain area of evergreen and deciduous broad-leaved mixed forest, the forest type diversity, different locations and elevations in the certain changes in vegetation composition, the main components are lauraceous, fiancée, euphorbiaceous, betulaceous, bambusoideae, roseleaf, wind cane, maraca, celastraceous, accuracies, leguminous, seven hippocastanaceae, cycadaceae, podocarpaceae, walnut, ulmaceae, urticaceae, bitter radicchio moss, crowfoot, cashew, palm wax, tomato, orchids, adiantaceae, zingiberaceae, polypodiaceae, five plus, spleenwort, oleaceae, hamamelidaceae, saxifrage, rubiaceae, neariaceae, polyhydriaceae, guoliniaceae, guanyaoziaceae, begoniaceae, cactus, zijin niu, primalaceae, honeysuckle family, oleoraceae, romaceae, salviaceae, liliaceae, arniaceae, liliaceae, liliaceae, stone garlic, and so on.

5.1.2 High Conservation Values (B1.2)

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

5.1.3 Without-project Scenario: Biodiversity (B1.3)

As mentioned above, the without-project land use scenario is continuing the "non-use" of the current land which will have no effect on the biodiversity conditions.

5.2 Net Positive Biodiversity Impacts

5.2.1 Expected Biodiversity Changes (B2.1)

After the afforestation project is fully launched, There will be an increase in plant species, and the project will implement afforestation activities through scientific and rational allocation methods, without burning

and cutting. As the growing trees grow into the forest, the project site will gradually become an ecological community with tall trees, which will improve biodiversity; On the other hand, because the habitat environment is better, the species of animals can be increased, because scientific and rational afforestation projects can adjust the hydrological cycle, reduce the risk of drought and flood; promote soil nutrient cycling, and improve the local microclimate and other ecological environment.

5.2.2 Mitigation Measures (B2.3)

As long as the current mitigation measures are monitoring, the relevant departments of the local government shall select the areas where the type and quantity of the monitoring objects are concentrated according to the distribution of the monitoring objects and the local reality, and establish the monitoring sample sites and unit monitoring points. In order to facilitate the monitoring work and the collection of monitoring data, monitoring sites will be mainly established in existing nature reserves and surrounding areas. The number of monitored sites is not less than 10% of the number of resource survey sites. The monitoring stations of the units choose the representative forest stations, timber checkpoints, nature reserves and other institutions to monitor the socio-economic status, the domestication and breeding of wild animals, utilization and trade for a long time.

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

After the afforestation project is fully launched, it not only produces positive benefits to soil erosion control, but also has far-reaching significance to wildlife resources protection. In the future, efforts should be made to strengthen the protection of natural forests, and the felling of natural forests should be banned in an all-round way. Meanwhile, the non-forested areas of most suitable forests should be restored as natural forests, which is more conducive to the survival and development of wildlife.

The 27 rare and endangered plants in this region are shown in the following table:

National key plants	Endemic plants	
Wing pod wood	Uvaria kweichowensis	Senecio scandens Buch-Ham
Camptotheca	Net vein embellish nan	Ramulus et Folium Phyllodii Pulchelli
toon	L. floribunda	Cynanchum stauntoni

Toona ciliata Roem. var. pubescens	Phoebe neurantha var. cavaleriei	Elsholtzia cypriani
Emmenopterys	pilosicalyx	Orchidaceae Anoectochilus roxburghii
Zelkova serrata	Phyllanthodendron lativenium Croiz.	Begonia sinensis
Dendrobium officinale	Phyllanthodendron caudatifolium P. T. Li	Begonia with long fibrous leaves
	Acer poliophyllum Fang et Wu	Bamboo hangs in ma ling canyon
	Lysimachia brachyandra	Viburnum betulifolium
	Allocheilos cortusiflorum	Senecio palmatus

The 2 rare and endangered animals in this region are shown in the following table:

Class i state protection of animals	Class ii state protection of animals
A. chrysaetos	A. gentilis

As per IUCN's Red List of Threatened Species, In terms of plant species just, Zelkova serrata, Dendrobium officinale and Uvaria kweichowensis fortune is globally Critically Endangered or Endangered species. In terms of animals species, there has 1 animal is globally Critically Endangered or Endangered species.

5.2.4 High Conservation Values Protected (B2.4)

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

5.2.5 Species Used (B2.5)

The project will mainly use native species for the productive activities to be implemented as part of the strategy.

5.2.6 Invasive Species (B2.5)

N/A.

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

N/A.

5.2.8 GMO Exclusion (B2.7)

N/A.

5.2.9 Inputs Justification (B2.8)

Chemical pesticides are only allowed in the event of serious disease problems in the project area and pesticides are used in accordance with national pesticide policies. Because of the potential impact of using chemical pesticides, improper application of pesticides can cause damage to the natural environment, including contaminated soil, water and air conditions, and habitats for wildlife. But for this project, pesticides will be strictly managed by trained staff to minimize potential impacts. In addition, environmentally friendly measures such as mixture arrangements, seed and seedling quarantine will be taken. In particular, biological measures to control pests and diseases are taken. Therefore, the application of pesticides will be limited.

Under the supervision of biological control agents, according to the local pest control policy, pests will be treated through biological control. Biological control agents are natural enemies of pests and are native species that do not adversely affect the local environment and community.

5.2.10 Waste Products (B2.9)

The waste products resulting from the project activities may include:

(1) Rubbish

The farmers will regularly clean up plastic, metal, paper and other waste products in the project area. Local forest technicians will also conduct frequent visits to ensure that waste and waste products are well identified and cleaned.

(2) Human waste

There may be some waste of people, because there is no toilet on site, the amount will be very small and can be naturally degraded, so no special treatment is required and there is no impact.

5.3 Offsite Biodiversity Impacts

5.3.1 Negative Offsite Biodiversity Impacts (B3.1) and Mitigation Measures (B3.2)

As the project activities will increase 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.

5.3.2 Net Offsite Biodiversity Benefits (B3.3)

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

5.4 Biodiversity Impact Monitoring

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

The project proponent will submit the community monitoring plan after validation.

5.4.2 Biodiversity Monitoring Plan Dissemination (B4.3)

The monitoring plan and results of every verification will be published on VCS and CCB website which can be easily download by stakeholders. Also, a contact person with phone numbers will be published in case any stakeholders want to directly contact the project owner and raise opinions.

5.5 Optional Criterion: Exceptional Biodiversity Benefits

5.5.1 High Biodiversity Conservation Priority Status (GL3.1)

N/A.

5.5.2 Trigger Species Population Trends (GL3.2, GL3.3)

N/A.